AGTECH AND THE EDGE

EDGE AND NEW ADVANCES
IN SMART FARMING.

DXN

SELF-DRIVING TRACTORS, SOIL MONITORING APPS AND AI CONTROLLED IRRIGATION SYSTEMS – THE SMART FARMS OF THE FUTURE ARE HERE.

As the global population rises, so too does the need to feed it. Consumer preferences are also putting new pressures on our food systems. In addition to healthy, safe, affordable food, consumers now also want convenience, premium eating experiences, and to feel confident that the products they're buying are good for their families and the planet.

Successfully delivering productive and sustainable agricultural systems will form the foundations for meeting these challenges.

Agricultural technology or agrotechnology (AgTech) is the use of technology in agriculture, horticulture, and aquaculture with the aim of improving yield, efficiency, and profitability. Agricultural technology can be products, services or applications derived from agriculture that improve various input/output processes.

Innovation in agriculture is not new. Farmers, supported by the research and extension system in which they operate, have been driving the creation of new technologies and farming systems since well before "agtech" was a word.

AgTech is a new phenomenon, characterised by the entrance of new players, new business models and new technologies. If we can avoid the hype, AgTech holds huge potential for agriculture, empowering farmers to feed our increasingly hungry and environmentally unstable world.

Cost effectiveness, sustainability and quality improvement are all well documented benefits of AgTech solutions, but there is one major challenge to implementing these new platforms and systems.

Agricultural technology, or Agtech, is predicted to become Australia's next $100 billion industry by 2030.

THE NEED FOR HIGH SPEED-CONTINUOUS INTERNET CONNECTIVITY.

Farms are usually rural and remote in nature and often located at the very edges of the network. This means some farms have no network access while others may have only intermittent or poor-quality connections, making it near impossible and highly expensive to take full advantage of these new technologies.

Edge computing offers part of the solution and will play an important role in providing a means by which the farming community can effectively access and use smart agriculture services. By moving the computing power closer to the end user and shifting toward the edge, latency issues can be addressed, and infrastructure costs made more manageable.

HERE'S WHAT'S NEXT FOR AGTECH IN 2020 AND THE EXCITING OPPORTUNITIES EDGE DATA CENTRES ARE HELPING TO SUPPORT.

Livestock monitoring

Commercial farmers aren't just harvesting crops; many also manage hundreds or thousands of livestock. And when your commodity is a living, breathing, moving creature, being able to monitor everything from the health to the location of your livestock can prove critical to the enduring success of your business.

IoT-enabled livestock management solutions are transforming the livestock management paradigm. Livestock management IoT solutions often involve embedding connected sensors into livestock wearables in order to monitor heart rate, blood pressure, respiratory rate, temperature, and even digestion. These sensors can also track an animal's location to help find sick animals while also identifying optimal grazing patterns. The sensors then send data to the cloud, allowing farmers to identify and address problems in their herds faster via user interfaces.

Autonomous tractors

Farmers today are often looking at ways to expand their operations. In the not too distant future, automated farming has the potential to do just that. With the right automated equipment, a farmer can easily scale operations from a few thousand acres to 10 thousand acres, for example. One reason why a farmer may be the first adopter of autonomous vehicles (AV) is that there are no pedestrians or other vehicles to contend with on a farm. The acres of open land provide a low-risk testing environment in which to work out the kinks of emerging AV technologies. And with GPS, you can use geo fences to keep tractors on course and automatically shut them down if they drive off course.

Autonomous tractors aren't just mindless driving robots. They also operate with intelligence to maximise farming efficiency. And because these robotic tractors are driverless, in theory they can run 24/7.

Video Analytics

Smart farming all about collecting the right data and using it to optimise your resource-planning and operation. Artificial Vision technologies using artificial intelligence are making waves in the agriculture sector just like they are in any other.

Smart Agriculture is a major use case for vision-based automation and data analytics applications, driven by drones and vision-based harvesting, weeding and so on. Deploying compute capabilities using ventless industrial PC's at the Edge allows for on-site analytics and quick access to graphic-heavy data and analytics.

Besides Edge computing devices, deployment of 4G/LTE/5G connectivity is another key factor in evolution of high-resolution visual data collection in remote environment. Industrial Communication Gateways with integrated LTE connectivity offer a great onsite compute platform along with wireless communication to the Cloud.

Environmental Monitoring

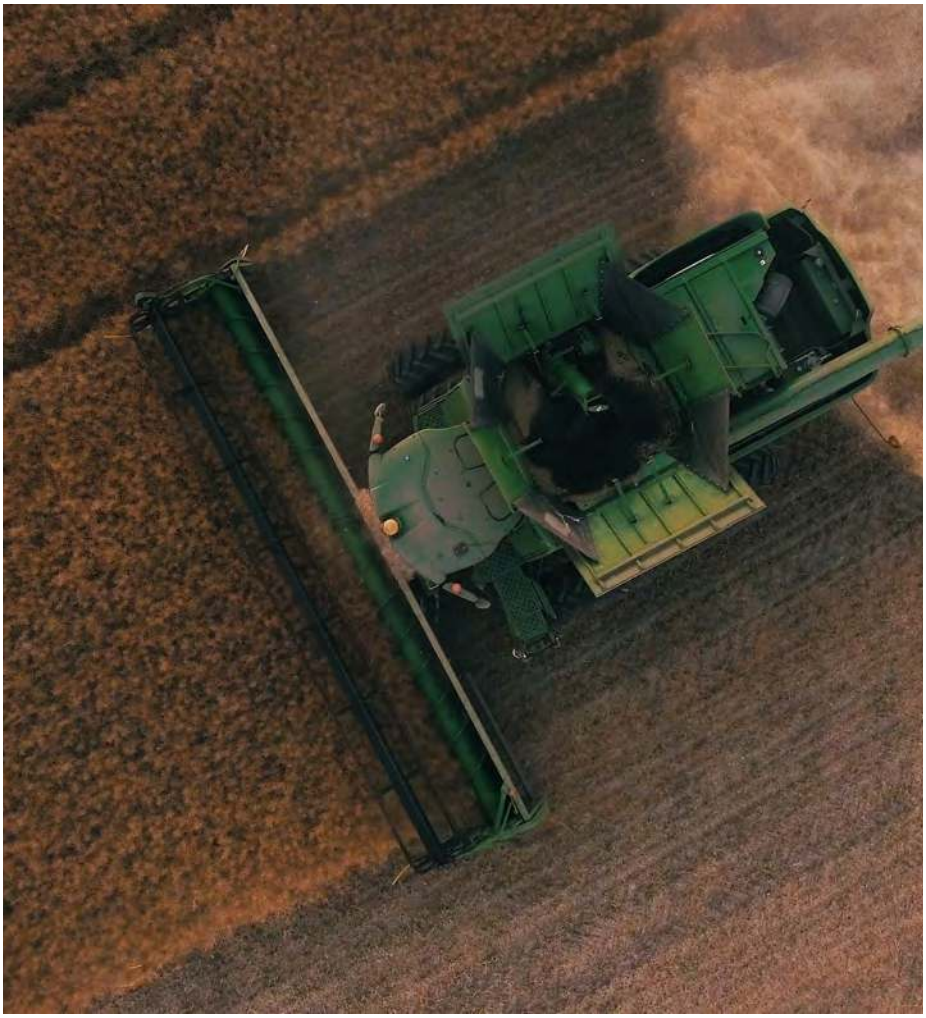
One of the biggest advantages that Edge computing has brought to farming and agriculture over the past few years is the ability to remotely monitor different aspects of a farm's agricultural operations. Networks of sensors, ranging from several sporadically placed sensors to thousands of connected devices monitoring aspects such as soil, weather and humidity and temperature conditions as well as acidity and pH levels.

Edge computing allows for the generating and collecting of the data necessary in delivering such solutions much closer to the source. It also enables some data processing operations to be performed in the Edge devices themselves. This allows farmers and agricultural workers detailed insights about their operational environments.

Vertical Farming

We live on a planet of finite resources, and one of those finite resources is farmable land. Soil degradation is a growing problem around the world and the amount of farmable land we have is slowly decreasing. In response to this growing crisis, scientists and farmers from around the world have developed what has become known as vertical farming. Vertical farming involves using the data collected from a network of IoT sensors and devices to optimise the growing of food and plants without the need for farmland.

In vertical farms for example, moisture levels are controlled with a network of sensors that constantly monitor a mist that surrounds the plant. Using Edge computing, much of the data processing involved in such operations can be done on the Edge devices themselves, without the need to be sent to the Cloud, further adding to the benefits of such systems within farming environments.



AGTECH WILL MAKE FARMING SMARTER AND MORE EFFICIENT THAN EVER

Farmers will soon begin to shift their focus from maintaining a margin to managing growth. And while exciting new technology can help with scaling business, no solution is one-size-fits-all—it's about choosing the path forward that makes the most sense for your farmland.

In the coming years, this technology will enable farmers to make smart decisions about new investments, too.

That's where AgTech developments will really start to shine. With tools that provide a predictive model, farmers can get a better idea of where they'll need to invest to successfully manage their farm's expansion. And alternatively, these models could also inform farmers if expanding operations wouldn't be a wise business decision.

Farming has long prized being at the forefront of human innovation, so it makes sense that now is the time for AgTech to make farming smarter and more efficient than ever. In 2020 and beyond, AgTech will design better ways for farmers and landowners to understand their land, choose the right tools and empower better farmland stewardship.

About DXN Limited

DXN are edge infrastructure manufactures and we are fully committed to building the framework that will support the technologies of the future.

DXN GIVING YOU THE EDGE

Rapid Deployment
Modular
Different

DXN is a vertically integrated data centre company. DXN design build operate and own and lease data centre infrastructure. DXN build rugged, resilient and purpose-built Edge data centres. Engineering and manufacturing are completed locally in Australia and DCs deployed to any site globally. DXN customers tailor environmental and physical security to suit their requirements, all certified by the Uptime Institute.

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