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WHAT CAN WE LOOK FORWARD TO?

An Insights Report On Optimism

Prepared by Futerra for
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Why Optimism?

Most of us are aware of the grand shifts facing our world. From the speed of technological change, to the pressures of environmental change and our growing, and changing, global population. But too often these shifts are portrayed only as threats, and the potential solutions and opportunities for progress are neglected.

On behalf of Vodafone, Futerra invited a group of leading futurists to reflect on what could go right, rather than what might go wrong. And the findings reveal that although few things in the world are entirely positive, the opportunities for a better world are more numerous, intriguing and closer to reality than we might think.

By the late 2030s we could...

Turn today's water, food and energy scarcities into abundance.

Offer health to everyone, in ways that are unique to your genetics and lifestyle.

Live, work and play alongside machines designed to help, and not compete with, humanity.

See, smell and touch far off places and the lives of others while never leaving a classroom or living room.

Work in meaningful ways, trading on our talents and contributing to the world through our jobs.

Thrive in green and clean cities, where we grow our food and visit parks in the same skyscrapers where we live and work (all without stepping into a car).

None of this is guaranteed of course. And every social and technological trend has inherent risks as well as potential opportunities. However, our experts nominated 10 trends that excite them. We hope they inspire, surprise and motivate you too.

10 Positive Trends

Looking at what is already possible today, we can imagine...

Trend 1: Future Cities

What does the future look like?
In 20 years, cities will be cleaner, healthier places to live and very different from today. New green spaces, including vast 'vertical forests' on the roofs of skyscrapers, will clean the air. New urban agricultures (in tunnels and skyscrapers) can grow fresh food in city centres. Homes will be 3D printed rather than built, and filled with 4D furniture that can reconfigure itself to fit the changing needs of your home. This technology will also have a lifesaving application: providing fast temporary shelter in emergency situations.

"In the past, urbanization was driven by industrialisation and globalisation, and motivated by the desire for economic growth. The future post-industrial urbanisation will focus on sustainability and creativity, and a revaluing of people and planet over profit."

– *Jennifer Gidley*

"Cities are the source of change and energy of our civilization. However, the unfortunate reality of today is that the more prosperous a city gets, the unhappier it becomes. We need a new imagination of the city that is founded on bringing technology and people together. Thinking of cities as organisms powered by a new sensibility and connected by a layer of technology is the starting point for transforming the urban experience."

– *Santosh Desai*

Why do we think this will happen?
China's vertical 'Forest City' will absorb almost 10,000 tons of carbon dioxide a year

Masdar City in the United Arab Emirates will run on 100% renewable energy, emitting zero emissions and creating zero waste

The United Arab Emirates wants 25% of buildings to be 3D-printed by 2030

Trend 2: 100 Terawatt World

What does the future look like?
In 20 years, imagine humanity having access to 100 terawatts of clean, cheap energy – five times the amount produced today (17.5 terawatts). This could be made possible through better capture, storage and deployment of renewable energy. The shift to this energy abundance will see solar panels not only on rooftops but built invisibly into windows, walls and even some highways. New advanced storage systems will provide steady, reliable power to people in the remotest parts of the world.

"An abundance of energy by 2040 will not only have a positive impact on disposable income, but will have a profound influence on water and food security. It will be a key building block in the establishment of a more resilient world economy."

– *Pieter Geldenhuys*

Why do we think this will happen?
In 2016, Germany produced so much renewable energy that energy prices became negative

France will create 1,000km of solar roads over 5 years

Solar glass is replacing standard windows to bring renewable energy directly to homes

Tesla has designed an at-home battery that can store 13.5kWh of energy

By 2050, the globe could be powered by 100% renewable energy, according to Stanford research

Trend 3: Everything Online

What does the future look like?
In 20 years, more everyday objects will incorporate sensor technology connected to the internet, allowing companies, homes and everything in between to operate smartly. By 2050 we will need to feed 9.6 billion people, and through a tripling in sensor use, the agricultural internet of things could increase food production by 70 percent.

"The 'internet of everything' is a way of imbuing objects with human intelligence. In other words, it is embedding inanimate objects with intelligence that allows us to connect and work with them in a completely new way. This enhances objects to make them much more responsive to our articulated and unarticulated needs, in an intuitive and instinctive way, and this integration of human beings and objects will be transformational."

– *Santosh Desai*

Why do we think this will happen?
By the year 2050, the Agricultural Internet of Things will enable us to increase food production by 70%, says IBM

The Internet of Things will enable end-to-end visibility of supply chains

Trend 4: Intelligent Assistance

What does the future look like?
In 20 years, with breakthroughs in Artificial Intelligence, machines will increasingly support human intelligence. AI will become the ultimate PA, anticipating our needs and allowing us to spend less time doing menial tasks. Our personal digital assistants will manage more complicated tasks too, such as protecting our time, monitoring our health, and even helping us stay safe.

"I look at the movement of technology from overcoming the limitations of the body, to now increasingly being used to multiply the powers of the mind, and nothing does that better than artificial intelligence. Machines are increasingly developing the capability to think in new ways and solve problems of a much larger scale."

– ***Santosh Desai***

"AI will on the one hand endlessly enrich our lives through deeper cognition, but will on the other force us to redefine our own intelligence."

– ***Pieter Geldenhuys***

Why do we think this will happen?
AlphaGo beat the best Go player in the world, 10 years earlier than expected

10 examples of Artificial Intelligence in use today

PWC predicts that AI will contribute $15.7 trillion to the global economy by 2030

Trend 5: Personalised Medicine and Healthcare

What does the future look like?
In 20 years, tailored medical advice and new treatments will take account of our lifestyles, physiology and even our genetics, improving life chances in both developed and developing countries. Personalised physical repairs, made possible by the early 2020s through 3D bio-printing and 'living drugs' designed to turn an individual's own immune system against disease, will end the era of one-size-fits-all healthcare. This will cut costs, reduce waiting times and potentially even end the need for donor lists.

"Increasingly affordable DNA analysis will not only assist us to remotely develop personalised medicine, it will also enable us to treat hereditary deceases decades before the symptoms start to appear."

– ***Pieter Geldenhuys***

"Remote medicine could have an enormous footprint and impact, and I clearly see it as having a disproportionate role to play. It has already begun to happen in a very small way, but given the very differential access to medicine in India, the idea of technology being able to level that playing field could make a huge difference."

– ***Santosh Desai***

Why do we think this will happen?
IBM's cognitive computing system uses the latest available research to help guide physicians' decisions

The US Food and Drug Administration approved the first 'living drug' for cancer in 2017

The bio-printing industry could be worth $1.8 billion by 2027

The first bio-printed heart could be created by 2023

Trend 6: Purposeful Work and Priority Shift

What does the future look like?
In 20 years, the ethical and environmental values of the young will increase pressure on businesses to seek purpose beyond profit. As automation fulfils the 'dangerous, dirty and dull' roles, there will be a premium on human creativity. These trends of purpose and creativity will drive a second-wave sharing economy, with more direct transactions between individuals to share ownership. This will change how we make, buy and use 'things', such as an up to 80% reduction in individual car ownership in developed markets like the United States by 2030.

"I don't think it's purposeful business but purposeful **people** that is the optimistic trend. More people are thinking about what a purposeful life is, and how that contributes to thriving local communities – and then how that moves out to business. The starting point is people and purpose, as opposed to business and purpose."

– ***Cathy Runciman***

Why do we think this will happen?
Three-quarters of Millennials would take a pay cut to work for a socially responsible company

Nissan launches 'social network' car-share ownership scheme

Car ownership could be cut by about 80% by 2030 as a result of autonomous cars and changes to ownership structures

7. Mega Water Projects

What does the future look like?
In 20 years, large-scale water capture projects, ranging from innovative precipitation harvesting techniques through to groundwater replenishment and improved desalination, could enable every human to have access to plentiful clean water (including the 1.2 billion people already impacted by water scarcity). The rise of innovative responses to sourcing water will make it more common in coastal, arid countries to grow vegetables in the middle of deserts using nothing but sunlight and seawater.

"In the next 15 years, we are going to tackle the global water problem as desalinisation technologies will become vastly more affordable."

– *Gerd Leonhard*

Why do we think this will happen?
Fog-catching nets in Lima allow for a steady source of clean water in desert areas

Global desalination capacity could double by 2030

The first desert vegetable farm using only sun and seawater opened in 2016

Trend 8: Travel Shift

What does the future look like?
By 2021, countries will start replacing current air and rail links with super-fast mass public transport, such as hyperloops and intercity trains travelling at speeds of up to 600mph. In 20 years (or sooner), a new generation of driverless cars, trucks and drones, operating within connected systems, will make mobility a pleasure and offer more choices of where we can live, work and play.

"A renewed focus on mass transport solutions is really critical for the future of cities. More liveable cities will have less personal/private transport options and much better mass transport systems which work and which we actually want to use. This will influence how cities are designed and planned, in particular to create more public space."

– ***Cathy Runciman***

Why do we think this will happen?
500mph Hyperloop train will travel from Dubai to Abu Dhabi in 12 minutes

China plans an intercity train that will travel at more than 600mph

10 million self-driving cars will hit the road by 2020

Trend 9: Protein Shift

What does the future look like?
Within 20 years, we will enjoy a wide range of healthy and delicious sources of meat-free protein and realistic meat alternatives that don't come from animals. This will help bring both global carbon emissions and heart disease down to an all-time low.

"There are many game-changing trends we are seeing within food and agriculture but one we are seeing emerge quickly is 'clean meat' grown in labs, although this is very expensive today it is becoming exponentially cheaper, as well."

– *Gerd Leonhard*

"How might we feed 9-10 billion people and not destroy our planet in the attempt. Some are working to meet this challenge through the development of extraordinary plant-based alternatives to meat in the lab, while another resurgent movement based on agro-ecology. I'm interested in what positive impacts will emerge as these two approaches work more closely together."

– *Cathy Runciman*

Why do we think this will happen?
The plant-based burger that cooks and sizzles like real meat

The world's first lab-grown chicken strips from animal cells

Silicon Valley has invested over $250 million in alternative protein start-ups

Trend 10: Immersive Living

What does the future look like?
In 20 years, education and entertainment will become more immersive, using virtual, augmented and mixed-reality technologies. This hyper-realistic experience will let you not only see, but also smell and touch your way through events, exotic destinations and even to learn about history by stepping into a simulation based in the past. Within 20 years, you will be able to dive into coral reefs or sit in the front row of the World Cup final, all from the comfort of your living room.

"Immersive Entertainment in sport will introduce a new dimension in how we will celebrate life's greatest moments."

– *Pieter Geldenhuys*

Why do we think this will happen?
Virtual reality will let you arrive without travelling

Foxton Estate Agents offer virtual reality property viewings

Virtual reality may enable planes may become windowless in the next 10 years, saving weight and carbon emission

Brown University has created a VR experience for middle and high school students

5G will provide immersive entertainment at the 2020 Olympics in Tokyo

The future-thinkers who contributed to the research included:

Santosh Desai (India)
Santosh is MD & CEO of Futurebrands, an end-to-end brand consultancy. He is a weekly columnist at the Times of India, a media critic, and the author of 'Mother Pious Lady: Making Sense of Everyday India'.

Pieter Geldenhuys (South Africa)
Pieter is Director of the Institute for Technology Strategy and Innovation, North-West University. He is a 'tour guide to the future', guiding companies to be a proactive agent in creating the future.

Jennifer M. Gidley PhD (Australia)
Jennifer is a futurist, psychologist and educator. She was President of the World Futures Studies Federation from 2009-2017. Her most recent books are 'The Future: A Very Short Introduction' (Oxford) and 'Postformal Education: Philosophy for Complex Futures' (Springer).

Gerd Leonhard (Germany)
Gerd is owner of The Futures Agency, whose clients include Accenture, Unilever, UBS, Walmart, Mercedes Benz and many others. His latest publication is 'Technology vs. Humanity' and explores how the exponential development of technology redefines the way we work, live and think and the questions surrounding our future.

Cathy Runciman (UK)
Cathy is Co-founder of Atlas of the Future, leads partnerships at the global media platform openDemocracy, and is a board advisor to Makerversity. She is the former MD of Time Out and was an independent Council member at Goldsmiths University for 6 years.

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Thank you

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