Technology and Agriculture – exploring the possibilities

Belinda Dennett (Microsoft) & Chris Motton (Advance Computing)
Digitisation has sparked a 4th industrial revolution

Mechanised production 1780s
Mass production 1870s
Automated production 1970s
Digital production 2015+
Agriculture needs to fundamentally transform

**Global access**

1 in 9 people are undernourished (UN)

65% Reduce poverty for 65% of the world’s poor who live in rural areas and work in farming

70% more food is needed by 2050

**Sustainable production**

70% of global water resources are needed for Agriculture

24% of global greenhouse emissions come from Agriculture

251 T liters of water to be saved in 2030 from implementing Smart Agriculture

**Economic growth**

30% of global workers are employed by Agriculture

10-30% Agriculture contributes 10% of global GDP and up to 30% in low income countries

$4.8T Global Agriculture revenue

Source: Sustainability development goals, UNITED NATIONS 2017
We’re committed to protecting our planet

AI for Earth empowers people and organizations to solve global environmental challenges through technological innovation.

CLIMATE CHANGE
An increasing variability in climate is threatening human health, infrastructure, and the natural systems we rely on.

AGRICULTURE
In order to feed the world’s rapidly growing population, farmers must produce more food, on less arable land, and with lower environmental impact.

WATER
In less than two decades, demand for fresh water is projected to outpace supply.

BIODIVERSITY
Species are going extinct beyond the natural rate, driving the decay of key ecosystem services.

http://aka.ms/AIforEarth
Microsoft’s AI for Earth leverages technology to solve global issues

“Fundamentally, AI can accelerate our ability to observe environmental systems and how they are changing at a global scale, convert the data into useful information, and apply that information to take concrete steps to better manage our natural resources.”

—Brad Smith, President and Chief Legal Officer, Microsoft
Innovation comes with challenges

- **Connecting assets**
  - Absence of internet connectivity on farms and lack of data
  - Disparate systems that lead to siloed data
  - Inconsistent and fragmented data

- **Enabling insights**
  - Inability to obtain quality data for analysis
  - Difficult to gain insight from unstructured data
  - Inaccessible artificial intelligence and machine learning models

- **Ensuring food safety**
  - Uncertain verification of food supply chain
  - Unclear impact of product recalls and origin
  - Increasing demand to understand the provenance of product

- **Collaborating securely**
  - Complex cross-company collaboration concepts
  - Concerns about IP and security in cross-company networks
  - Insecure data sharing processes supporting “farm to table”
Farmers are innovative by design
Advance Computing
Redefining technology for industry

Kyabram

30+
The impact of innovation
Technology in agribusiness is not One-size-fits-all
Framework for agriculture transformation

REINVENT PROCESSES

- Precision farming
- Sustainable production
- Connected logistics
- Predictive maintenance

Digital Transformation Pillars

- Engage Customers
- Empower Employees
- Optimize Operations
- Transform Products

RETHINK DATA TO OUTCOMES

TRUSTED TECHNOLOGY PLATFORM

- Security
- Compliance
- Privacy
- Transparency

TRANSFORM BUSINESS MODELS
FarmBeats

FarmBeats provides farmers with access to Microsoft Cloud and AI technologies, enabling data-driven decisions to improve agricultural yield, lower overall costs, and reduce the environmental impact of agricultural production.

**Local Farm Computer**

Windows 10 IoT-based Azure IoT Gateway performs computations and AI at the FarmBeats Edge in the farmer’s house/office.

**Soil Sensor**

Solar-powered soil sensors gather moisture, soil chemistry, and temperature data.

**TYE Balloons**

Low-cost Tethered Eye helium balloons continuously stream images and video of the farm to the Azure IoT Gateway in places where drones are not permitted.

**Drones**

Autopilot drones gather aerial imagery (visible and multi-spectral).

**Azure Cloud**

Machine learning algorithms integrate sensor data with aerial imagery and crop predictions.

**Heat Map**

Algorithms process data to create a detailed heat map of the field.

**Farmer**

Heat map data is sent to a farmer who applies insight to increase efficiency and conserve resources.

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ACM milks data for connected factory

"Manufacturers must be adaptive and be able to change and move a lot quicker than it has in the past. You have to be able to be flexible and efficient, because the industry is changing, from what it was 10 years ago. In in two or three years it will be very, very different"

— Jason Limbrick, Chief Operating Officer
Australian Consolidated Milk
Rural Group optimises team performance & customer service

“
We’re getting faster and faster at our administration jobs every week – and so are our technicians who don’t like to touch computers.

— Graeme Shiels, Director
Rural Group

NEW HOLLAND
AGRICULTURE
Choice Group cloud switch unshackles staff and builds the business

"When staff have that flexibility, generally what you’ll find, from a cultural side of things, is that when things need to be done in the office, or we have tight deadlines, or we are under the pump, the staff are happy to come together to do things as a team. When things need to be done, people will come into work early. They’ll stay back late, if they have to."

— Jamie Cox, Director
Choice Group
Opportunities in Cotton
Microsoft Traineeship Program

Australia will need another 100,000 tech workers by 2024*.

Only 6000 Australian IT graduates complete their university education per year.

There is an urgent need to skill disadvantaged people and reskill redundant workers to ensure no-one is left behind by Australia’s “digital transformation”.

There are well documented business benefits to having a more diverse workforce.
Microsoft Traineeship Program

Announced in 2018, we aim to support over 150 people to take their first steps into a technology career.

We target smart, capable people from diverse backgrounds.

Our program blends academic and practical, on-the-job learning and experience.

A Cert IV in IT with integrated Microsoft Azure certifications forms the academic qualification. This is delivered part-time over 18 – 24 months by TAFE and will involve 1-2 days per week, depending on the subject.

TAFE costs are covered by State Government. Microsoft Certification costs are covered by Microsoft.

Microsoft Dynamics version coming in 2020
Questions