Rapport for deltagelse i

9th Conference of the Asian Federation for Information Technology in Agriculture - 2014
ICT's for future Economic and Sustainable Agricultural Systems
29 Sep - 2 Oct 2014, Edith Cowan University, Perth

Baggrund

Konferencer i serien Conferences of the Asian Federation for Information Technology in Agriculture (AFITA) bidrager til at styrke samarbejde og vidensdeling mellem nationale og internationale organisationer og foreninger med interesse for forskning og udnyttelse af informationsteknologi i jordbrug, fødevarer og miljø.

Formålet med konferencen var at præsentere eksempler på, hvordan fremskridt inden for IKT bidrager til udvikling i leveringen af viden til landmænd, forskere og industrien, idet landbrugssektoren anses som en vigtig sektor i verdensøkonomien og dens bæredygtighed er afgørende med stigende befolkningstilvækst og globale miljøændringer. Der blev stillet i udsigt, at alle deltagere (akademikere, forskere, praktikere, politikere, og observatører) ville blive udfordret og inviteret til at bidrage, dele og formidle deres ideer, produkter, løsninger, god praksis eller politikker for emnet relevante og kritiske spørgsmål, der behandles i denne internationale konference.

AFITA konferencer organiseres af Asian Federation for Information Technology in Agriculture i samarbejde med nationale medlemmer. Konferencen i Perth blev arrangeret i samarbejde med The Australian Society of Information and Communication Technologies in Agriculture (ASCITA); CSBR og Edith Cowan University og blev støttet bl.a. af Australian Centre for International Agricultural Research; The Grains Research and Development Corporation (GRDC); The Global Forum on Agricultural Research (GFAR) og FAO. Konferencen fandt sted på Edith Cowan University campus.

Fagligt lagde arrangørerne op til en bred dækkende konference, idet de opfordrede til at fremsende indlæg indenfor disse områder:

- Apps for Agriculture
- Precision Technology and Image Processing
- Precision agriculture
- Decision support systems
- Information management and Delivery
- Bioinformatics
- Policies

Ministeriet for Fødevarer, Landbrug og Fiskeri
Den Europæiske Landbrugsfond for Udvikling af Landdistrikterne
Naturerhverv.dk
Danmark og Europa investerer i landdistrikterne
Se 'European Agricultural Fund for Rural Development' (EAFRD)

- Biotechnology and Nano Technology
- Biological Computing Systems
- Traceability
- Climate Forecasting and modelling
- ICT in Agriculture Extension
- Environmental Monitoring
- Agroinformatics
- Agricultural Engineering solutions
- Supply chains
- Farming in the Cloud
- Smart Farms
- Sensor Networks

Fra Videncentret blev der fremsendt to proposals:

- Google glass in Agriculture - Nicolai Fog Hansen, Jens Peter Hansen and Pie Ann Louise Munksgaard
- Experiences with promoting uptake of social media amongst farmers and advisers – Jens Peter Hansen

Google Glass blev accepteret for poster session, og indlægget om uptake of social media blev accepteret for oral præsentation.

Paper 41 (abstract only)	
Title:	Google glass in Agriculture
Author keywords:	Google glass wearables ICT user driven app
Abstract:	Google Glass is one of several wearbles on the market. It could very well become one of the farmers favorite tools for several reasons. It brings information out to where he is. It allows him to get information while working with both hands free. It allows the farmer to get remote support, and thus both better and cheaper advice. Actually Google Glass is not on the Danish market, so we have been in the United States and picked up a copy for use at the Knowledge Centre for Agriculture. Here we test both the usability, testing in field study among Danish farmers. We are at the moment developing a working prototype to run Google Glass on our existing applications.
Time:	Jul 13, 09:06 GMT

Paper 55	
Title:	Experiences with promoting uptake of social media amongst farmers and advisers
Paper:	PDF (Sep 23, 09:15 GMT)
Author keywords:	social media social business knowledge exchange extension virtual community of practice
EasyChair keyphrases:	social medium (440), social business (130), social medium tool (95), digital disruption (90), danish farmer (70), knowledge sharing (60), agricultural knowledge (50), local advisory center (47), secure enterprise social network (40), social technology (40), knowledge centre (40)
Abstract:	Knowledge Centre for Agriculture is finishing a two year project aiming at demonstrating how farmers and advisers can increase knowledge sharing and communication by means of social media tools. The focus of the project is that agricultural knowledge should be disseminated motivating, timely and in the right place and that social media often will be most appropriate tool for obtaining this. We have targeted the farmer-advisor relation; networks amongst farmers; networks amongst advisers and the interplay between R&D, advisers and farmers and - depending of the context - we have demonstrated how-to and benefits by using a number of social media tools such as Twitter, Vine, Facebook, Yammer, LinkedIn, YouTube, Slideshare, Pinterest and webinars. In general, we have experienced, that farmers and advisers do not consider social media in relation to their farming business or own extension activities, but that once being introduced to relevant tools, many of them realizes the potential and jumps on the bandwagon. Our presentation will present project activities done to promote uptake of social media and resulting effects.
Time:	Jul 15, 11:26 GMT

Formål

Formålet med deltagelse I konferencen var via præsentationer af Videncentrets arbejde med udnyttelse af Google Glasses i landbruget til en bedre udnyttelse af data på landbrugsbedriften og erfaringer med sociale medier at

- få vurderet og kritiseret vort arbejde,
- opnå synlighed på den internationale scene i forhold til tilsvarende aktiviteter,
- etablere personlige relationer til potentielle ressource personer

samt at få et generelt overblik over aktuelle væsentlige områder indenfor forskning og udvikling i brug af IT teknologi i landbruget.

Rejseplan

Rejseplanen for Nicolai Fog Hansen og Jens Peter Hansen er vist herunder.

Udrejse Aalborg onsdag 24. september 10:55
Ankomst Perth 25. september 17:35

I lejet bil fra Perth til Esperance – ankomst fredag 26. september 8.00
Fem besøg i Esperance området i løbet af fredagen inkl. overnatning hos Chris Reichstein
Lørdag 27. september fra Esperance til Bridgetown inkl. besøg på dansk ejede Strathaven Farm
Søndag 28. september retur til Perth

Konference mandag 29.september – 2. oktober inkl. field trip Perth – York – Cunderdin – Merredin

Fredag 3. oktober besøg på Royal Agricultural Show og hos dansk svineproducent i Pinjarra

Hjemrejse fredag 3. oktober 22:20 fra Perth
Hjemkomst Aalborg lørdag 4. oktober 15:35

Indhold konference

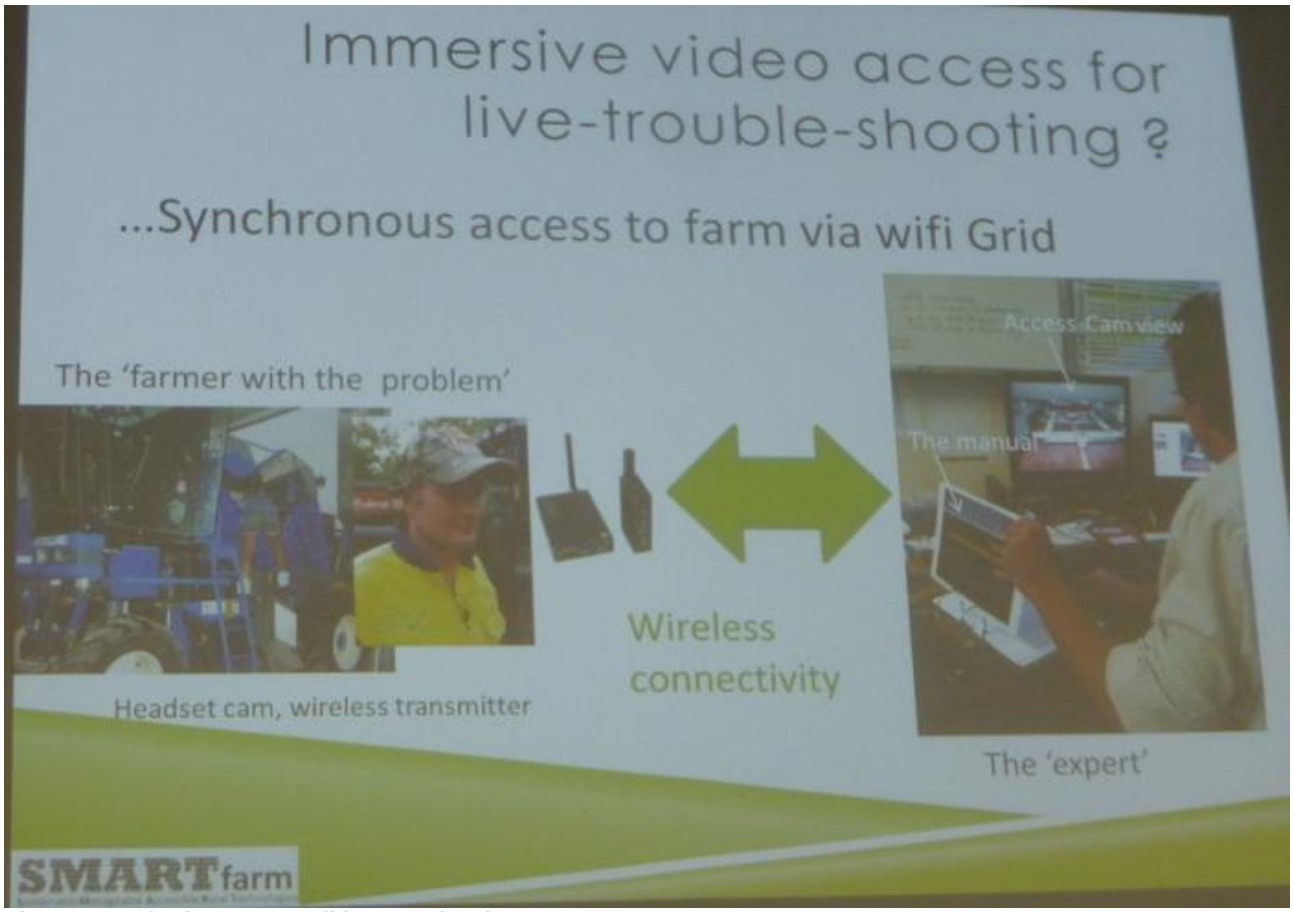
Den praktiske organisering af konferencen var usædvanlig dårlig. Ved konferencen start var man ikke parat til at registrere deltagere; plenary auditoriet var ikke klargjort; undervejs oplevede vi aflåste session rooms og lokale optaget af andre og field trip turen var 95 % buskørsel (600 km) med meget begrænset tid til besigtigelser.

Som bilag til dette dokument er vedhæftet Conference Program med markering af de mest givende sessioner, som Jens Peter Hansen deltog i. Her skal især fremhæves Growers Forum, hvor praktikere - landmænd, rådgivere, personer fra organisationer og virksomheder – leverede en række indlæg om noget, der faktisk anvendes i praksis.

Herunder er vist samt udvalgte billeder af slides taget on-site fra diverse sessioner.

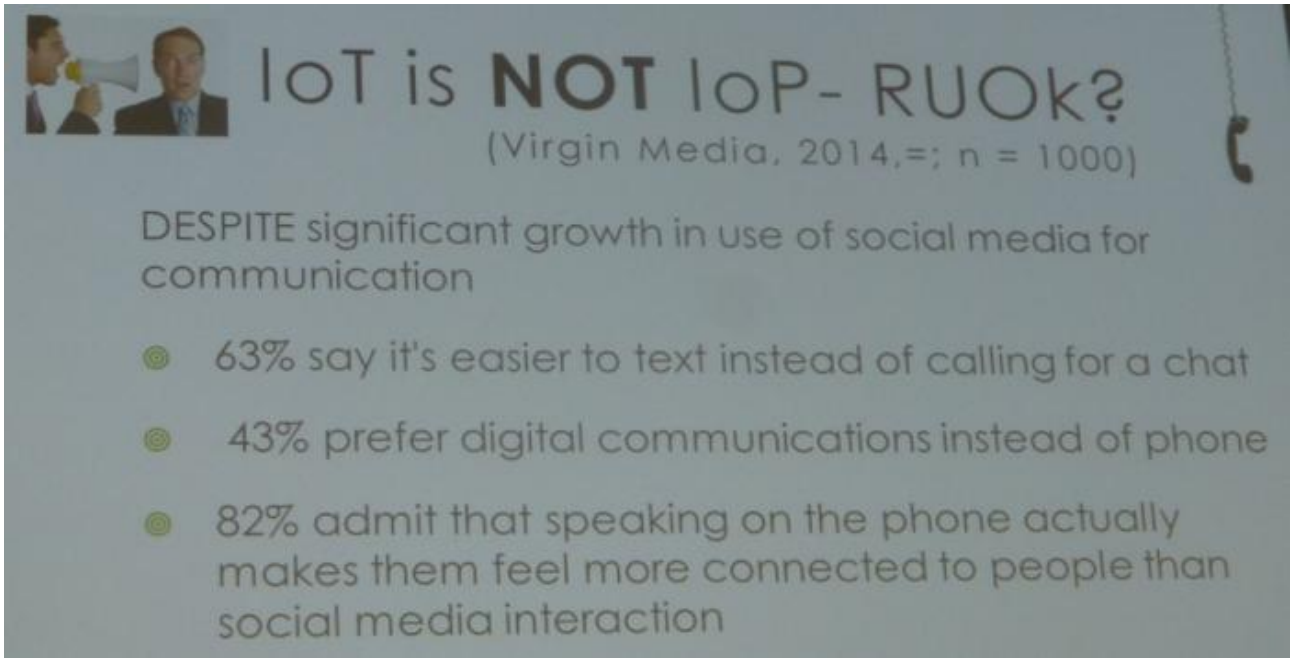
The future of precision agriculture as it meets the internet of things (IoT)
Prof David Lamb (University of New England, NSW)

- Connecting people to information > Connecting people to people > Connecting people to things (connecting things to thing's?)
- Viser virtuel støttet vejledning ved brug af headset webcam - hvorfor ikke google glasses?
- Knowledge sharing: Citizen knowledge og crowdsourcing
- Autostyring fra 47 til 67 % fra 2008 til 2011
- Interessante tal om at folk foretrækker at snakke i telefon frem for sociale medier. Og at sms foretrækkes frem for chat.
- Sensors betydning: Rapport antager at landbrug først kommer på banen i 2018
- Nu flere forbundne maskiner end mennesker



Figur 1 Hvorfor bruger man ikke Google Glass?

Figur 2 I forhold til DK nye metoder til videns deling: Virtuelle markvandringer; udstrakt brug af Twitter og crowdsourcing

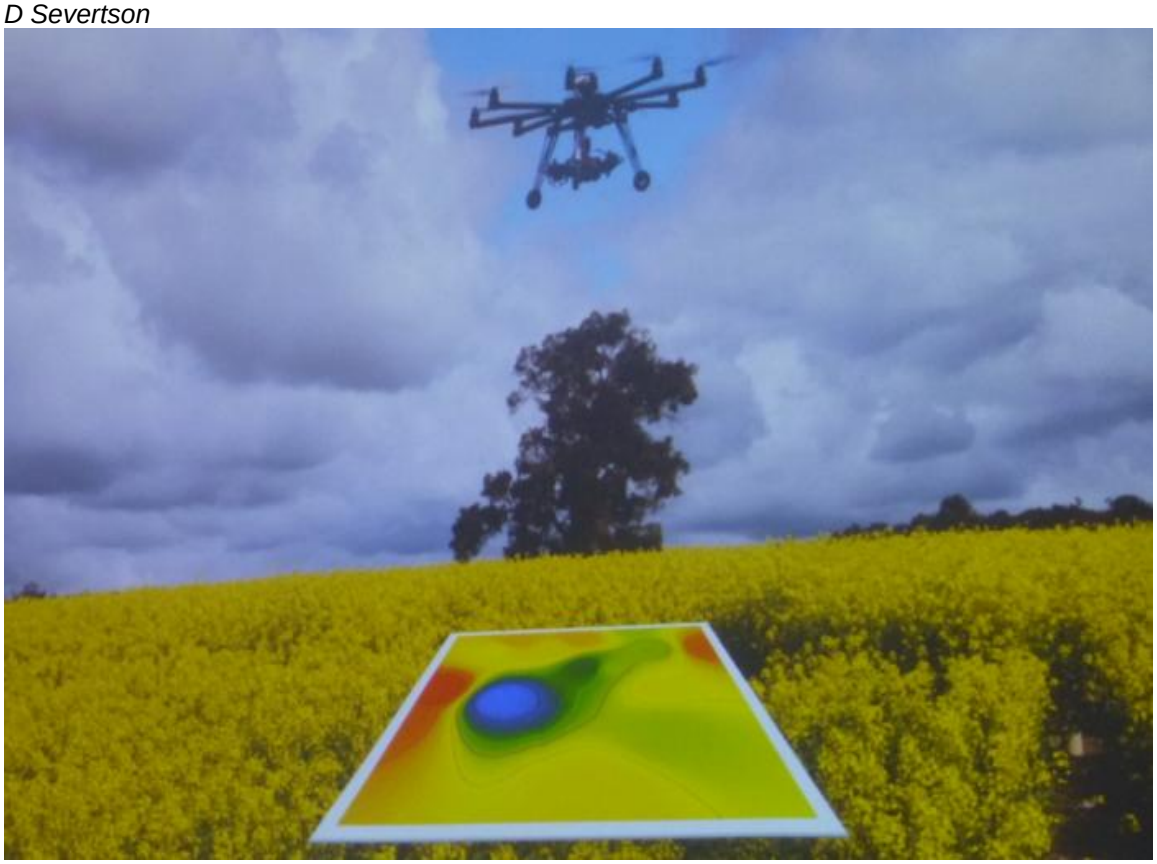


Figur 3 Sociale medier er endnu ikke foretrukken kommunikations metode

Mapping yield potential: integrating geophysics, soil moisture data and crop growth modelling to inform site-specific nitrogen rates
F D'Emden

Figur 4 Indlæg af Frank D'Emden, som vi havde besøgt på vores studietur til Esperance

Detection of cabbage aphids in canola using visual inspection and remote sensing
D Severtson


Figur 5 Lovende arbejde med brug af droner til dektering af insekt angreb I raps

Sponsor address (Grain Growers Australia) – præsentation af Production Wise software pakke

Figur 6 Eksempel på indlæg i Growers Forum - her præsentation af ProductionWise

Online Education in the XXIst century: Teaching and Extension

Prof Fedro Zazueta (University of Florida, USA)

- Service - infrastructure - people
- Data og information er blot nødvendige forudsætninger for knowledge
- Erfaringer: 45 pct billigere, lærte bedre forudsat god lærer

Experiences with promoting uptake of social media amongst farmers and advisers
J P Hansen

Figur 7 Jens Peter Hansen præsenterer indlægget "Experiences with promoting uptake of social media amongst farmers

"**Forward Thinking for ICT use in Asian Agri-Food Chains**
Dr Ajit Maru, (Global Forum of Agricultural Research); Gerard Sylvester , (United Nations Food and Agriculture Organization)

A) What could be the Agri-food systems of the future?
B) What are the Agri-food systems we want or do not want?

Workshop med tankevækkende diskussioner om fremtidens fødevareforsyning – hvor store en rolle kommer "designede" fødevarer til at spille? Hvem kommer til at bestemmer om fødevarer produceres på marken eller i laboratorie lignende fabrikker?

Agricultural Big Data Analyzing System with Open-source Technologies and CLOP (CLoud Open Platform)
M Hirafuji, A Itoh, T Kiura and T Yoshida

- The real heroes in all organizations and companies will be the people who understand how to create value and insight from data and information. These new heroes will be essential employees that will lead the col-laboration towards creating value independent of, and across all kinds of, technologies.
- Data will be the new oil. Business intelligence will be vital to companies' survival — companies will make profit only if they base business decisions on data analytics.
- A human being's main task will move from thinking about what to do, to checking/controlling the outcome of what all these devices are telling us to do.

Videncentrets præsentationer kan ses via disse links:

Experiences with promoting uptake of social media amongst farmers and advisers.
Paper presented at 9th Conference of the Asian Federation for Information Technology in Agriculture – 2014. Perth, Australia, 29 Sep - 2 Oct 2014.

Google Glass in Agriculture - poster

Studie tur

Via besøg på Videncentret af Chris Reichstein, der som en del af et Nuffield Scholarship rejste verden rundt for at indsamle inspiration (se figur 1), var vi blevet opmærksomme på området Esperance, der er karakteriseret ved særdeles progressive landmænd hvad angår udnyttelse af ny teknologi. Konferencedeltagelsen blev derfor suppleret med en studietur til en række landmænd med henblik på at indsamle inspiration fra praksis om brug af data og teknologi.

Chris Reichstein
Nuffield Australia 2014 Scholarship winner

Chris Reichstein from Esperance in Western Australia, has been awarded a 2014 Nuffield Scholarship, supported by the **Grains Research and Development Corporation**.

He will study how best to deliver information to farmers in order to bring about practice change, resulting in improved profitability and/or sustainability.

Chris crops wheat, barley, canola and field peas over an area of 4000 hectares north-east of Esperance in the 400 millimetre rainfall zone. The business is purely grain production with livestock being phased out in 2007.

Chris says while a great deal of research and development work is undertaken in Australia, the packaging and delivery of the messages by traditional means is giving a poor return on dollars invested.

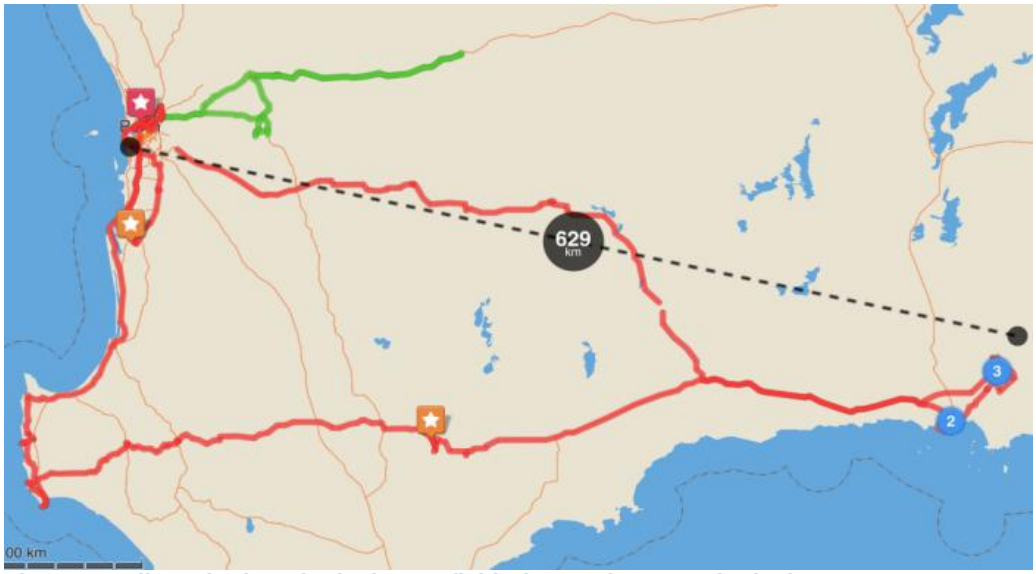
"Like most, farmers are time-poor, so I'd like to investigate the best combination of technology, media, social and scientific means that can be employed to best disseminate this valuable information, and research what role grower groups can play," Chris explains.

Chris says while his studies may be targeting change at the research and extension level, the benefits would encompass all stakeholders.
To complete his studies, Chris will include the USA and Brazil on his travel schedule.

Location: Esperance, Western Australia
Mobile: 0429 101 970
creichstein@bigpond.com

Figur 8 Præsentation af Chris Reichstein på www.nuffield.au

Studieturen er vist på kortet figure 9 med rød markering – grøn markering er field trip turen som del af konferencen.



Figur 9 Studietur (rød markering) samt field trip tour (grøn markering).

Chris Reichsteen havde tilrettelagt vore besøg i Esperance området omfattende

Precision Agronomics Australia, hvor **Frank D'Emden** – Technology Development Manager – tog imod og fortalte om firmaets samarbejde med dygtige landmænd I Western Australia om udnyttelse af variable rate technology (VRT). Vi fik et godt indtryk af et lille, agilt firma med en fin kombination af agrologisk og ikt mæssig viden.

David Cox, WaterHatch Farms, dave@waterhatchfarms.com.au. Grower (ca. 10.000 ha) og kødproducent. Præsident for South East Premium Wheat Growers Association (SEPWA), der har 270 store landbrug I Esperance området som medlemmer. Fik i 2004 Nuffield Scolarship til studie af nitrogen management. Hans udviklede metode er efterfølgende blevet taget i brug af en del landmænd, og han har operationaliseret sin metode i form af programmet E-ZEE Nitrogen (N) til beregning af optimal in-season tildeling af kvælstof primært baseret på tilgængelige vand ressourcer.


Figur 10 Tre Nuffield Scholarship modtagere - David Cox, Andrew Fowler og Chris Reichstein diskuterer apps

David var også beta-tester af iPad/iPhone programmet AgriTrack som han demonstrerede for os hvordan programmet benyttes til at holde styr på maskiner, mandskab og aktiviteter.

Nigel Mertz, nigel@sepwa.org.au. Nigel har en bred baggrund indenfor Agribusiness marketing og arbejder pt. for SEPWA på forskellige projekter – primært omkring præcisionslandbrug. Vi besøgte Nigel på hans hjemme adresse og fik en bred snak om data indsamling og –anvendelse, brug af sociale medier og samarbejdet mellem rådgivere og landmand. Vi fik indtrykket – her og i andre sammenhænge i Esperance området – at rådgivere og landmænd ser hinanden som kollegaer i et fælles projekt.

Mic Fels, grower (ca. 6.000 ha), direktør for iPaddock og app udvikler. Imponerende at se ham fremvise tre "prototyper" på sin app: Notebog, skemaer i A4 mappe, regneark inden han endte med at lave app'en, der øjensynlig er ved at få nogen udbredelse i Australien.

Figur 11 Nic Fels fortæller om app'en iPaddock udviklet ud fra et tidligere skemabaseret system.

Vores rundtur i Esperanace sluttede hos **Chris Reichstein**, hvor snakken fortsatte over aftensmåltiden inden en tur i i nattemørket på – forgæves – udkig efter kænguruer. Næste morgen var der tid til at besigtige hans maskinpark og se eksempler på, hvor der stedse arbejdes på at holde ukrudtstrykket nede – pt. benyttede Chris opsamling af avner efter mejetærskning for at reducere mængde af ukrudtsfrø.

Figur 12 Flotte hvedemarker hos Chris Reichstein

Figur 13 Trailer til opsamling af ukrudsfrø ved høst

Fra Chris gik turen retur mod Perth via et besøg på danskejede Strathaven Farm nær Growangerup, hvor Knud Nymann tog imod. Vi fik en danskers syn på det at drive landbrug i Australien – Nymann etablerede sig i 1992.

Efter konferencen var der tid til et kort besøg på besøge IGA Perth Royal Show, der dog var lige så meget tivoli som landbrug – der var enkelte gode særudstillinger som f.eks. en om moderne teknologi i landbruget.

Figur 14 Udstilling om teknologisk landbrug på Perth Royal Show

Efter små to timer på show'et gik turen ned til Pinjarra og besøg hos danske Torben Sørensen, der er direktør og daglig leder af GD Pork Group, der er ejet af det danske selskab Pork Australia ApS. Nuværende produktionsgrundlag er 1.150 årssøer, og der arbejdes med planer om en udvidelse op til 2.500 søer.

Torben fremviste bedriften, hvor vi fik indtrykket af at management og eksekvering fuldt er på højde med danske producenter. Bedriften benyttede primært traditionelle "vidensdelingssystemer" (tavler, tuch, kridt), men var dog så småt ved at begynde at bruge app'en iVet.

Udbytte

- Brug af åben indkaldelse når poster i diverse rådgivende udvalg til støtte for Videncentres arbejde skal sammensættes. Australske erfaringer er, at man ift. organisationsudpegede medlemmer bedre formår at få fat i engagerede personer med fagligt stærke kompetancer.

- Opmærksom på et samarbejde om implementering af eXtesion's web baserede systemer (Ask An Expert) i Australien via et samarbejde mellem eXtension og Grains Research & Development Corporation (GRDC). Videncentret har i en årrække fulgt eXtension – USA-AUS kan måske udvides til USA-AUS-DK.

- Et større antal personlige kontakter, hvor især Chris Reichton og Tom McCue, Grains Research & Development Corporation (GRDC) er indgange til yderligere viden og kontakter.

Conference Program

9th Conference of the Asian Federation for Information Technology in Agriculture - AFITA 2014

ICT’s for future Economic and Sustainable Agricultural Systems

Edith Cowan University, Perth, Western Australia

Monday, September 29, 2014

Building 12, Cafe	
7:30 am to 4:00 pm	Registration

Building 17, Room:157

8:00 am to 9:00 am	**Opening Ceremonies** Dr L Armstrong, ASICTA President, Conference Convenor (Edith Cowan University), Dr Noel Nannup – Welcome to Country Professor Ron Oliver, Edith Cowan University – Welcome to ECU Dr San-Chen Chang, Minister, Ministry of Science &Technology, Taiwan, AFITA President- Official Opening of AFITA 2014 AFITA President – Official Opening of AFITA 2014
Plenary Session 1: Precision Agriculture and ICT in Agriculture Chairperson: Prof Hamyln Jones	
9:00 am to 10:30 am	**The future of precision agriculture as it meets the internet of things (IoT)** Prof David Lamb (University of New England, NSW) **The role of information & communication technologies in increasing agricultural productivity** Dr Timothy Wark (CSIRO, Brisbane, Qld)
10:30 am to 11:00 am	Morning Break
Session 2: Precision Agriculture Chairperson: Prof David Lamb	
11:00 am to 11:30 am	**Imaging for precision agriculture – the mixed pixel problem with special reference to thermal imagery** Hamlyn Jones and Xavier Sirault
11:30 am to 12:00 pm	**Landuse Mapping Accuracy by means of geo-information technology in Indonesia** P B K Santoso, W Wahyunto and S R Murdiyati
12:00 pm to 13:00 pm	Lunch Break
Session 3: Spatial Analysis Chairperson: S Ninomiya	
13:00 pm to 13:30 pm	**Real time inflow forecasting for reservoir water management using advance geospatial tools** RK Suryawanshi, SS Gedam and RN Sankhua
13:30 pm to 14:00 pm	**A case study in Vietnam's North Delta: Operational SALUS model development and validation impact of climate change on rice productivity**

	T Y Chou, T V Hoang, M L Yeh and C Y Chien
14:00 pm to 14:30 pm	**Multi-temporal phenology NDVI feature-based Remote Sensing Method of Winter Potato Planting Area** Si-Yu Huang, Shui-Sen Chen and Wei Liu
14:30 pm to 15:00 pm	**Feasible Adjustment of Agronomic Management Sustainability Index for Rice Production in Taiwan** T Y Chou, M L Yeh and C Y Chien
15:00 pm to 15:30 pm	**Quantitative Color Evaluation of Digital Images Based on Illuminating Spectral Information** A Hashimoto, Y Toyoshi, K-I Suehara and T Kameoka
15:30 pm to 16:00 pm	Afternoon Break
Session 4: Panel Discussion on spatial analysis for agricultural productivity and sustainability Chairperson: Dr L Armstrong	
16:00 pm to 17:00 pm	All presenters will be on the panel

Grower Forum: Building 3, Room: 210/212

Session 5: Precision Agriculture for Irrigation Scheduling and Fertiliser Application Rates Chairperson: Doug Hamilton	
11:00 am to 11:30 am	**IRRI-EYE: South Australian Trial of a Satellite Irrigation Advisory Service** Jeremy Nelson, Michael Cutting and Guido D'Urso
11:30 am to 12:00 pm	**Mapping yield potential: integrating geophysics, soil moisture data and crop growth modelling to inform site-specific nitrogen rates** F D'Emden
12:00 pm to 13:00 pm	Lunch Break
Session 6: Remote sensing for improved Crop and Pasture management Chairperson: Frank D'Emden	
13:00 pm to 13:30 pm	***BlackBridge* Monitoring Programs with RapidEye imagery James Durana (BlackBridge)**
13:30 pm to 14:00 pm	**Operational near real time processing and delivery systems of Pasture Growth Rate and Biomass Information for Farmers - From Satellite to farm** R Stovold, D Lamb and G Donald
14:00 pm to 14:30 pm	**Detection of cabbage aphids in canola using visual inspection and remote sensing**

	D Severtson
14:30 pm to 15:00 pm	**Sponsor address (Grain Growers Australia)** TBA
15:00 pm to 15:30 pm	**Discussion**

ONLINE FORUM	**Building 17, Room 125**
Session 7: Chairperson: Dr Tirtha Ranjeet	
11:00 am to 11:30 am	**Determinants of Graduates Students Participation in Agricultural value Chain in Benin** C J Amegnaglo, Y Y Soglo, A F Akpa and G D'Oliveira
11:30 am to 12:00 pm	**A survey of image processing techniques for agriculture** L Saxena and L Armstrong
12:00 pm to 13:00 pm	Lunch Break
Session 8: Chairperson: Dr Tirtha Ranjeet	
13:00 pm to 13:30 pm	**A review of the use of ICT to support Agricultural development in India** Pallavi Chatuphale and Leisa Armstrong
13:30 pm to 14:00 pm	**Low Cost Weather Information System** A K Tripathy, S Santhmayor, C Jagasia and T Sawant
14:00 pm to 14:30 pm	***Smart Farming to the grazing industries: Developing the next generation of technologies** M Trotter
14:30: - 15:00	**Crop water requirement for Gladiolus under different field conditions** G Chandramouli

Workshop 1: Building 3, Room: 209/211	
13:00 pm to 15:30 pm Prof. M.Moni, Professor Emeritus and Chairman, Centre for Agricultural Informatics and e-Governance Research studies, SHOBHIT University, NCR Delhi. And Prof. H K Misra, Professor, Department of	**Competency Building in Agricultural Informatics for Sustainable Development: Strategies for Roadmap for Developing Countries**

Information System, Institute of Rural Management Anand (IRMA), Anand, Gujarat & Expert (Board of Studies) and Member (Advisory Committee), Agricultural Informatics Programme, SHOBHIT University, NCR Delhi.	
Poster Session	**Building 17, Room:102**
18:00 am to 19:00 pm	**Precision Nutrient Management through use of LCC and Nutrient Expert in Hybrid Maize under Laterite Soil of India** M Banerjee, D Maiti and S Dutta **Phenology and NDVI based Remote sensing method for planting area of potato during winter season in South China** S Chen, S Huang and L Han **Computational Morphometrics of Crop Images** O. Babutunde, L. Armstrong, J. Leng and D. A. Diepeveen **Use of image segmentation techniques to improve precision in agricultural production systems** L Saxena and L Armstrong **Geospatial data mining in agricultural watersheds** SA Nallan and L Armstrong **Geospatial Decision Support System for Rice Production Planning, Monitoring and Damage Risk Assessment Under Natural Climate Hazard Events in the Cagayan Valley Region, Philippines** J Guzman **Application of Micro and Nano-bubbles CO2 under Sodium Chloride Mediated Solution for Inactivating Microorganism Growth on Shredded Green Papaya** K Chareekhot, C Wongs-Aree, P Boonyaritthongchai, S Kanlayanarat, C Techavutiporn, S Ohashi and K Nakano **An Architecture of a Decision Support System for Western Australian Agricultural Industry** T. Ranjeet and L. Armstrong
17:00 pm to 18:00 pm	Mount Lawley Campus Tour
From 19:00 pm	Welcome Function (outside, in front of café, building 12, if weather permits, otherwise inside Building 12, Cafe) Including a performance by Indigenous Dance Group

Tuesday, September 30, 2014	
Building 12, Cafe 8:00 am to 4:00 pm	Registration
Networking Breakfast:	**Building 10, Room 307/308**
Chairperson: 8:00 am to 9:00 am	Field Robotics on the Farm **Dr Robert Fitch (University of Sydney, Australian Centre for Field Robotics)**

	Building 17, Room 157
Plenary Session 9: Chairperson: N F Hansen	ICT in Education and Product Tracking in Agriculture
9:00 am to 10:30 am	**Online Education in the XXIst century: Teaching and Extension** Prof Fedro Zazueta (University of Florida, USA) **Transparency for Sustainability: Food chain challenge and Future Internet opportunities** Prof Gerhard Schiefer (Universität Bonn, Germany)
10:30 am to 11:00 am	Morning Break
Session 10: ICT challenges Chairperson: A Manjichi	
11:00 am to 11:30 am	**Analysis of effectiveness of modern Information and Communication Technologies on maize marketing efficiency in selected markets of Malawi** S Tione
11:30 am to 12:00 pm	**Challenges of using Information Communication Technologies by extensional professionals in Abia State, Nigeria** O Akinnagbe and F Uzor
12:00 pm to 13:00 pm	Lunch Break
Session 11: ICT examples from different countries Chairperson: J P Hansen	
13:00 pm to 13:30 pm	**ePublication For a Complete and Accurate Agriculture Database** L Wulaningtyas and E Nugroho
13:30 pm to 14:00 pm	**The Current Status Regarding the E-Commerce of Farmers Association in Taiwan**

	C-C Chen, C C Liang and H-P Yueh
14:00 pm to 14:30 pm	**Experiences with promoting uptake of social media amongst farmers and advisers** J P Hansen and D Marcussen
14:30 pm to 15:00 pm	**Construction of the Prototype System for LAI Measurement System Using Stereo Camera Sensor Network System** Y Kimura, A Nakajima, K Shiraishi and T Kameoka
15:00 pm to 15:30 pm	Tba
15:30 pm to 16:00 pm	Afternoon Break
Session 12: ICT examples Chairperson: V Sharma	
16:00 pm to 16:30 pm	**Framework of New MetBroker** T Kiura, K Tanaka, M Laurenson, S Honda and T Yoshida
16:30 pm to 17:00 pm	**Length of Rainy Season Prediction Based on Southern Oscillation Index and Dipole Mode Index Using Support Vector Regression** A B Hermanianto, A Buono and K K Nisa
17:00 pm to 17:30 pm	**An Artificial Neural Network for Predicting Crops Yield in Nepal** T Ranjeet and L Armstrong
17:30 pm to 18:00 pm	Tba

Grower Forum: Building 3, Room: 210/212

Session 13: Chairperson: Dr Ian Foster	
11:00 am to 11:30 am	Weather stations for agriculture in WA I Foster
11:30 am to 12:00 pm	MyCrop: agronomic app delivers in-field diagnostics K Ryan
12:00 pm to 13:00 pm	Lunch Break
Session 14: Image processing Chairperson: Dr Andreas Neuhaus 13:00 pm to 13:30 pm	
13:30 pm to 14:00 pm	**High throughput phenotyping tools for time series images in paddy fields** G Wei and S Ninomiya
14:00 pm to 14:30 pm	**Image Processing Approach for Identification of Duck Egg Fertility and Hatchability**

	S Suharni, L Lussiana, K B Seminar,Y Sukra and J Harlan
14:30 pm to 15:00 pm	**An Intelligent System For Early Detection of Food Crisis And Spatial-Based Decision Making of Potential Land Evaluation For Food Production** KB Seminar, Y Arkeman and RJ Lahay
15:00 pm to 15:30 pm	**GrIDSense: Information, Communication and Dissemination System for Water, Pest / Disease Management for Citrus Crop** S Sawant, M Bhadnake, S Suradhaniwar, S Durbha, J Adinarayana, B.V.N. Phanindra and A Zape

GFAR/FAO Forum Building 3,Room: 209/211

Dr Ajit Maru **(Global Forum of Agricultural Research)** **Gerard Sylvester** **(United Nations Food and Agriculture Organization)**	**"Forward Thinking for ICT use in Asian Agri-Food Chains**
Session 1 Providing the Background	
11:00 am to 11:15 am	**Overview of Asian Agri-food chains and Background to the Workshop** Ajit Maru
11:15am to 11.30 am	**The future of Agriculture and Agri-food chains in Asia** Robin Bourgeois
11.30 am to 11.45 am	**ICTs used in Agri-food chains** Gerard Sylvester
11.45 am to 12:00 pm	**Traceability Systems** Gerhard Schiefer
12:00 pm to 13:00 pm	Lunch Break
13:00 pm to 15:00 pm	**A) What could be the Agri-food systems of the future?** **B) What are the Agri-food systems we want or do not want?** Group Discussion (2-3 groups)
15:00 pm to 15:30 pm	**Plenary of Groups**
15:30 pm to 16:00 pm	Afternoon Tea
Session 3 **Facilitated Group Discussion**	
16:00 pm to 17:30 pm	**A) What could be the role(s) of ICTs in the future Agri-food systems we want?** **B) What actions can be taken for achieving the desired role(s) of ICTs in future Agri-food systems?**

	Group Discussion (2-3 groups)
17:30 pm to 18:00 pm	**Plenary of Groups**

AFITA Board Meeting	Building 10, Room 307/308
Chairperson: L. Armstrong	
11:00 am to 12:30 pm	

Building 3, Room: 101	
Session 15: Chairperson: TBA	
11:00 am to 11:30 am	**Agricultural Big Data Analyzing System with Open-source Technologies and CLOP (CLoud Open Platform)** M Hirafuji, A Itoh, T Kiura and T Yoshida
11:30 am to 12:00 pm	**Web-Based Training in eAgriculture for Agricultural College** P Nilsook, L Armstrong, P Taechatanasat and T Ranjeet
12:00 pm to 13:00 pm	Lunch Break
Session 16: Chairperson: TBA	
13:00 pm to 13:30 pm	**Towards an Agriculture Knowledge Ecosystem: A Social Life Network for Farmers in Sri Lanka** A Ginige, L De Silva, T Ginige, P Di Giovanni, A Walisadeera, M Mathai, J Goonetillake, G Wikramanayake, G Vitiello, M Sebillo, G Tortora, D Richards and R Jain
13:30 pm to 14:00 pm	**AGDATEX, a Method to Communicate Grain Production Information** A Diggle, S Porter and A Macgregor
14:00 pm to 14:30 pm	**Improving livelihood impacts of foreign direct investment in agriculture in West Africa: the role of the policy and legal framework** N G M Armel
14:30 pm to 15:00 pm	**Perception of Farmers towards Mobile Based Information and Communication Technology in Agriculture: A Case of Kisan Call Centre in Guntur District, Andhra Pradesh, India** V Sharma and G Mahra
15:00 pm to 15:30 pm	Tba

Poster Session	**Building 17, Room:102**
18:00 am to 19:00 pm	**Development of Integrated Environmental Knowledge base System for Agricultural Decision Support** R Dutta **Next Generation Agriculture and Rural Development** D Khanna and C Bhatt **Farm Management Information Systems Architectures and users expectations: towards a new ecosystem?** G Carli, E Pignatti and M Canavari **Strategies for Implementation of Indonesia eGovernment** N Setyabudhi **TOTALTrace – Extendable Traceability for Safe, Sustainable and Resilient Food Network** Rakesh Vazirani **Using mobility to improve economic and financial management of Indian Farmers** P Shah, N Gandhi and L Armstrong **Multilanguage online eAgriculture courses for Thai agriculture science students** P Taechatanasat, L Armstrong and P Nilsook **An efficient microwave online stored rice disinfestation system** Y Wan, C-Y Chen, M-C Hong, M-H Lai **Use of Information and Communication Technology on Sustainable intensification of Maize and Legume cropping systems in Mozambique** Angela Manjichi and Daniel Rodriguez **Study of Supply Chain Management for Mango using SCOR Model in Gujarat** A Agarwal **Households' Perception of the Causes of Poverty in the South West of Nigeria** J O Ajayi **ICT framework to guide policy for Indian agriculture** Pallavi Chatuphale and Leisa Armstrong

Wednesday, October 01, 2014

Field/Industry Tours	
6:00 am to 17:00 pm	**Country Tour (Perth – York – Cunderdin – Merredin)**
9:00 am to 16:00 pm	**City Tour (Landgate – Kings Park – iVec)**
Conference Dinner:	
18 pm to late	**Sittella Winery in the Swan Valley**

Thursday, October 02, 2014

Building 12, Café 8:00 am to 4:00 pm	Registration

Building 17, Room 157	
Plenary Session 17: Chairperson: Prof R Norton	
9:00 am to 10:30 am	**Optimising the Western Australian grain industry** Mr Matthew Regan (CBH, Perth) **Nutrient Expert®: a decision support tool for small holder farmers** Prof Mira Pampolino (IPNI, Philippines)
10:30 am to 11:00 am	Morning Break
Session 18: Chairperson: Prof J Adinarayana	
11:00 am to 11:30 am	**Status and strategies on ICT/ICM for agricultural research for development in the Asia-Pacific region** A G Sylvester, S. Attaluri and A Maru
11:30 am to 12:00 pm	**Gender and adoption of cowpea innovation in the context of climate change in Benin** G Adjimoti
12:00 pm to 13:00 pm	Lunch Break
Session 19: Chairperson: TBA	
13:00 pm to 13:30 pm	**Two Layered Ensemble Framework for Soil Moisture Estimation** R Dutta
13:30 pm to 14:00 pm	**Crop Yield Prediction Systems for Rainfed Areas and Mountainous Areas in Thailand** K Tanaka and T Kiura
14:00 pm to 14:30 pm	**Application of Cellular Neural Networks and NaiveBayes Classifier in Agriculture** O Babatunde, L Armstrong, J Leng and D Diepeveen
14:30 pm to 15:00 pm	**ICTs to improve family farming** A. Maru, R. Bourgeois and W. Mayer
15:00 pm to 15:30 pm	**Decision Support System on Spatial Planning for Food Security Policy**

	Analysis (Case Study: Jawa Barat Province) H Hardjomidjojo, H Imantho and D Suyamto
15:30 pm to 16:00 pm	Afternoon Break
16:00 pm to 18:30 pm	Closing Ceremony Panel discussion AFITA General Assembly Awards

Grower Forum: Building 3, Room: 210/212

Session 20: Chairperson: A Foss	
11:00 am to 11:30 am	**A unique interactive Decision Support System (NUlogic®) for advisors to guide sustainable and profitable fertiliser and soil amendment applications in Western Australia (Part 1 & 2)** A Neuhaus, J W Bowden, D Hamilton
11:30 am to 12:00 pm	**A web-based database to support soil test calibration** R Norton, S Speirs, M Conyets, K Peverill, C Dyson and G Watmuff
12:00 pm to 13:00 pm	Lunch Break
Session 21: Chairperson: A Neuhaus	
13:00 pm to 13:30 pm	**Improving Fertiliser Spreader Accuracy using Numerical Modelling** M Roesner and R Waring
13:30 pm to 14:00 pm	**Soil and plant testing combined with nutrients and alkalinity balance calculations can improve soil amendment decisions by growers** G Anderson, M Harries and P Dolling
14:00 pm to 14:30 pm	**Sponsor address (GRDC)** TBA
14:30 pm to 15:00 pm	**Sponsor address (CSBP)** TBA
15.00 pm to 15:30 pm	

Building 17, Room: 125	
Session 22: Chairperson: Dr Tirtha Ranjeet	
11:00 am to 11:30 am	**Economics of Cassava Production in Ondo State, Nigeria** J O Ajayi
11:30 am to 12:00 pm	**ICTs for Agricultural Extension: A study in Ratnagiri district of Maharashtra, India** N Gandhi and L Armstrong
12:00 pm to 13:00 pm	Lunch Break
Session 23: Chairperson: Dr Tirtha Ranjeet	
13:00 pm to 13:30 pm	**Role of ICTs in improving drought scenario management in India** S Wankhede, L Armstrong and N. Gandhi
13:30 pm to 14:00 pm	**ICT and Agricultural knowledge dissemination at Farm level in Eastern India** R. Jain, U. Ahuja, R. Bala, A. Kumar and R. Chand
14:00 pm to 14:30 pm	**Review of agricultural eTraining approaches for rural India.** S Karandikar and L Armstrong
14:30 pm to 15:00 pm	**Mobile Applications for Indian Agriculture Sector: A case study** Pratik Shah, Niketa Gandhi and Leisa Armstrong
15:00 pm to 15:30 pm	**Application of ICT Tools for Climate Change and Disaster Management in Bangladesh** M. A Zaman and A.K.M. A Ahad
16:00 to 16:30 pm	**ICT4D: A Survey of ICT-in-Agriculture in Kenya and other Africa Nations** F Awuor, G Raburu and D Rambim
Building 3 Room 209/211	
Session 24 Chairperson : TBA	
11:00 am to 11:30 am	**A network that really works – the application of artificial neural networks to improve yield predictions and nitrogen management in Western Australia** J Leng, A Neuhaus and L Armstrong
11:30 am to 12:00 pm	**Pre-processing spatial data for geospatial data mining: A watershed case**

	study S A Nallan and L Armstrong
12:00 pm to 13:00 pm	Lunch Break
Session 25 Chairperson : TBA	
13:00 pm to 13:30 pm	**Decision support system data for farmer decision making** P.Taechatanasat and L. Armstrong
13:30 pm to 14:00 pm	**Fisheries Research Using Digital Tablets in Myanmar** X Tezzo, E Baran, G Johnstone, G Mille, W K Ko and Z Z Wah
14:00 pm to 14:30 pm	Tba
14:30 pm to 15:00 pm	Tba
15:00 pm to 15:30 pm	Tba

Poster Session	**Building 17, Room:102**
17:30 am to 19:00 pm	**Web based tools to improve on farm water use efficiency** J Dee, L van Wyk and J Storry **Effects of Climate Change on the Production and Profitability of Cassava in the Niger Delta Region of Nigeria** J O Ajayi **Controlling Sprinkler Rotation Speed to Optimize Water Distribution Uniformity of Travelling Rain Guns** G Ghinassi and E Pezzola **Google glass in Agriculture** N F Hansen, J P Hansen and P A L Munksgaard **Rhizobium legume symbiosis in soils of Algeria** O Abdelhakim **Validation of Site Specific Nutrient Management for Kharif rice in Coochbehar district of West Bengal, India.** Abhas Kumar Sinha, Parthendu Poddar and Prabir Mukhopadhyay **Decision Support Framework for Indian Agricultural Systems** N Gandhi and L Armstrong **Predictive Modeling of Drought Using Spatial and Temporal Data Mining** S Wankhede, L Armstrong
From 19:00 pm	Farewell Function (outside, in front of café, building 12, if weather permits, otherwise inside Building 12, Cafe)

Friday, October 03, 2014

Post-Conference Workshop: Building 17, Room: 201	
9:00 am to 16:00 pm Mr Mark Heffernan	Introduction to Dynamic Modelling with STELLA and iThink using iPad or Desktop

Saturday, October 04, 2014

Post-Conference Workshop: Building 17, Room: 201	
9:00 am to 16:00 pm Mr Mark Heffernan	Introduction to Dynamic Modelling with STELLA and iThink using iPad or Desktop

Building: 17, Room: 102 = Paper Preparation room

Building 13, Room: 222 = Conference Secretariat

Keynote Speakers

Professor David Lamb

Project Leader CRC for Spatial Information and Leader of Precision Agriculture Research Group at University of New England, Australia) (dlamb@une.edu.au)

The future of precision agriculture as it meets the internet of things (IoT)

The role of internet in agriculture is fast approaching a 'third wave'; 'Wave 1' was connecting people to data via www (1990's); 'Wave 2' was about connecting people to people, viz, Facebook and Twitter (2000's); and 'Wave 3' will connect people to 'things' (2010-). Advances in wireless sensor networks (WSNs) coupled with in-situ, low-cost sensors of soil moisture, plant biomass and local climate conditions; the so-called 'internet of things', means our fields are set to become sources of high quality, local yet synoptic, real-time, biophysical data. This data is suitable to integrate with plant growth and water-nutrient flux models to quantify the growth and development of our crops and pastures in real time. Add to this intelligent and autonomous systems; both on ground and in the air to meet the needs of surveillance, timely management and improving workflow.

The future of PA future is inextricably linked to our ability to 'connect' farms via the internet. The recent review of NBN Co's satellite and fixed-wireless programmes estimated the demand for high-speed internet in rural and regional Australia to be three times greater than originally anticipated only 6 years earlier. PA now, and certainly in the next 5 -10 years will be about our ability to communicate with, within and between farms. Connection and communication is the key.

Professor Fedro S. Zazueta
Professor in Agricultural and Biological Engineering at the University of Florida, USA.

Online Education in the XXIst century: Teaching and Extension

Information Technology (IT) has brought about a paradigmatic change to the delivery of educational materials in higher education and Agricultural Extension. This presentation focuses on the evolution of information delivery systems in this context, including vision, strategy, implementation and outcomes using the US Land Grant University System as an example, specifically the University of Florida. Key success factors, as well as a discussion of current IT drivers and their current and possible future impacts are presented. Finally, the importance of awareness of technological convergence and competency are discussed.

Dr Tim Wark,

Transformation Capability Platform Leader, Sensors and Sensor Networks (Computational Informatics, CSIRO Australia)

The role of information & communication technologies in increasing agricultural productivity

Productivity increases in agricultural enterprises are increasingly driven by the ability to reduce costs in the exchange of information or services, as well as improving the quality of information around which key management decisions are made. This talk will present an overview around key trends in emerging information & communication technologies and how these might impact the future of agriculture. The platforms described have the potential to greatly improve connectivity between the current state of the agricultural enterprise, its manager and a range of external service providers, experts, information sources, communities of interest, as well as markets both national and overseas. New business models will need to evolve which can take advantage of information which can be shared between multiple enterprises while still maintaining a competitive marketplace. These new technologies are expected to form the backbone of the next generation of agri-environmental service businesses linking data and translating it into insight.

Professor Gerhard Schiefer

Management Board Member, FoodNetCenter and Chair of Research Group "Food Chain Management" at University of Bonn, Germany schiefer@uni-bonn.de

Transparency for Sustainability: Food chain challenge and Future Internet opportunities

Transparency for sustainability covers a broad range of issues reaching from tracking and tracing along the chain (from farm to fork) to food safety and quality assurance, the consideration of environmental footprints of various kind, the matching of logistics with production and retail needs or the provision of appropriate information to consumers (forward information) and producers (backward information). As such it is a key success factor for the success of activities towards improvements in sustainability.
Reaching transparency is dependent on cooperation among all actors in the chain, on agreements on the information flow, on the appropriate transformation of information into signals the recipient can deal with, and on the availability of a suitable communication infrastructure based on networked devices and a communication network that is easy to use, fits the needs of small and medium sized enterprises (incl. farms) which represent still

the vast majority of enterprises in the food sector, and is flexible enough to support dynamically changing trade relationships.
The presentation will touch the various aspects but concentrate on the communication infrastructure and ongoing efforts to overcome the traditional barriers in the establishment of broadly accepted communication networks (which do not depend on centralized data bases or centrally managed information systems) through concepts and development activities utilizing capabilities of what is called the “Future Internet”. It is initiated by a major research and development thrust of the European Union to better match upcoming technological developments in the digital economy with business sector needs, and specifically in the food sector, to improve transparency for sustainability within the chain and towards consumers.

Mr Matthew Regan

Grain Quality Manager, Consolidated Bulk Handling (CBH, Perth Australia)

Optimising the Western Australian grain industry

The CBH Group is Australia’s leading grain business, operating a unique integrated supply chain from grower to customer. Owned and controlled by around 4,300 Western Australian grain growers, the core purpose of the CBH Group is to create and return value to growers. With a network comprising of 197 receival points and 4 Panamax port facilities spread across a grain growing area of 320,000 square kilometres, harnessing developments in Information Technology for the betterment of the business and value return to grain growers has always been at the forefront of the CBH Group’s operations. Mat Regan, CBH Grain Quality Manager, will present on the key projects implemented by the Group in recent years to showcase the innovative ways in which the business has used information technology to optimise the WA grain industry to deliver real value to grain growers.

Professor Mira Pamplino (International Plant Nutrition Institute, SEAP Phillipines)

Nutrient Expert®: a decision support tool for smallholder farmers

Mirasol F. Pampolino*, Ping He, Kaushik Majumdar, Shamie Zingore, Thomas Oberthür, Adrian Johnston

Intensifying crop production will require crop and nutrient management strategies that produce high yields and improve farmers’ economic benefits, while protecting the environment. Nutrient Expert® (NE) is an easy-to-use, computer-based decision support tool that can rapidly provide fertilizer recommendations for an individual farmer’s field with or without soil testing results. It allows users to draw required information from their own

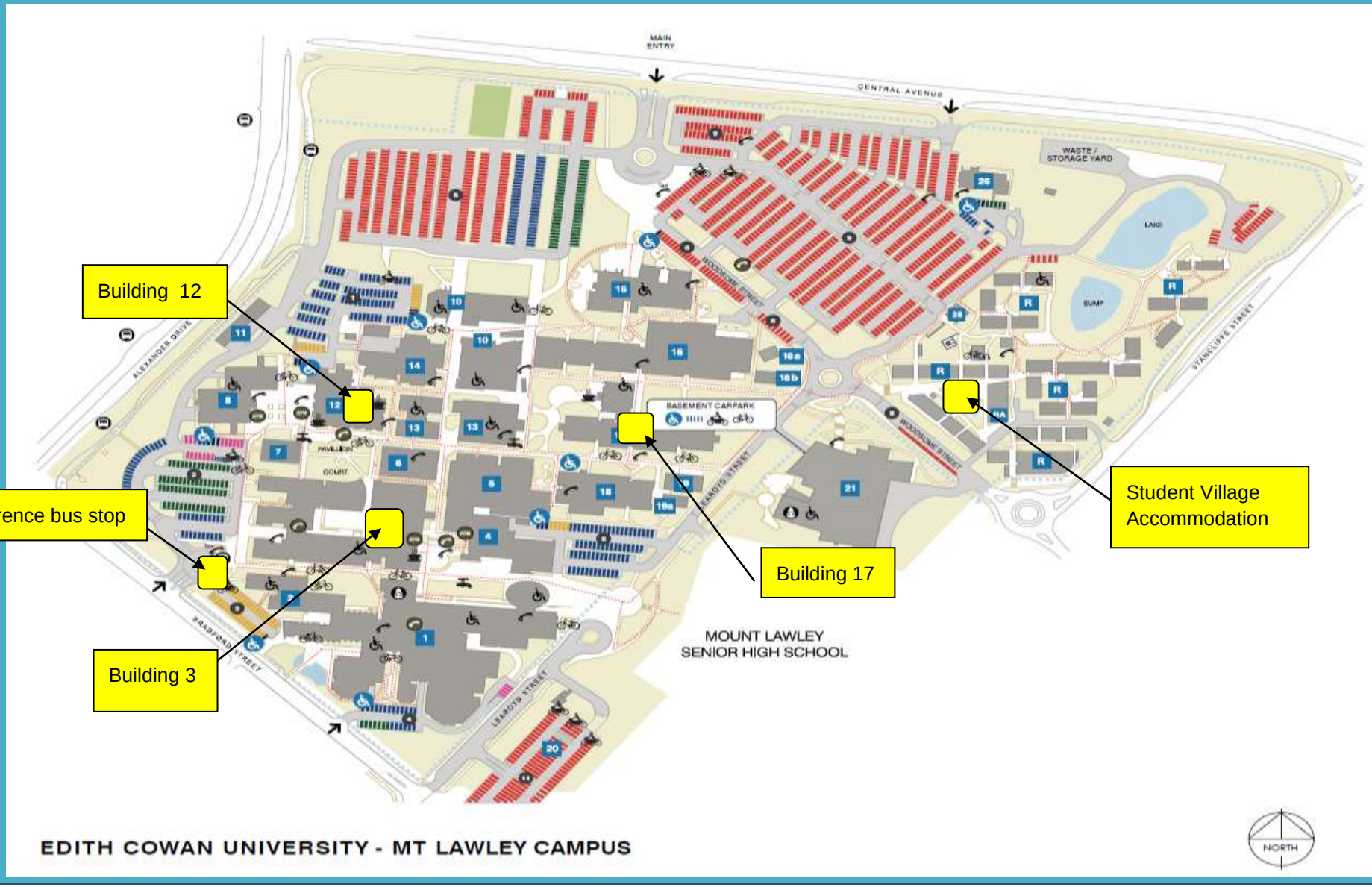
experience, farmers' knowledge of the local region and farmers' practices. NE recommendations are based on yield response functions using the QUEFTS model and the principles of site-specific nutrient management (SSNM). Versions of Nutrient Expert® have been developed for different crops (maize, wheat, rice, soybean) in different geographies (i.e. Southeast Asia, South Asia, China, sub-Saharan Africa). NE development involved the use of agronomic data collected from field experiments, consultation meetings with local experts and stakeholders, and multi-location field validation. NE recommendations were tested against farmer's fertilizer practice (FFP) and local recommendations (if any) during 2010-14 for maize in China, India, Indonesia, and the Philippines and for wheat in China and India. Agronomic and economic benefits of using NE were assessed at all sites. Environmental benefits were assessed at selected sites through determination of fertilizer use efficiency and estimation of global warming potential. For both maize and wheat, NE recommendations for N, P, and K varied across locations reflecting the differences in site characteristics and farming practices (climate, soil, cropping system, farmers' yield and inputs, residue management, etc). NE increased fertilizer rates where farmers' application were below optimal rates, and reduced rates when farmers over applied fertilizer. In India, NE recommendations increased grain yield and economic benefits in maize and wheat over the current farmers' practices; similar trends were observed for maize in Indonesia and the Philippines. In China, where farmers' yields are already close to the attainable yield, NE improved fertilizer N use efficiency by reducing N application while maintaining high yields. In northwest India, lower global warming potential has been indicated in wheat with NE-based recommendations than FFP. NE promotes balanced application of nutrients and efficient use of fertilizers by providing recommendations based on crop nutrient requirements tailored to a farmer's specific yield goals and location-specific conditions. NE is effective in providing recommendations that can increase smallholder farmers' yields and profits. NE also helps reduce potential environmental impacts from excessive or inefficient use of fertilizers. Field-validated versions of NE are available for download at software.ipni.net.

Dr Robert Fitch Senior Research Fellow with the Australian Centre for Field Robotics (ACFR) , University of Sydney, Australia

Field Robotics on the Farm

Over the last five years there has been a rapidly growing interest in the use of automated machinery and software processes amongst various agricultural and environment groups. The farm of the future will likely involve a 'system of systems' where teams of relatively small robots and sensors work together to collect information and perform mechanical tasks. In this talk, I will present our work in the development of robotics and intelligent systems for improving land and labour productivity of farms, and will provide examples from the broad-acre agriculture, tree crop, and vegetable industries. With better sensing, data analytics, and real-time control, robots will be able to collect vast amounts of precise information about the health and maturity of crops. This information, along with the automation of mechanical processes, will help to increase the efficiency of farming, leading to better yield and profitability. We will also start to see new capabilities such as variable rate planting and fertigation, minimal (if any) chemical usage, and selective harvesting. Through these advances, agricultural robotics has the potential to transform the way food is grown, produced, and delivered.

Map of Conference Venue



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