



# THE INTERNET OF THINGS (IOT)

FUTURE TECHNOLOGY EDITION

**#6** in the Series of 'Essential Eight' Tech Mega Trends set to impact all markets in the coming years



dunstan thomas



## THE INTERNET OF THINGS (IOT)

Internet of Things promises to keep autonomous vehicles safe; optimise our use of finite resources and energy; keep animals healthy; deliver new Big Data insights – and much more besides.

The Internet of things (IoT) is the network of physical objects – devices, appliances, vehicles and sensors – embedded with software, network connectivity and computer power, that enables them to collect, exchange and act on data usually without human intervention. There are 17bn connected devices out there already in use!

In theory, any physical object that can be equipped with a sensor and Internet-connected counts as part of the IoT, and that could even include living creatures. The IoT is destined to change the pattern of our lives in many ways – including how our economies function. Here are 8 examples of how those changes could play out:



1

## IOT-ENABLED PRECISION-IRRIGATION

AT&T partnered with a company called WaterBit, which makes solar-powered ground-embedded sensors to monitor agricultural soil moisture. When the sensors detect a part of a field needs water, they signal an automated irrigation system that waters only that section. This 'precision farming' conserves water and can also boost crop yields.



2

## INTERNET OF (MOVING) THINGS OFFERS GREATER SAFETY FOR SELF-DRIVING CARS

The Internet-connected car revolution is a key building block for autonomous vehicles. 'Connected Cars' are set to become ubiquitous by 2022. In fact, EU law already requires new cars built in the Eurozone to be fitted with eCall technology. eCall essentially automatically sends a message with GPS location of the car to the EU's central emergency service 112 if IoT sensors on the car detect high impact.

Vehicle-to-vehicle (V2V) communications is set to be used by self-driving cars to detect distances between your car and the one in front when in autonomous mode. The theory is that your car can position itself in safe proximity to the car ahead, automatically slowing as the car in front slows, and remaining outside safe stopping distance. According to US National Highway Transportation Safety Administration, this IoT application could cut the number of crashes in the US by 400,000 to 600,000 – and save up to 1,080 lives each year. Yes – autonomous driving could be safer than relying on humans after all!

3

## CONNECTED CARS CAN EVEN REDUCE YOUR CAR INSURANCE BILLS

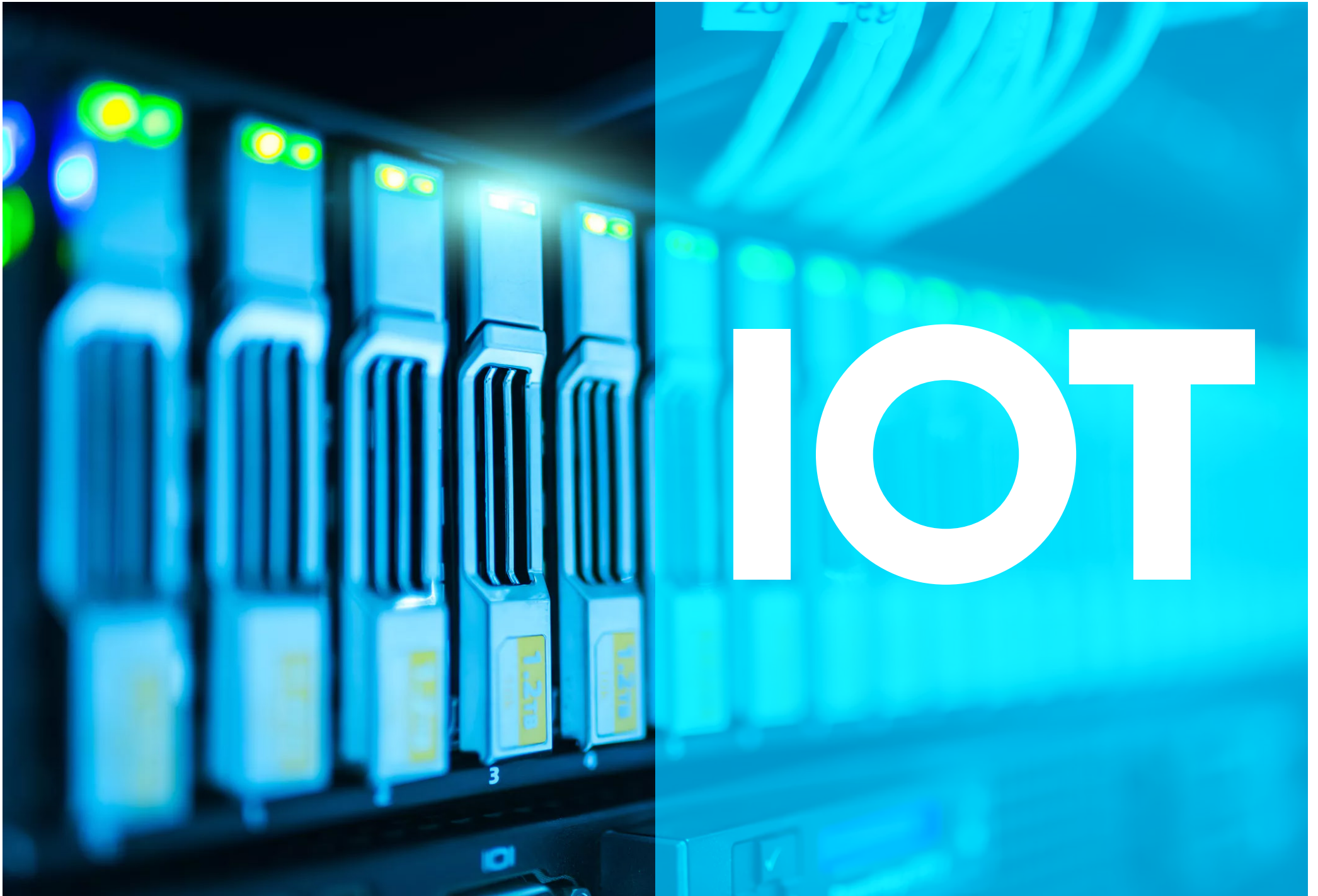
Car insurer Progressive employs onboard diagnostics (OBD) and telematics data, combined with Machine Learning to study driving behaviour and adjust insurance premium pricing accordingly. The theory is that if you are regularly braking late your anticipation may be poor, and so you are more likely to have an accident. Premiums reflect this increased likelihood over time.

4

## MICROSOFT & AMAZON EMBRACING CLOUD-BASED IOT SOLUTIONS

Microsoft announced its new Azure IoT Central platform just a year ago, allowing for the secure communication between IoT devices and the cloud. This new service will fill the need for what is essentially a software PnP solution for connecting IoT firmware to the cloud. Microsoft will continue to invest in its IoT infrastructure, promoting IoT and the potential it brings. Amazon Web Services also have an IoT play.





**5**

## **5G SET TO ACCELERATE IOT ADOPTION**

5G standards offer even more potential for IoT devices, with mobile communication for embedded devices benefiting from the resulting reduced latency and increased reliability. Reduced latency will let connected IoT devices send and receive data faster than ever before, allowing for the analysis and management of data to function at a level not possible on current 4G networks. Any application that needs rapid, no-compromises computing in as little time as possible will reap huge benefits from the technology. The transport and logistics sector will undoubtedly find quick integration for 5G-enabled devices.

**6**

## **IOT & ARTIFICIAL INTELLIGENCE (AI) TOGETHER OFFER POWERFUL BUSINESSES POWERFUL MARKET & CONSUMER INSIGHTS**

In the coming years, the biggest trend we see in IoT will be how connected devices will combine with AI to become a decision-making aid for businesses and individual consumers. IoT includes billions of devices that are connected to the cloud. These connected devices need to be seen as data collectors that feed into a central database in the cloud.

So, what is the purpose of collecting all this data if not to make intelligent decisions? This is where AI comes into the picture. A Machine Learning system can identify trends and uncover insights from the resulting Big Data, to help improve decision-making in every area of our lives, from making management decisions, to selecting the right products, health regimes, even supporting retirement saving plans.

**7**

## **BOOMTIME FOR IOT**

McKinsey Global Institute looked at more than 150-specific IoT applications that now exist or could be in widespread use within 10 years and estimated that the IoT has a total potential economic impact of \$3.9trn to \$11.1trn per year by 2025. The total value of this impact would be equivalent to about 11% of the world economy in the same timeframe.

**8**

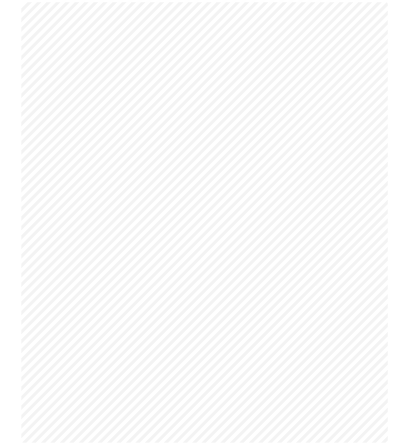
## **'ATTACK SURFACE' EXPANDS MASSIVELY WITH IOT**

By 2020, 25% of all cyber-attacks will target IoT devices, according to a survey by Trustlook. IoT security is a market that is now expanding at nearly 30% CAGR to counteract that fridge shut down and prevent your autonomous car driving into the car in front – or off a cliff!



## IN SUMMARY

The Internet of Things creates an 'Internet of data-borne insights' which should unlock value in the unlikeliest of places – from smart street lamps which save power to subcutaneous IoT 'fit bits' which monitor a cow's health in real-time. Collectively, IoT has huge potential to improve our lives for the better.



[www.dthomas.co.uk/content/fs/futuretech.shtml](http://www.dthomas.co.uk/content/fs/futuretech.shtml)

INTERNET OF THINGS  
Economic impact

**\$3.9trn - \$11.1trn**

Per year by  
**2025**

Bringing the total value to  
**11%** of the world  
economy



Tel: **023 9282 2254**

Email: **[info@dthomas.co.uk](mailto:info@dthomas.co.uk)**

[www.dthomas.co.uk](http://www.dthomas.co.uk)