Designing digital agriculture with, not for farmers

Image: Farmer Needs A Robot 6 Feb 2018
http://www.abc.net.au/catalyst/stories/4792106.htm
Is digital farming a swizz?

Dr S. Kate Devitt
Philosopher and Cognitive Scientist
CEO BetterBeliefs
Research Associate Queensland University of Technology
Twitter: @skdevitt
Email: kate.devitt@qut.edu.au
Website: http://betterbeliefs.com.au
Is digital farming a swizz?

YES
Let farmers be and support them where it counts

NO
Then, what are:
- individuals,
- communities,
- industries
- government,
- Companies and
- organisations
...doing to help?

Design with, not for

https://medium.com/@elle_mccann/so-you-think-you-want-to-run-a-hackathon-think-again-f96cd7df246a
Successful innovation needs to consider...

Five characteristics of an innovation: its relative advantage, compatibility, complexity, trialability and observability—E.M. Rogers *Diffusion of Innovation* 1983.
Unified Theory of Acceptance and Use

A digital story: SONOs

2002 Fantastic speakers with terrible user interface (UI) on complex controller
2009 Smart phone ‘Universal Controller App’
2014 Intuitive app, seamless for users
A digital story: ROOMBA

Most successful domestic robot

2002 Challenge: Make a $200 domestic cleaning robot
2011 Simple one button control ‘clean’
2015 Intelligent cleaning… at a high end price $600+
2017 integration with Amazon Echo (Alexa)
A Digital Story: John Deere buys Blue River Technologies 2017

The merger brings together smart digital technologies

- Robotics
- Increasing autonomy
- Internet of Things
- AI and machine learning
- Cloud data management

A Digital Story: John Deere buys Blue River Technologies 2017

Scaling farm management

- Manage more acres
- Optimise existing acres

But, digital agriculture is also...

Personal spreadsheets

Smart phones
...and digitally based farm services

- Does the money spent on digital services exceed the savings on inputs and resources?
- Does service save time?
- Is the data usable?
SUPPORTING FARMERS
What support exists for Australian farmers now?

• What federal, state and local programs help farmers now?
  – How many of these relate to digital agriculture?
Farm Business Concessional Loans Scheme

- **Borrow**
  - Up to $1,000,000
  - Interest-only first 5yrs
  - Pay off within 10yrs

Other support

- Farm Household Allowance
  - Basic income to cover basic household needs
- Managing Farm Risk Program
  - Free insurance options advice
- Managing weeds and pest animals
  - Funds to manage weeds and pests
- Rural Financial Counselling Service
  - Free financial counselling

- Taxation measures
- Regional Investment Corporation
  - Business loans to support long-term strength, resilience and profitability of farm businesses by helping them to build and maintain diversity in the markets they supply, so they can take advantage of new and emerging opportunities across Australia and overseas.
  - Concessional loans
  - National Water Infrastructure Loan Facility

✓ Needs digital infrastructure.
✓ Need to invest real funds, rather than loans
Compare to motor industry

- Automotive Transformation Scheme “to encourage competitive investment and innovation in the industry and to place it on an economically sustainable footing” (2014-2015)
- $1 billion to protect the industry and take care of workers displaced by the end of the industry

Budget Review 2014–15 Index

Australian Agriculture

• 85,681 farm businesses in Australia
• 2016-17, 304,200 people directly employed in Australian agriculture.
• The complete agricultural supply chain, including the affiliated food and fibre industries, provide over 1.6 million jobs to the Australian economy

Will digital agriculture support jobs?

https://medium.com/@elle_mccann/so-you-think-you-want-to-run-a-hackathon-think-again-f96cd7df246a
Farming is at ‘high risk’ of automation by AI (e.g. machine learning and machine recognition) by 2030.

Australia must prepare for the future of work through public and private intervention.

- an education and innovation agenda to skill people to adapt to emerging technologies
- a mandate to regulate technologies to mitigate against negative social impacts
- assist citizens with the transition to alternative employment opportunities

Farmers already have in abundance the skills needed to thrive in the future of agricultural work.
What support do farmers need?

**Retraining**
- Digital literacies
- Electrical engineering
- Computer science

**Support**
- Digitally capable consultants and farm workers
- AI assistance
- Digital support services

**Risk reduction**
- Government and industry support
- Risk mitigation for farmers trialing new technologies
Digital literacies for farm managers

• Top-level understanding of the capabilities and limitations of digital technologies
  – how *trustworthy* they are
  – how to cut through the sales pitch,
  – need to know the skills of human resources needed to work side-by-side with these technologies, so how to recruit the right skill sets
INCENTIVES
Incentives—On farm innovation subsidy

- What about a dollar for dollar co-investment from govt for farmers to install, support and tinker with new tech trials?
- Aim to increase adoption, but more importantly, increase on farm ingenuity where farmers modify technologies *in situ* and then able to benefit if their mods gain traction amongst larger community
Incentives—Fair go trials

- Create ‘fair go’ trials that limit risk to farm operations while allowing experimentation,
  - E.g. partial farm trials such as mixed irrigation methods on dryland cotton.
- Increased need for:
  - Sustained on farm trials with research institutions, CSIRO, and subsidised startups.
  - Trials need on farm resources to help technology use. Particularly for activities that risk industry-wide consequences.
Where does it go wrong?

• How do we tackle biosecurity related tech?
  – Don’t want to screw up surveillance with, say poor drone use and then get worse data than manual field inspections for pests and diseases.

• Social license to operate issues.
  – How can digital tech improve SL?
  – How can digital tech convey farmer perspective to city? Use land clearing QLD video example
Digital farming is a swizz for the unsupported and unprepared
Support digital ag by designing with, not for farmers
Thank you