



2020 Legacy of Good Plan
Annual Update



NET POSITIVE

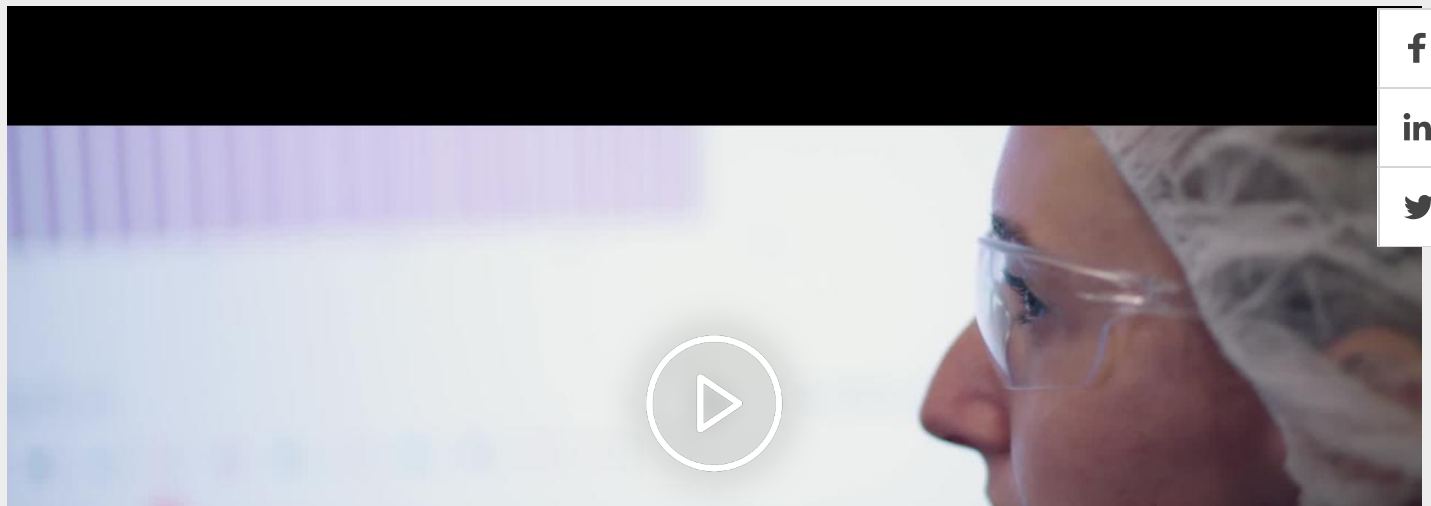
Harnessing IoT to combat food insecurity, waste and spoilage

AeroFarms and IMS Evolve are using innovative Dell Internet of Things (IoT) solutions to protect global food supplies.

In the past 40 years, the world has lost one-third of its arable land due to erosion and pollution. Industrial farming methods are degrading soil far faster than nature can rebuild it and compromising other natural resources. Globally, **70 percent of fresh water** is used for agriculture. Meanwhile, the world's demand for food is rapidly increasing. According to the United Nations' (U.N.) Food and Agriculture Organization (FAO), the world will need to grow 50 percent more food by 2050 to feed a predicted population of 9.7 billion.

Meeting the challenge of feeding such a large population, while conserving resources, will require looking holistically at our agricultural models. One area that stands out is the problem of food waste. **The FAO estimates** that one-third of the food produced in the world for human consumption every year — approximately 1.3 billion metric tons — gets lost or wasted. **The U.N. estimates** that reducing this waste by just 25 percent would be enough to feed people who are malnourished.

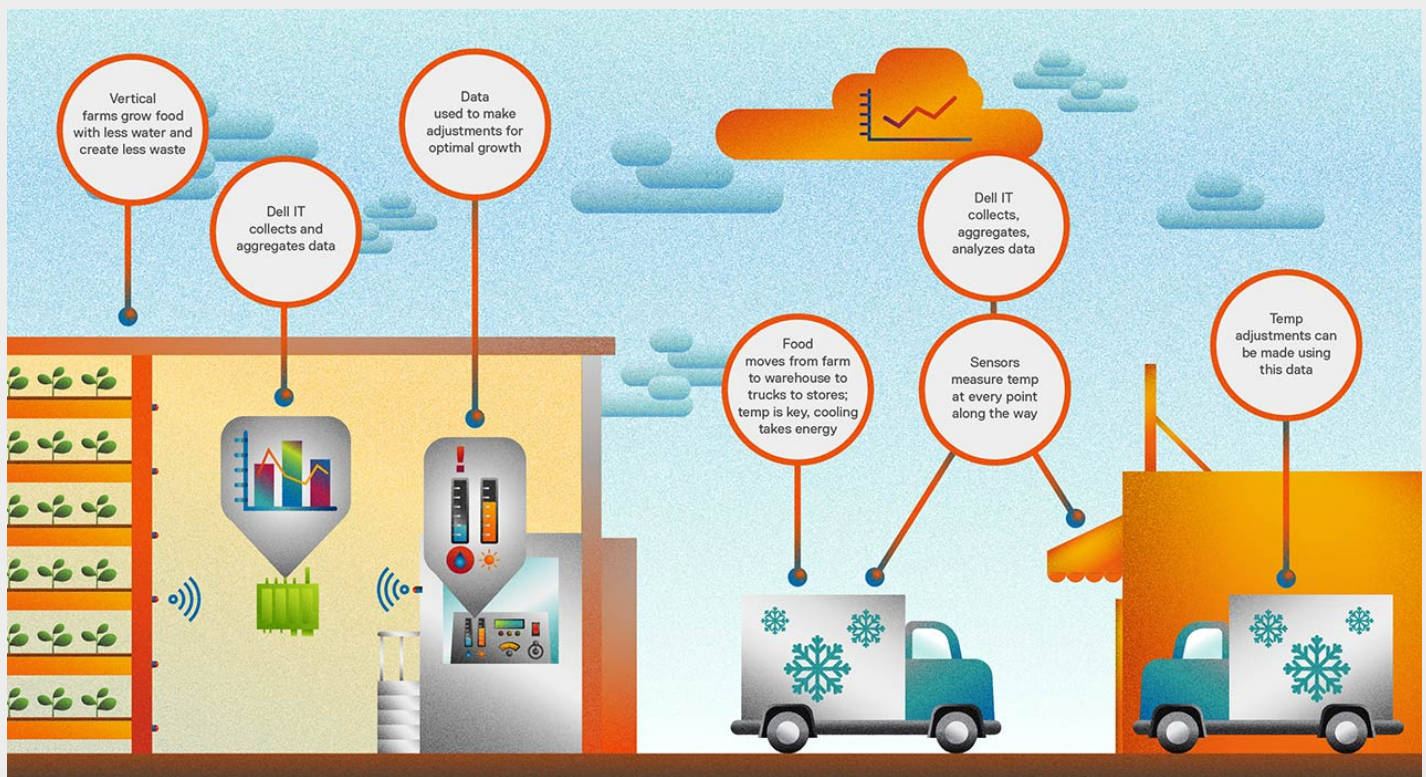
Two of Dell's customers, **AeroFarms** and **IMS Evolve**, are addressing these problems by using innovative IoT technologies to transform food production and delivery.





24-7, AeroFarms collects millions of data points from farms stacked vertically. Using modern imaging, big data and machine learning, they're turning everything about a plant into data.

Harnessing IoT to combat food insecurity, waste and spoilage



AeroFarms®
Farming Locally. Globally.



AeroFarms has developed an **indoor vertical farming system** that grows food with far fewer resources and less waste than conventional methods. In fact, AeroFarms has achieved 390 times greater productivity than field farming while using 95 percent less water.

At 70,000 square feet, AeroFarms' flagship facility in Newark, N.J., is one of the world's largest vertical farms, with vegetable plants stacked from floor to ceiling inside a former steel mill. Each plant at the farm is equipped with an IoT-enabled sensor that tracks its vital statistics, including water consumption, nutrient density and readiness for harvest. Dell Edge Gateways aggregate and analyze the data, and the system uses machine learning to optimize the growing environment. That means the vegetables' temperature, water and light are adjusted automatically, and the team knows exactly when to pick them for maximum flavor, nutrition and freshness, avoiding spoilage and waste.



U.K.-based **IMS Evolve** is improving the quality and safety of produce while cutting energy usage and food waste through IoT-enabled management of the supermarket industry's "cold chain." This chain refers to the long, complex journey that produce and other refrigerated foods make between the farm or production facility and retailers' shelves. As produce moves from warehouses to trucks to stores, it must stay at the optimum temperature to ensure quality, extend shelf life and remain safe to eat. Unforeseen changes in temperature, machinery failures or incorrect in-store refrigeration can lead to costly food spoilage and negative customer experience. It can also waste energy, as cooling **consumes 14 percent** of the U.K.'s electricity production.

IMS Evolve's IoT solution is currently managing more than 6.6 billion data points per day across 12 countries. Dell Edge Gateways support the collection, aggregation and analysis of this real-time operating data from both modern and legacy devices. Information is processed at the edge of the network, near the source of the data. The IMS Evolve software contextualizes data against existing systems, delivering advanced analytics, workflow management and real-time control and automation through a single platform. Supermarkets are given new levels of visibility over their environment and operations, and can improve customer experience by keeping produce at optimum temperature and condition.

IMS Evolve's customers have seen a 49 percent reduction in loss of refrigerated stock, a 30 percent reduction in customer complaints, and \$7 million in annual energy savings across one application alone.



Net Positive Goals

10X20



By 2020, the good that will come from our technology will be 10x what it takes to create and use it



SUBGOAL

Measurement of Solutions



Identify and quantify the environmental benefits of IT-based solutions

[View the Goals Dashboard](#)



Advancing and assessing our Legacy of Good

Using open data to add challenges

Related content



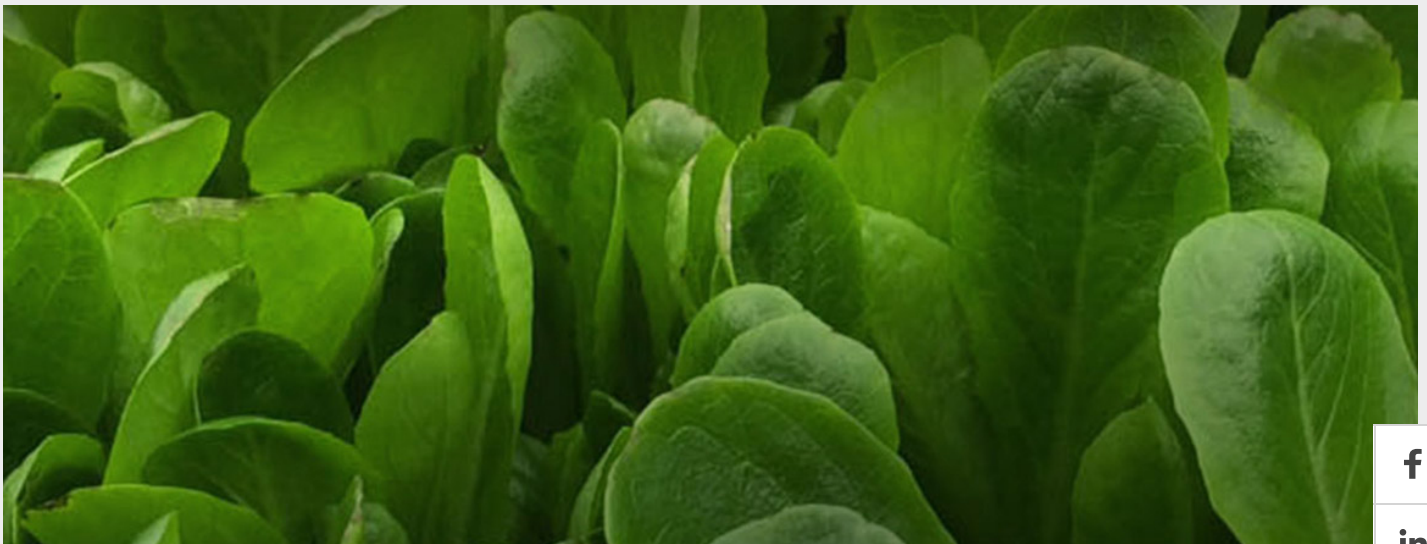


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