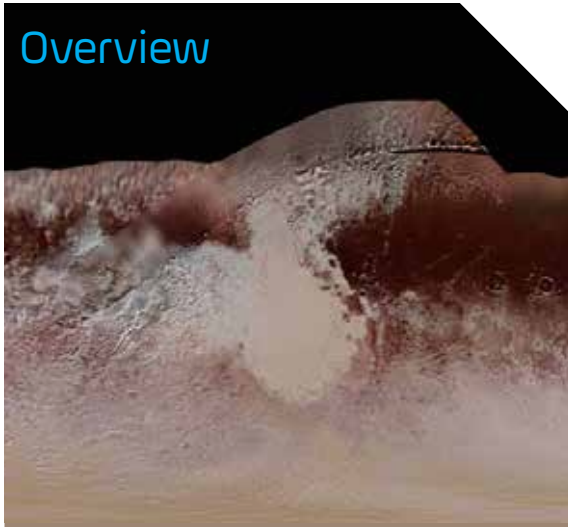


The Power of 3

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Driving the future further

Overview



Global colour map of Pluto [collated images from NASA/New Horizons spacecraft].

The original *Blade Runner* movie, released in 1982, is set in a post-apocalyptic Los Angeles in 2019. There, humans and robot servants navigate the dystopian urban environment in flying cars, giant animated billboards hawk brand-name products and advertising drones blare announcements about the off-world colonies to which large numbers of Earth's population have decamped. While that bleak depiction of the future lacked much of the tech taken for granted today, it feels prescient nonetheless.

Back to the future

"The best way to predict the future is to create it"

~ Alan Kay



Nowadays, [Sophia the Robot](#) appears on TV, drones are ubiquitous, the first [hyperloop capsule](#) has been unveiled, Elon Musk's tilt at Mars and NASA's Mars and Pluto missions are harbingers of interstellar travel, vertical take-off and landing craft are being trialled as aerial taxis, and Elon (him again!) has foreshadowed a Neuralink product designed to seamlessly connect human brains to computers.

[Image credit: Pixabay.com/Geralt.]

Artist's impression of the skyport at Paramount Miami WorldCenter, under construction now.



Chinese scientists plan to send three artificial moons into space [ABC News - Jarrod Fankhauser].

Less beguiling, perhaps, than flying cars or the new 'moons' China is planning to put into orbit, the technologies outlined next - while not new - will gather momentum through 2019 and beyond. And, like species extinction and global warming, their effects will be far-reaching.



'Harnessing the chaos of continual change'

Every year, global research and advisory firm **Gartner Inc.** lists what it considers the most important trends for businesses and organisations worldwide. At a symposium in Cape Town recently, **Brian Burke, Gartner's vice-president and head of research, described the future as an intelligent digital mesh of people, devices, content and service. It will, he opined, rely on a proliferation of artificial intelligence, cloud and edge computing and internet of things (IoT) platforms, with blockchain the digital guardian of privacy and security.**

Artificial intelligence (AI)

AI, says the online dictionary, is "the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making and translation between languages."

Knowledge engineering, machine learning and machine perception are all key components, and robotics a major field to which AI relates. And, when an **artwork** created using AI sells for around half a million dollars, perhaps no section of society is beyond its reach.

Gartner foresees a massive shift towards AI-enhanced virtual health care and facial recognition in particular and, more generally, says Burke:

... from stand-alone intelligent things to a swarm of collaborative intelligent things, with multiple devices working together, either independently of people or with human input. For example, if a drone examined a large field and found it was ready for harvesting, it could dispatch an autonomous harvester.



An autonomous vehicle for the farm: Yanmar's YTS113A robotic tractor [source *New Atlas*].

Cloud computing

Cloud computing relies on shared computing resources rather than a local server or personal device to store, manage and process data. A service provider like Apple's iCloud, for instance, allows people to share resources, software and information and use applications from any device that can access the Internet, without the need to invest in hardware or infrastructure. Gartner predicts that the number of cloud-managed service providers will triple by 2020.

Edge computing

An edge device is any piece of hardware that controls data flow at the boundary between two networks. In so doing, it reduces the communications bandwidth required between sensors and a central data collection centre by performing analytics and knowledge generation at or near the source of the data. Edge computing focuses on devices and technologies attached to the 'things' in the IoT (see *The Power of 3, issue 14*), where speed and fast data are key: think asset management, process optimisation, supply chain management – in a hyper-connected world the list will go on and on. This has elevated the role of edge devices, ushering in the need for more intelligence, computing power and advanced services at the network edge.

IoT platforms

These are the digital 'plumbing' or middleware that connects edge devices with data-driven applications for end users, allowing information from sensors, devices, networks and software to come together and unlock valuable data that can then be acted upon.

As the flow of data from the IoT becomes a deluge (think sensor-intensive and thus data-intensive smart homes, smart buildings and smart cars, for a start), cloud storage, edge networking and IoT platforms will form the basis of next-generation services.

Blockchain

Originally devised for energy-draining cryptocurrency Bitcoin, blockchain technology allows digital information – not just financial transactions but virtually anything of value – to be distributed *but not copied*, creating the backbone of a new type of internet. Writing for *Forbes.com*, Gideon Kimbrell cites it as the new big thing in verifying identity and protecting privacy at a time when online data privacy legislation is being enacted worldwide. Says he: "People won't be demanding blockchain, so businesses will have to lead the charge in transitioning to this system." Despite considering blockchain technology 'immature', Gartner predicts its effect on businesses will be enormous, creating a massive US\$31 trillion in value by 2030.

And finally ... Fancy an 'electric' feed? *The Guardian* reports that Finnish researchers are close to commercialising a nutrient-rich protein with no input from animals or plants. Rather, the ingredients are hydrogen-oxidising bacteria, electricity from solar panels, water, carbon dioxide from the air, nitrogen, and trace quantities of minerals like calcium, sodium, potassium and zinc. The resulting compound is 50-60% protein, the rest being carbohydrate and fat. Solar Foods has teamed with a European Space Agency programme that helps start-ups with space-related business ideas – like how to make food on Mars. So, if Earth's rivers dry up, bees are wiped out, crops fail and the only creatures left alive on the planet are human, there's some hope after all ... provided Elon can get us there!

Which **Perth-based company** seeks to power and recycle future tech?

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