



## Optimising agriculture

Data Into Profit has created a web-based decision support application that delivers predictive information to the agriculture industry. Real-time data from in-field sensors, such as soil moisture probes, rain gauges, electrical conductivity meters, thermometers and even cameras, are collected and collated with historical weather and agricultural data. This is then processed by Crop Manager, Data Into Profit's system of decision-making algorithms, which is based on plant performance benchmarking and has accessible outputs that can be viewed on your mobile phone.

Crop Manager can:

- benchmark crop performance
- immediately notify you of problems, such as under-watering or temperature control in greenhouses
- enable precision watering and fertilising for intensive horticulture
- support evidence-based decisions around planting, replanting, fertilising, forward selling and harvesting in broadacre farming
- improve farming practices by improving the accuracy of the benchmarking process using artificial intelligence.

Crop Manager provides current and predictive information for proactive decision making in agriculture, optimising inputs and reducing operational costs, while maximising crop yields and market opportunities. As Crop Manager progressively learns from every new input, the benefits are both immediate and cumulative.

## Contact

Cisco IoE Innovation Centre Perth  
Curtin University  
Level 1, Building 216  
Kent Street  
Bentley WA 6102  
Tel: +61 8 9266 1728  
Web: [cisco.com.au/innovationcentre](http://cisco.com.au/innovationcentre)

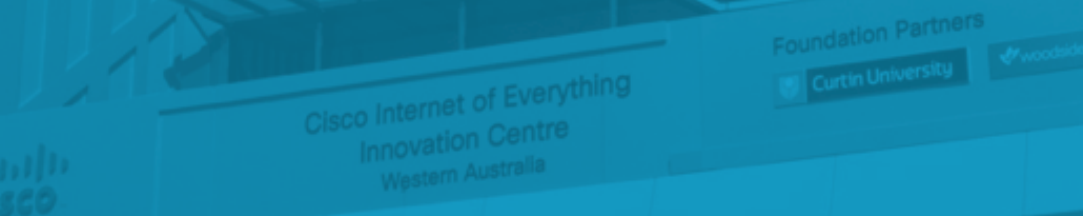
**Tom Goerke**  
Centre Director, CIIC  
Email: [tgoerke@cisco.com](mailto:tgoerke@cisco.com)

**Lauchlan Wallace**  
Data Science Manager, Woodside Energy Ltd.  
Email: [Lauchlan.Wallace@Woodside.com.au](mailto:Lauchlan.Wallace@Woodside.com.au)

**Professor Andrew Rohl**  
Director, Curtin Institute for Computation  
Email: [a.rohl@curtin.edu.au](mailto:a.rohl@curtin.edu.au)

**Paul Nicholls**  
Director, Strategic Projects (Research and Development)  
Email: [p.nicholls@curtin.edu.au](mailto:p.nicholls@curtin.edu.au)

**Richard Riddle**  
Chief Executive Officer, Data Into Profit  
Tel: +61 0 43 741 4301  
Email: [rriddle@dataintoprofit.com](mailto:rriddle@dataintoprofit.com)



Cisco Internet of Everything Innovation Centre, Western Australia.

### DISCLAIMER INFORMATION

Information in this publication is correct at May 2016 but may be subject to change. This material does not purport to constitute legal or professional advice. Curtin accepts no responsibility for and makes no representations, whether express or implied, as to the accuracy or reliability in any respect of any material in this publication. Except to the extent mandated otherwise by legislation, Curtin University does not accept responsibility for the consequences of any reliance which may be placed on this material by any person. Curtin will not be liable to you or to any other person for any loss or damage (including direct, consequential or economic loss or damage) however caused and whether by negligence or otherwise which may result directly or indirectly from the use of this publication.

### Copyright information

© Curtin University 2016. Published by Curtin University. Cricos Provider Code 003011. Curtin University is a trademark of Curtin University of Technology.

Except as permitted by the Copyright Act 1968, this material may not be reproduced, stored or transmitted without the permission of the copyright owner. All enquiries must be directed to Curtin University.

2214SE



# Curtin University



## CONVERTING THE SCIENCE OF AGRICULTURE INTO THE REALITY OF FARMING. ANYWHERE.



Make tomorrow better.

## The challenge

Data Into Profit's in-field agricultural sensors are Global System for Mobile Communications (GSM) enabled – they can measure and transmit data anywhere there is mobile phone coverage. Unfortunately, a large percentage of broadacre farms do not have mobile coverage: no signal, no data collection, and farmers cannot benefit from the decision support of Crop Manager. This large market was literally unreachable.

In contrast, intensive horticulture usually occurs in areas of mobile coverage. However, in these applications data needs to be measured and transmitted in near-real time (up to once a second). The power draw of the sensors becomes an issue if they are not connected to mains power, and the data charge costs over GSM are prohibitive.

Data Into Profit needed a low-power, independent, wireless communication protocol.

## Collaborating to communicate

Within the Cisco Internet of Everything (IoE) Innovation Centre, Data Into Profit are now working with Cisco to implement a new communication protocol. LoRa is a long range and low power wide-area network designed to connect low-cost, battery-operated devices over long distances and work in the harsh environments of a regional network. A LoRa gateway can connect to sensors more than 10 kilometres away, and because it has such a low power requirement, the battery-operated sensors can be left in the field for a very long time.

Data Into Profit is converting their array of sensors to be able to send LoRa-based signals. Cisco has introduced them to several hardware manufacturers that design and develop LoRa-based devices to facilitate the process.

The Cisco IoE Innovation Centre houses a LoRa gateway, and Cisco is providing the core tools, platforms and expertise to help integrate the technologies involved, as well as designing data management and security for the system.

## Benefits of collaborative innovation

*'We see this as the beginning of what we can do in this centre. On one level it's about connectivity, but when we can integrate the computing, data security and related protocols, it frees up groups like Data Into Profit to focus on what they do best – the analytics – and that can offer a real competitive advantage.'*

Mark Blum, Cisco.

*'There are so many potential applications for this concept. Centre partner Woodside is interested in this project because of the potential to apply it where they need remote, low-maintenance wireless networks to help monitor offshore oil and gas platforms.'*

Paul Nicholls, Curtin University.

*'Access to Cisco's expertise and hardware has the potential to transform our product. Communication has always been the limitation. Once we can feed Crop Manager larger and more complex data sets, our decision support will get better and better as it learns from every scenario. We can get the data out of the field, to where people can make decisions that can make or save money.'*

Richard Riddle, Data Into Profit.

## About the Cisco Internet of Everything Innovation Centre

### Accelerating innovation in next generation technologies

The Cisco IoE Innovation Centre Perth is a new industry and research collaboration centre established at Curtin University by Cisco with foundation partners Curtin University and Woodside Energy. With links to advanced facilities and a global industry network, the centre brings together start-ups and small to medium enterprises, industry experts, developers and researchers in an open environment to create groundbreaking and innovative solutions that foster growth, provide jobs and help build sustainable economies.

The centre is creating a state-of-the-art connected community focused on leveraging cloud, analytics, cybersecurity and the Internet of Everything network platforms. It provides a productive and experimental environment for collaboration; a hub where innovative minds and diverse skill sets come together.

