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# Smart connections

## How the Internet of Things is changing asset management

Connected assets for productivity, efficiency, sustainability and safety

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AN ENERGY POWER SYSTEMS AUSTRALIA WHITE PAPER



**Energy Power  
Systems**





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**Digitally-enabled  
 innovations are  
 creating  
 opportunities  
 and disrupting  
 business models  
 across all  
 sectors of our  
 economy.**  
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**McKinsey & Company,  
 Digital Australia: Seizing  
 opportunities from the  
 Fourth Industrial Revolution\***

“Digital can represent the next frontier of productivity and economic uplift for Australia, with the potential to contribute between A\$140 billion and A\$250 billion to Australia’s GDP by 2025, based on currently-available technology alone.”\* This is the size of the prize according to McKinsey & Company - and the opportunities with new technologies are endless.

Non-traditional competition has grown exponentially as players from tech giants like Google and Apple to multi-nationals like BP and Shell invest in more powerful and advanced connected monitoring assets. In fact, search engines may be a different type of engine but these tech companies are holistically committed to innovation development – they are continually changing the way people think, purchase and interact for both personal and business pursuits. Customers are also embracing technologies to make doing business more effective.

As technology continues to enhance our world, Caterpillar® is constantly developing and refining advanced technologies. These products, along with extensive training curriculums, provide everything you need to maximise the performance of your equipment, reduce costly downtime, increase your return on investment, improve safety in your workplace, enhance operator performance, and much more.

Cat® Connect delivers smart use of technology and services to improve your jobsite efficiency. Using the data from technology-equipped machines, you’ll get more information and insight into your equipment and operations than ever before. Never has there been a better time to connect with and embrace the IoT for your business. EPSA can show you how.

Chris Murray  
 Managing Director

\* McKinsey & Company, Digital Australia: Seizing opportunities from the Fourth Industrial Revolution, March 2017



## The future is connected

**IoT** The IoT brings together all kinds of connected devices into a global network of distributed intelligence – thanks to mobile, cloud computing and big data – rapidly disrupting markets and transforming business strategies.

**Industry 4.0** uses transformative technologies to connect the physical world with the digital world from advanced automation, robotics artificial intelligence and machine learning to sensor technology and data analytics.

**\$2.4 billion** is the Government's planned investment in growing Australia's research, science and technology capabilities over the next 12 years to support a stronger and smarter economy.\*

\* Australian Government, Department of Industry, Innovation and Science, Industry 4.0, viewed November 2, 2018

# Talking telematics

**\$69.3 billion**

Predicted value of the global commercial telematics market by 2022<sup>1</sup>

Blending computer science with telecommunications, vehicular technologies, road transportation, road safety and electrical engineering; the potential impact of telematics technologies on business operations is incredibly powerful – it can make a huge impact on preventive maintenance, equipment management, productivity, customer service, safety and sustainability.

The advent of the fourth industrial revolution (4IR) and the convergence of the digital and physical worlds are through IoT transforming the supply chain to an interconnected, open system. Already enabled technologies ensure greater understanding of application, increased awareness of market spread and more security and accuracy around inventory management. Telematics also facilitates a more effective communication for parts and support, and is instrumental in the data capabilities underpinning research and development.

Telematics solutions deliver a wide range of efficiency benefits, from fleet management to smarter asset utilisation – all that can be customised to individual requirements. Smart factories for example can integrate data from system-wide physical, operational, and human assets to optimise the entire manufacturing network to deliver a more efficient and agile system, less downtime with the ability to predict, a greater ability for predictions and self-optimize performance in real or near-real time.

Telematics solutions also deliver richer knowledge about the fleet operating hours to automate the collection of hours and ensure the equipment is being maintained to OEM standards through automated service schedules and purchasing processes. It also allows the centralisation of trending costs, bespoke purchase recommendations, product compliance to modifications and upgrades and instigation of common parts purchasing and distribution.

1. Digital Journal, Press Release: Commercial Telematics Market to Be Worth 20.3% by 2022 Know About the Industry by Applications, by Services by Technology, 13 June 2018i

2. compound annual growth rate of 20.3% from \$18.9 billion in 2015



# The digital difference

## How technology is delivering disruption in Australia



### Healthcare 8-12%

The potential reduction of Australia's annual healthcare expenditure by automating and simplifying processes, facilitating better connectivity, and using better reporting and advanced analytics.



### Mining A\$40-80 billion

The potential value in EBIT improvement by better applying sensor technology, advanced analytics and process automation with end-to-end integration for real-time performance monitoring, optimisation, and control.



### Retail \$15-30 billion

Total potential EBIT improvement opportunity utilising digital to transform the retail value chain including sourcing, distribution, logistics, in-store operations, marketing and omni-channel customer experience.



### Utilities \$1.3 billion

The amount in EBIT improvement from digitally-enabled innovations across generation, transmission and distribution, energy trading, and energy retailing, and collecting and mining the data unlocked by smart meters.

Source: McKinsey & Company, Digital Australia: Seizing the opportunity from the Fourth Industrial Revolution , March 2017

## Spotlight on energy generation

To minimise the downside of disruption, the energy generation industry must adopt digital. McKinsey & Company predict “the combined efficiency gains from digital levers are estimated to represent a A\$200 million annual opportunity for generators”. Predictive maintenance, equipment automation, end-to-end analytics and monitoring and a digitally-enabled workforce are key while smart grid solutions embed sensing technology along network lines and are changing traditional network dynamics, while enabling digital solutions across the value chain.

- » Automation of infrastructure, sensors and other smart grid technologies reduces costs, improves grid reliability, fault restoration and loss prevention
- » Digital tools improve workforce efficiency and effectiveness – particularly remote workers
- » Predictive maintenance reduces costs and outages, and utilises downtime through smart prediction of future demand
- » Advanced metering allows for two-way communication between a customer and utility
- » Data-driven solutions decrease grid loads and reduce the need for future grid extensions



“**Virtual power plants (VPP) operate by integrating several types of power sources and battery storage systems, using a cloud-connected control system that ‘intelligently’ allows the batteries to be directed in unison... Connecting at scale provides grid stability by discharging at a time that will be of greatest benefit for the customer.**

McKINSEY & COMPANY

Source: McKinsey & Company, Digital Australia: Seizing the opportunity from the Fourth Industrial Revolution , March 2017, viewed November 2018.

# Turning your data into dollars

From fleet monitoring and management to production and compaction measurement, to operator guidance and Caterpillar®'s awareness technology helps operations of all sizes and types work more efficiently, profitably and safely.



## Telematics tech

By gathering all the data generated by your equipment, materials and people and serving it up to you in easy-to-digest bites, Cat® Link telematics technology helps take the complexity out of managing your jobsites. These useful insights come automatically and accurately—no human error or effort— via one digital interface.



## Safer jobsites

When operators know what's happening around their equipment, they can work more safely and confidently all shift long. Cat® Detect technology includes CCTV cameras and vehicle tracking systems that help you create a safer job site, reducing the chance of accidents and the costs associated with them.



## Weigh on the go

When operators load the right amount of the right material on every truck, you get more done every working minute. Cat® Payload technology brings on board weighing systems to the cab. That instant feedback improves operator accuracy and speed, eliminates dangerous overloading and wasteful under-loading, and reduces error and rework—all of which saves time, fuel and component life.



## Quality compaction

When your operators get instant feedback in the cab, they can deliver uniform results in fewer passes—no matter what their experience level. Cat® Compact technology for asphalt, landfill and soil compaction equipment brings advanced measurement and real-time guidance together. These control techniques help your operators hit their compaction targets every time. It's higher quality work done faster, saving you time, fuel, component wear and material costs.



## Remote monitoring

By enabling operators to run remote equipment either from a remote location on site or at an off-site command centre, Cat® Command technology makes work safer, more comfortable and more precise—driving productivity up and costs down.



## Grading efficiencies

Automating machine control helps operators of any experience level get to grade faster and with more accuracy. With Cat® Grade technology, you get more done with less—less idle time, fuel burned, rework, operator fatigue and component wear. The result? Grading efficiency improvements of up to 50 per cent compared to traditional methods.

# Market-leading technology solutions



With Cat Connect® we help customers with their equipment management to be more productive, more safe and provide more sustainable solutions.

The goal of our team is to make our customers more successful just with the information we are gathering from equipment. We provide our customers with a complete fleet solution, regardless of what assets they have. We are monitoring equipment for customers in the mining and construction industries through to power systems, energy and transportation, and even down to service vehicles.

The reality is we have assets that we can connect to any piece of equipment – even down to a toolbox you may want to track. We also have the benefit of Cat Connect® service and connectivity when providing analysis to support customers.



**JEVAN DAVENPORT**, CAT CONNECT® CUSTOMER SOLUTIONS CENTRE, WILLIAM ADAMS, MELBOURNE

## 1,100<sup>+</sup>

machines with premium monitoring

## 10,000<sup>+</sup>

machine oil samples in 12 months

**The Cat Connect® Services Benefits app depicts benefits of each service and how it works in a dynamic way while also discovering how to control costs, improve operations, reduce risk and manage people.**



## Connect with Cat® – smart use of technology

Cat Connect® is a global suite of integrated equipment and asset management services and solutions. It makes smart use of technology and services to improve jobsite efficiencies and deliver insights.

### THINK Solutions

Increase uptime and reduce operating costs by monitoring location, fuel burn and utilisation, as well as health and maintenance issues like hours and fluid contamination.

### THINK Safety

Get visibility with enhanced safety options like tire monitoring and off-board safety reporting provide valuable learning and coaching opportunities for everyone onsite.

### THINK Sustainability

Reduce environmental impact and simplify compliance reporting by monitoring fuel burn and managing resource consumption.

### THINK Productivity

Make it easier to achieve efficiencies through production monitoring on site.



**Our value is more than just the data – it's the people sitting behind the data making informed decisions and helping our customers to what they do better every day.**



**JEVAN DAVENPORT**, CAT CONNECT® CUSTOMER SOLUTIONS CENTRE WILLIAM ADAMS, MELBOURNE

# Choose EPSA and the global reputation of Caterpillar® to experience a superior investment and reliable performance.

There are thousands of Cat® generators providing prime power, standby or emergency support in commercial and residential operations across Australia provided by Energy Power Systems Australia (EPSA) – the exclusive Cat® generator dealer in Australia.



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