

Digital Vision for Farming



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Adrian Gregory, Chief Executive Officer, Atos UK & Ireland

Digital Vision for Farming

For the farming and food industry, the digital revolution is well underway amidst wider significant change.

Over the next decade, we will see important changes to policies that govern the sector. Environmental shifts bring fresh challenges in how animals are reared, crops are grown and fish are caught. And all this at a time when demand is rising for high-quality produce that is proven to meet expected standards.

Just as it always has, this industry will adapt and innovate to meet complex financial, environmental and societal challenges. What is unprecedented, however, is the power of technology in our ever more connected world. Data analytics and automation, for example, are important enablers for optimising yields and maximising efficiency to feed the world's growing population. The power of supercomputing is critical in pushing the boundaries of ongoing research. As the effects of climate change become clear, geospatial technology can predict floods and droughts so that farmers can better prepare. Blockchain is another game-changer, helping supply chains to conduct transactions and comply with regulatory requirements from farm to fork.

Digital transformation will make an important contribution in empowering and enabling farmers, and the wider agricultural sector, to face the challenges and opportunities arising from Britain's evolving landscape. Innovation is essential, as is collaboration with government and the private sector. This paper explores the key opportunities and challenges of this exciting new era. My team and I look forward to continuing to work with our customers and partners to make this digital vision a reality as Britain's landscape evolves.

A handwritten signature in black ink that reads "Adrian Gregory". The signature is written in a cursive style and is underlined with a single horizontal stroke.



George Eustice MP, Minister of State for Agriculture, Fisheries and Food

Advances in technology will help us to achieve the ambitions set out in our Agriculture Bill to farm more productively in a way that protects and enhances the environment.

Data-sharing powers in the Bill will improve transparency in the supply chain, helping food producers strengthen their negotiating position at the farm gate and get a better deal in the marketplace.

Meanwhile, we are developing the Livestock Information Programme to modernise livestock traceability and looking to technology to simplify farm inspections.





Julian Sturdy MP, Chair of the All-Party Parliamentary Group for Farming

Digital technology has the potential to be a big part of the solution to the challenge of ensuring food security that global agriculture faces. By allowing producers to make more informed, precise decisions, it allows for outputs to be maximised beyond what has been possible in the past, enabling a new level of efficiency.

The application of GPS technologies to harvesting crops like wheat, and the prospect of precision application of pesticides by drones to small parts of a field are good examples of how digital can facilitate considerable productivity gains. Digital also allows for a more intelligent use of agri-chemicals, to the benefit of the sector, consumers and general public.



Mapping diversity in UK agriculture

United Kingdom

500,000

people employed in agriculture.¹

70%

of land use in the UK is accounted for by agriculture.²

£13.6bn

is contributed a year to UK exports by the agri-tech sector.³

73

protected regional and traditional British foods and drinks in the UK, including Kentish ale, Cumberland sausage, Yorkshire forced rhubarb, Shetland lamb and Scottish wild salmon.⁴

35 million

sheep and lambs in the UK, and more than 90 different breeds of sheep.⁵

Northern Ireland

250

commercial growers of Bramley apples in County Armagh, supplying the cider, bakery and fresh markets.⁶

North West

19.2 million

tourists a year visit England's largest national park, The Lake District.⁷

Wales

23

vineyards in Wales, which produce both still and sparkling wine.⁸

80%

of Welsh land cared for by farmers, providing the backdrop for a tourism industry worth £2.8bn.⁹

South West

over **25.5 million livestock**

1.8 million cows, 3.2 million sheep, over 500,000 pigs and nearly 20 million poultry in the South West of England.¹⁰

£300m

worth of trade is generated for the Cornish economy through Cornish pasty production.¹¹

Jersey

1,500 tonnes

of Jersey Royal potatoes are exported daily (at peak production) from Jersey.¹²

¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/684003/future-farming-environment-consult-document.pdf

² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/684003/future-farming-environment-consult-document.pdf

³ <https://www.techuk.org/insights/news/item/9053-technology-solving-world-s-greatest-agricultural-challenges>

⁴ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/686499/food-farming-stats-release-29apr16.pdf

⁵ <https://www.cambridge-news.co.uk/business/7-things-farming-uk-surprise-13547743>

⁶ <https://www.bbc.co.uk/news/uk-northern-ireland-34381677>

⁷ <http://www.lakedistrict.gov.uk/learning/factsandfigures>

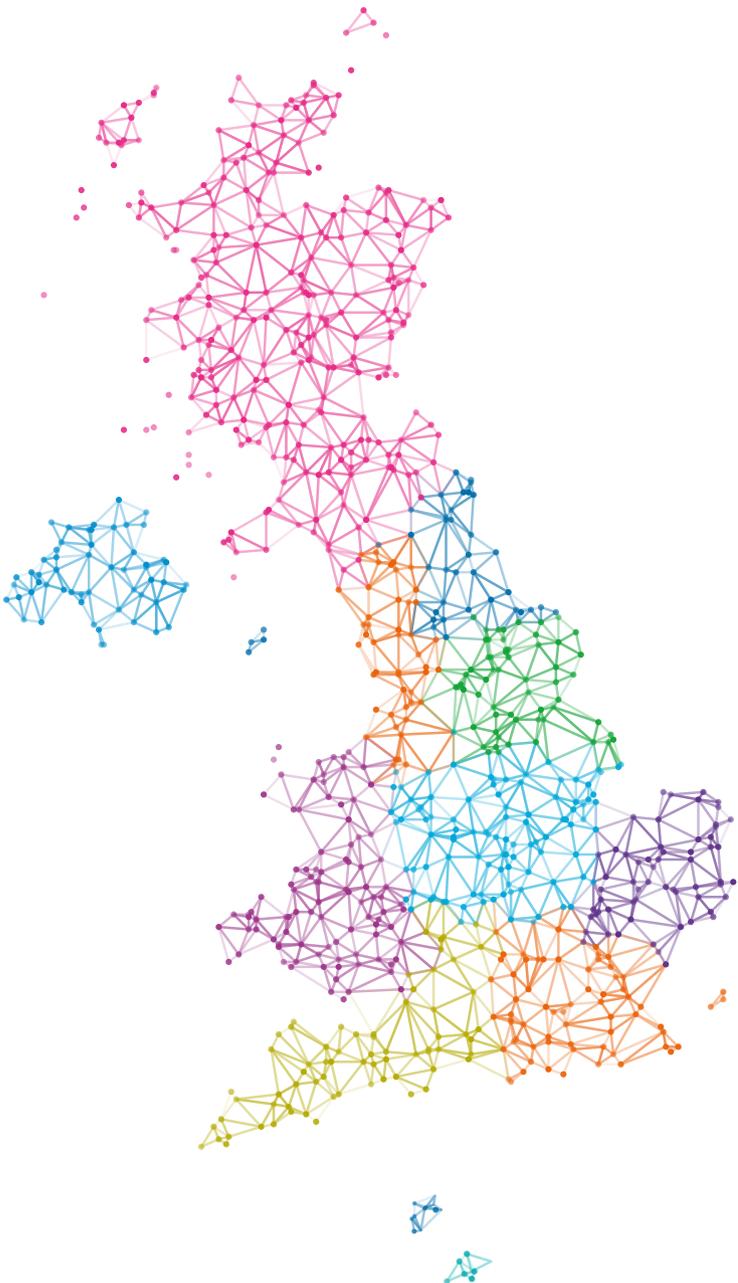
⁸ <https://www.thedrinksbusiness.com/2018/05/welsh-winery-and-distillery-numbers-rise-as-industry-calls-for-government-support/>

⁹ <https://www.fwi.co.uk/news/agriculture/foundation-welsh-economy-nfu-cymru>

¹⁰ <https://www.nfuonline.com/about-us/our-offices/south-west/south-west-key-content/farming-in-the-south-west/>

¹¹ <http://www.cornishpastyassociation.co.uk/about-the-pasty/facts-and-figures/>

¹² <https://www.jerseyroyals.co.uk/about-jersey-royals/production.aspx>



Scotland

30%

of the UK herd of breeding cattle found in Scotland.¹³

£4.3bn

brought in a year by Scottish whisky, representing more than 20% of the UK food and drink exports.¹⁴

North East

Kielder Forest Park

is the largest forest in England and one of the largest man-made forests in Europe.¹⁵

Yorkshire and Humber

Arable crops

Thanks to its varied soils and topography, Yorkshire and the Humber grows a wide variety of arable crops.¹⁶

Midlands

over **1 million**

Stilton cheeses are produced each year; more than 10% of them are exported to about 40 countries worldwide.¹⁷

East Anglia

Wheat and barley

Farmers in East Anglia grow enough wheat to produce 5,774 million loaves of bread, and enough barley to produce 2.5 million pints of beer a year.¹⁸

South East

90%

of the cherries and 50% of the plums in England are grown in Kent.¹⁹

¹³ <https://www.rfius.org.uk/farming-facts/what-we-produce.aspx>
¹⁴ <https://www.theguardian.com/business/2016/jan/27/scotch-whisky-industry-scotland-tax>
¹⁵ <https://www.forestry.gov.uk/forestry/infd-6gl9g>
¹⁶ <https://www.biovale.org/our-region/farming/>
¹⁷ http://www.stiltoncheese.co.uk/stilton_facts
¹⁸ <https://www.nfuonline.com/about-us/our-offices/east-anglia/east-anglia-key-content/farming-in-east-anglia/>
¹⁹ <http://wfminkent.co.uk/farming-in-kent/seasonal-food/>

Optimising crop yields using data and analytics

While the costs of raw materials such as seeds, fertilisers, grain and water are steadily increasing, consumers continue to expect a wide range of high-quality, affordable food to be available all year round.

Meanwhile, farmers must stay compliant with changing regulations that aim to safeguard consumers as well as minimise environmental impacts. All this comes at a time when the UN Food and Agriculture Organisation is predicting that the agricultural industry will need to produce 70% more food while only being able to use 5% more land¹.

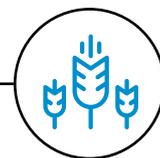
In response, farmers constantly need to discover ways to change and refine every aspect of their practices to become ever more economical and productive while also being more sustainable. Knowing the exact composition of the soil, the status of each crop development and the location of agricultural machinery can all help farmers to make adjustments and decisions that ensure a more successful and profitable operation. While conventional farming methods continue to evolve, we are also beginning to see new entrants to the sector emerge, such as the Dutch company Beladon, which is launching the world's first floating farm in the port city of Rotterdam.

From data to action

More than ever, there is a need to use data in agriculture to support a move away from mass production towards customised approaches at each stage of the supply chain. One data source that farmers are exploring is imagery of their land taken by satellites and drones. The latest generation of satellites can monitor large tracts of land over long periods of time; drones cover smaller areas and can be used for discrete tasks, providing a wealth of precision data that is vital to monitor the development of crop disease. In combination, these technologies provide unprecedented levels of insight into crop health, field conditions and weather changes.

Yet making sense of all this data can still be immensely challenging and imagery often requires specialist analysis to provide operational insight. Advanced data models are used to learn and raise alerts when they detect statistically unusual data. Data dashboards and visualisation technology greatly simplify the interpretation and display of data, presenting information in an actionable format to enable timely decision-making and adjustments by farming managers. This technology empowers farmers to become much more predictive in their approach, ultimately increasing the overall efficiency of their farming practices.

¹ http://www.fao.org/fileadmin/user_upload/wws/docs/Expert_paper/How_to_Feed_the_World_in_2050.pdf
² <https://news.un.org/en/story/2013/12/456912>



Immediate and long-term benefits

One typical use of satellite imagery is to provide biophysical indicators of plant development, such as chlorophyll or the proportion of green foliage. This data can be minutely analysed, with detection of any anomalies or discrepancies within and between plots of land. By connecting this information with other farm data, data scientists can provide diagnostics and suggest ways to finetune the farmers' practices, transforming this new and comprehensive dataset into significant practical value for farmers. Longer term, farmers can more easily optimise the amount of raw materials kept in the right place at the right time to improve yields and manage costs while production quality becomes more sustainable and reliable.

A data-driven approach is contributing to the development of new crop models by reconciling economic and environmental constraints. This is the case at the FUL "Ferme Urbaine Lyonnaise" in Lyon, France, a high-tech indoor culture unit that Atos is helping to implement. Bristling with sensors, furnished with robotic tools and steered by data, this laboratory-cum-growth-chamber autonomously provides ideal conditions for plant development with pesticide-free production. This innovative environment gives agriculture specialists strengthened capabilities for planning the creation of high-yield, high-quality farms in urban areas.

Data analytics is helping to further agricultural research in other domains, such as research into crop varieties that can contribute to resolving future

food and climate crises. With the global population heading rapidly towards an estimated 9.6 billion by 2050², a data-driven approach to farming will be critical in optimising production at every stage of the food chain to meet the challenges of food security, while promoting sustainable agriculture as set out by the United Nations.

Floating farms

With finite access to land for agriculture, meeting the needs of a fast-growing global population and increasing demand for healthy food means that food production systems need to evolve.

Floating farms are one solution. Products can be grown indoors near cities that are close to water. These farms could be anchored in oceans, lakes and rivers, and could even be moved around by ship as needed.

As well as releasing space, these farms reduce the distance that food travels before it reaches the consumer, in turn reducing transport pollution. Innovations can include more sustainable energy and farming methods, with the potential to use less water, fertiliser and pesticides than conventional food production systems.



Dairy farm of the future

For dairy farms, using analytics and capturing more data about both the animals and their environment will deliver gains right across the board, from better productivity and animal health to higher work satisfaction and more effective environmental management.

At the heart of any successful dairy enterprise is precision management in two key domains. Firstly, the wellbeing of the cows: healthy cows are essential to healthy dairy businesses, enabling them to continue to invest inwardly and in the environment. Secondly, the welfare of the people looking after the animals: labour is one of the biggest costs of milk production and to get the best return on that investment, we need to maintain an industry in which skilled people want to work. At the same time, to fulfil their wider land stewardship responsibilities, farming operations must be profitable and sustainable.

Measure to manage

Critical to effective herd management is timely decision-making based on accurate and detailed information. It's estimated that while 25% of the average herd are replaced annually, nearly three quarters of those losses are avoidable. Yet with milk producers and herd managers increasingly stretched, taking consistent measurements can be time-consuming.

That's where connected technologies and automation can make all the difference. It's not unusual for six hours a day to be spent milking on a traditional dairy farm. Robotic milkers release all that 'milk harvesting' time for skilled workers to focus on animal welfare, while the robot milkers continue recording detailed data 24/7 about each cow's health and milk. These robotics can be integrated with automated feeding systems, which also release significant amounts of time and optimise feed use, together with sensors outside and inside that improve precision grazing by measuring and managing the environment and each cow's nutritional needs.

Emerging technologies

These kinds of technologies are in place at the South West Dairy Development Centre, which was set up to create a vision of the future for dairy farming, as well as operating as a commercially viable enterprise and acting as one of three testbeds for the 5GRural First project. This was established to exploit the huge opportunities that 5G connectivity can provide for rural businesses. The Centre has demonstration and research

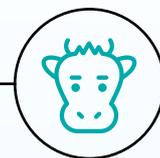
facilities for emerging technologies that will help UK dairying meet some of its most important challenges.

Fertility, for example, is a key issue for herd management, with calving indexes poorer (at 402 days against a target of less than 375 days) than they could be because the optimal time to inseminate a cow isn't always identified. Upcoming digital trials include a system that will revolutionise fertility by measuring milk progesterone levels to identify a cow's ovulation cycle. Also being piloted is technology that delivers 3D imaging for body conditioning and mobility - two other important factors in cow health and welfare.

Protecting the national herd

There are a wide range of potential applications for the higher speeds and connectivity that 5G will bring, such as remote veterinary services delivered via high-definition video. What will continue to be essential is turning real-time data into effective short-term and long-term decision-making and forecasting. That means recording more about where and how each animal is, and recording the environment in which they are kept, whether that's light levels in a building or conditions out on the land. For example, there is precision technology already being used in the arable sector that could be exploited to further empower the dairy industry with forage and grazing management. These include drones with hyperspectral imaging that provide real-time analysis of grazing quantity and quality that can be used to adjust nutrition and animal supplements.

Helping to optimise the profitability of farms enables them to contribute to environmental management and better animal and plant health. As improvements are rolled out nationally, wastage rates will be lowered and health problems prevented, bringing huge benefits to the environment and the national herd. In addition, technological advances will help with recruitment by making farms attractive places for the next generation to work. While undoubtedly there are challenges, there is also an exciting future ahead for the UK dairy industry.



The Agricultural Engineering Precision Innovation Centre (Agri-EPI Centre) is one of four Agri-Tech centres established by the UK Government. It focuses on the delivery of research, development, demonstration and training on precision agriculture and engineering for the livestock, arable, horticulture and aquaculture sectors.

Agri-EPI Centre's South West Dairy Development Centre is in Somerset, one of the UK's most important milk-producing regions. At its heart is a 180-cow herd run on a commercial basis in a fabric roofed building that is the first of its kind in the UK. With high-speed remote and visitor access, the centre also provides a state-of-the-art facility to test and demonstrate new and emerging digital technologies.

Independent dairy specialist Kingshay was commissioned to design, build and operate the dairy, with funding from Innovate UK and industry partners.





Organic Green Top Radishes

Organic Italian Parsley

Organic Green Top Purple Beets

Organic Green Top Purple Beets

Organic Turnips

Organic Parsley

Organic Rutabaga

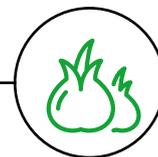
Organic Beets

Organic Purple Top Turnips

Organic Italian Radishes

Organic RADISH

Organic Colfax Beets



Blockchain: trust from farm to fork

Today's consumers are more conscious than ever of the origin and quality of the products they buy.

They want to know that food safety regulations have been met and that products are meeting the required standards. What's needed, therefore, is an accurate, easy and consistent way of sharing information from the time the product is first grown or made, until the moment it is bought by the consumer. This is where blockchain is a potential game-changer.

Trust with no intermediary

Blockchain is an incorruptible digital ledger of transactions that can be programmed to record not just financial transactions but virtually anything of value. Blockchain is ideal in situations where many organisations wish to share a single view of an item. By sharing, farmers and others along the supply chain can access data, facilitate instant payments and trace food production from farm to fork. What's important about blockchain is that it creates and supports mutual trust without the need for intermediaries. In other words, it builds trust on the strength of a network rather than on the authority of a third party.

To use a blockchain, stakeholders agree data governance and processes. This ensures that they can maintain ownership of their data and control who their data is shared with, whether that be current or future supply chain partners. Certification occurs at every stage of the process that the blockchain represents via a multi-stakeholder system.

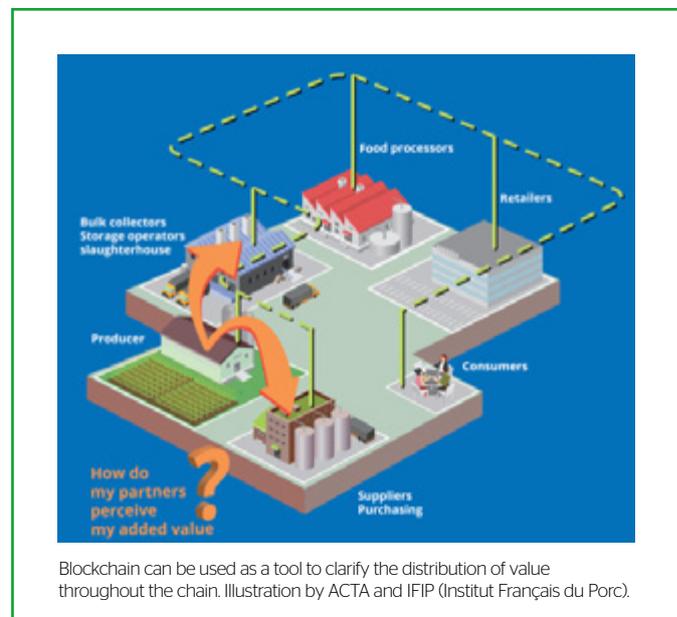
Early adopters

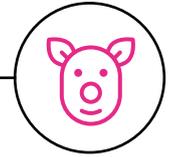
Atos is working with ACTA, the French network of agricultural technical institutes, to explore the potential of blockchain in agriculture. Elsewhere, we are already beginning to see early adopters across the sector, with Walmart, Nestlé and Unilever joining forces to introduce blockchain into their supply chains. As part of its 2022 transformation plan, Carrefour launched Europe's first food blockchain technology in early 2018, giving consumers complete product traceability through the entire supply chain.

The potential for blockchain goes beyond food standards and traceability. When it comes to insurance, for example, farmers want to be able to easily report an incident and receive payment quickly. Insurers want to

check the claim is valid and minimise the costs of processing the claim. As a neutral mediator, blockchain is ideal – especially in the case of large-scale events such as natural disasters, which is why Atos has developed a smart contract demonstrator for insurance policies covering wine growers against frost damage.

The agriculture industry is unique, highly regulated and with a supply chain and risks like no other. The shape of the future depends on individuals and organisations being willing and able to share their data while taking into account the requirements of the whole chain, from producer to consumer and from farm to fork.





Measuring animal welfare: our data-driven journey

Maintaining high animal welfare standards is a fundamental concern throughout the aquaculture and agriculture supply chains.

Besides the expectation of ethics and transparency from a well-informed public, poor animal welfare can significantly impact the productivity and profitability of a farm. Technology is contributing to the achievement of better outcomes in animal welfare by facilitating its measurement and reporting in a vast number of UK farms.

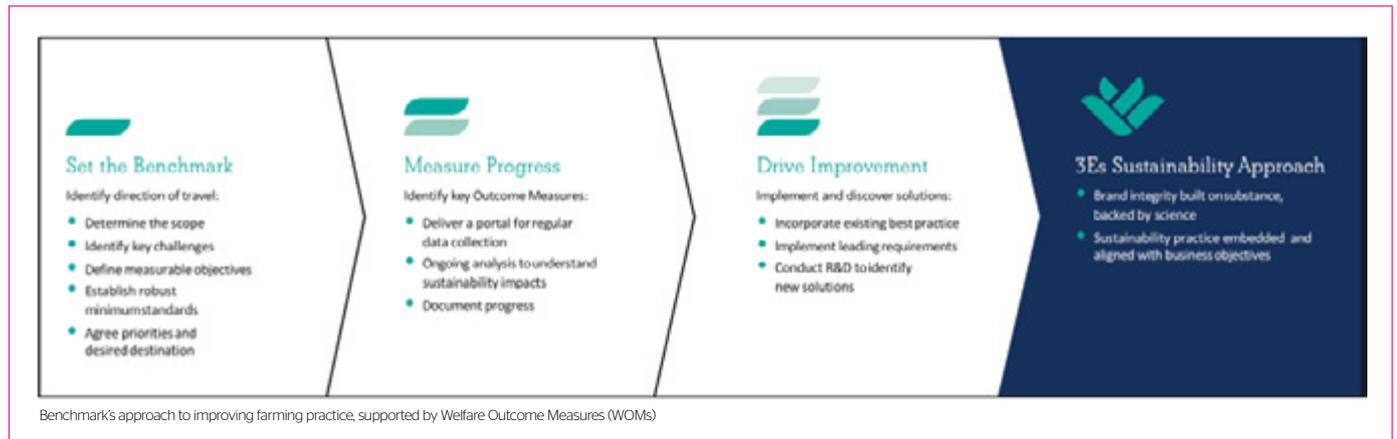
The collection of reliable metrics is an important step towards improving farming practices and animal welfare. Welfare Outcome Measures (WOMs) offer one such management tool, providing objective, robust information about the life of the animal and the environment in which it lives. Measurements relating to factors such as mortality, disease, injury, mobility and behaviour of animals can be collected along the supply chain, from farm to slaughter. This data can be made available via central data portals to inform decision-making at every stage, right through to retailers and then on to consumers.

Our experience at Benchmark is that WOMs can drive improvements across the supply chain by highlighting risk areas and informing

intervention where it is most needed - for example by recognising good practice and rolling out standards, changing production requirements as a condition of supply and investing in R&D projects. This can help to reduce animal disease, improve understanding of animal welfare and deliver more sustainable food production.

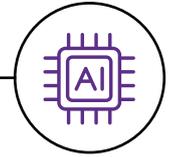
Digital technology is at the core of tools employed for data capture, analysis and distribution, and as such plays a crucial role in driving well-informed action that ultimately helps improve animal welfare standards. Some welfare measures are becoming automated in their collection through use of camera technology at slaughter; Benchmark is exploring further opportunities to develop sensors to automatically measure behaviour on farm.

With increased public demand for an ethical approach to animal welfare on our farms, good, reliable data will help provide evidence that improved conditions for animals are an achievable goal, thus incentivising the whole industry to strive for better standards.









Enabling and improving the dairy supply chain

From robotic milking, to integrated digital supply chains, to a bottling and distribution network that uses AI and automation, there is huge potential for digital technologies to transform the UK's dairy industry - and this work has already begun.



Processing and distribution

It's important to note that dairy farming doesn't start and end on the farm. When our 2,400 farmer owners supply their milk to Arla, it is sorted and distributed to retailers from our Aylesbury processing facility, the largest of its kind in the world. Here, bottles of milk are aligned and loaded for distribution with the assistance of a fleet of 90 robotic Automated Guidance Vehicles (AGVs). These use Artificial Intelligence (AI) capabilities to ensure the most efficient movement of a million and a half litres of milk a day.

The scope for extending AGV technology into all other areas of the dairy supply chain is one of the most exciting prospects for our industry. Fresh milk is not the only dairy product that can utilise AGVs to support its distribution; expanding their usage will help to drive efficiencies throughout the supply chain. The knock-on effects of this will be tremendous, enabling the dairy industry to reduce the environmental impact of its supply chain, cut food waste by consistently reacting to varying consumer demand and, ultimately, returning higher rewards to the farmers who produce the milk.

Broader transformation

Arla works with a huge array of different organisations, from bottle suppliers to logistics support and major retailers. Broader use of digital technologies has huge potential for improving communication and efficiencies between all our partners, customers and suppliers. The possibilities of real-time updates throughout our supply chain alone demonstrate why the dairy industry must embrace this change.

We are at the beginning of an important digital journey for our industry. Our innovative and entrepreneurial farmer owners are already on the path and Arla's work as a milk processor has digital as its backbone. Digital and dairy farming will increasingly go hand-in-hand.

High performance analytics for pastoral farming and wildlife protection

Thanks to recent advances in analytics and high performance computing, it's now possible to analyse vast amounts of different data to pinpoint incidents, predict events and identify actions to protect animal health and safeguard the environment.

Protecting wildlife and biodiversity

Pioneering the use of analytics is a project called EO4wildlife (Earth Observation for Wildlife), established to understand where different species of wildlife are located and, importantly, why they are there. Together with animal-tracking technology, earth observation data - such as earth temperature, atmosphere, surface, height and so on - is analysed to identify particular parameters and explain the movement of terrestrial and marine wildlife. Building such a complete real-time picture serves to maintain biodiversity where it is under threat.

Through a consortium, and based on Atos' Codex analytics services and solutions, conservationists and scientists search, merge and analyse rich sets of data in multiple sources and formats to identify hotspots, predict scenarios and advise policy-makers and others on specific actions and societal changes that are needed. Altogether, around 8,000 animals are tracked every month.

Tracking and protecting livestock

EO4wildlife clearly demonstrates the power of data analytics to consolidate and aggregate information from a variety of sources and provide intelligence to scientists and businesses. For farmers too, satellite data can be an invaluable source of new insight - particularly given the pressure on the sector to stay profitable while maintaining biosecurity and safeguarding animal health.

Some of the most important sources of data for farmers will, increasingly, be imagery of their land taken via satellite and remote sensors that monitor livestock and the environment. Advances in high performance computing bring the capability to process and analyse this complex data to detect key environmental factors and how they are changing over time.

Tracking and preventing disease

Advanced computing power is also being harnessed to gather, process, store and analyse vast amounts of data in order to understand and prevent increasing numbers of viral diseases. When a deadly virus emerges, scientists must respond rapidly to track its spread and stop it devastating livestock and possibly infecting humans.

The Pirbright Institute in Surrey is a global leader in this field and uses high performance computing from Atos to continue advancing its research projects and extending its capability. The technology is helping to accelerate progress in areas such as genome assembly of complex viruses and epidemiology studies to monitor virus migration. It is also critical when modelling the spread of disease with realistic simulations that take account of many factors, including work on the foot-and-mouth disease outbreak in the UK in 2001.

All this means that results and insights can be delivered much faster to aid the development of diagnostic tools, vaccines and treatments. In turn, scientists and policy-makers can reduce the impact of viral disease, ensure food security and improve the quality of life for animals and humans.

Actionable insights

Yet while powerful technological capabilities can transform what is now possible, what's also essential is that this is part of a wider workflow. To derive value from high performance computing and big data, it is not enough to run a complex data analytics model. Objectives need to be clear and data science needs to be robust so that data can be turned into meaningful insights. Collaboration is also key, with stakeholders working in partnership to address some of today's most pressing and important environmental and societal challenges.

¹ <http://www.eo4wildlife.eu>



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The ability to generate new insights from data is key to the future of the farming sector, both for consumers and farmers themselves. Open source technology that uses location and time to identify relationships between various data sources - a cornerstone of our work at Envitia - enables better decision-making and significant cost savings. That's because users have a clear and real-time picture of their business that can only come from accessing all available data securely, safely and without unnecessary cost. With the Welsh Government, for example, we delivered a rural payments mapping application that brought together all necessary data to best serve the needs of the farming community in Wales. We are delighted to be one of Atos' technology partners and we welcome their forward-thinking approach.

Nabil Lodey
CEO, Envitia

www.envitia.com

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Reducing the burden of inspections for farmers

The Department for Environment, Food & Rural Affairs (Defra) is taking the lead to harness field service management technology with an aim to improve the job of the farm inspector while simultaneously making life easier for farmers and delivering efficiencies that ultimately benefit the taxpayer.

The Farm Inspection and Regulation Review interim report, published in July 2018, highlighted how British farmers experience regulation, most directly through single purpose inspections. Farmers generally find these a burden, with what can appear to be sporadic inspections from local authorities, government agencies and other inspections for farm assurance schemes.

What's more, in 2012, the National Audit Office estimated that during 2011-12, nine separate government bodies made at least 114,000 inspections to English farms! Over half of these were to carry out disease surveillance and testing (at a cost of £28 million) and 30% were to check for farmers' compliance (at a cost of £19 million). The total cost in 2011-12 was £47 million.

So, how can digital technology help make these inspections more efficient and less of a burden for farmers?

Holistic view

Defra's innovative Field Activity Programme has been established to transform how inspectors work in the field. Its objectives are clear: to improve customer service, reduce the burden on compliant customers, improve the planning of visits, share core datasets, and create a resilient, unified and flexible workforce.

One focus of the Programme has been to increase adoption of field service management technology to improve the coordination of different visits, inspections and assessments. Kirona's field service management solutions can be seamlessly implemented and shared securely between local authorities, government agencies and farm assurance scheme organisations. This creates a holistic view, with a flow of accurate, reliable data into one secure source that is accessible by both departmental managers

and field-based inspectors, connecting the back-office with field workers in real-time. In a world that is becoming more and more connected, especially away from the work place, it is key to capitalise on programmes like these. As government departments pursue ways to increase productivity whilst operating within their means, organisations like Kirona are able to make a real positive impact to the end users - in this case farm inspectors, farmers and ultimately all of us as the end consumers.

Real-time visibility

On their smartphones, Animal and Plant Health Agency (APHA) inspectors can access data about particular visits and share when they're traveling, when they arrive, and when they start or finish each inspection, giving the back-office team real-time visibility of what's happening. They can also record and report all inspection data, ensuring consistency and accuracy without touching a piece of paper. The inspection appointments are planned and scheduled using dynamic resource scheduling, automating the process and therefore optimising it to meet key performance indicators such as reducing travel time between visits. At the end of the inspection, the software automatically formats the data and sends it to a team at the Defra office - ultimately supporting Defra to become a data-driven department.

By the end of the business year (March 2019), it is anticipated that 23% of APHA's field activity will be delivered using field service management technology. Yet more can be done. Extending these capabilities by combining them with a work management system and a mobile workforce application would enable organisations and agencies to fully harness even more benefits, not only for farmers but for inspection staff and ultimately taxpayers too.

<https://www.kirona.com/>

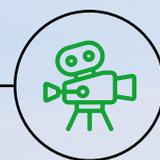


Acknowledgements

We would like to thank the following contributors. If you wish to send feedback, please tweet using **#DVfFarming** or email: **AtosDigitalVisions@atos.net**

In order of appearance

Adrian Gregory	Chief Executive Officer, Atos UK&I
George Eustice MP	Minister of State for Agriculture, Fisheries and Food
Julian Sturdy MP	Chair of the All-Party Parliamentary Group for Farming
Felix Pearson	Account Director, Atos UK&I
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