

Precision Farming

Measures taken to ensure success



Presented by
David Speller
Owner Applied



Demand for Chicken Meat

- Demand has seen a consistent trend



Key Economic Factor

- Margins going one way in real terms



Net Effect on How We Farm

- We need better management
- Use of Data to forecast and monitor
- We need to embrace sensor technologies as they develop
- Need to understand how to farm with the reductions in the use of medication
- Open our eyes to possibilities
- Look outside agriculture, others have been here before, e.g airline sector

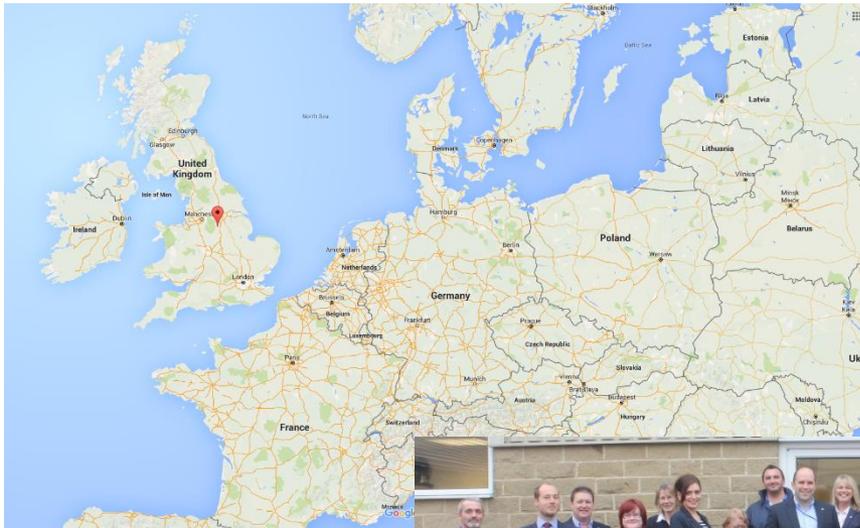
So Who Am I?



- Initially a Broiler Farming Business
- Owner Farmer but contract manage 10 other sites as well
- Daily monitoring / Consultancy on further farms
- Covering 3,000,000 birds producing around 20m birds per annum
- Remote optimising in N Ireland & Australia
- Involved in many innovation projects

Where are We Based

Chesterfield, Derbyshire, UK



Sites Currently Managed



Discussions with Peru

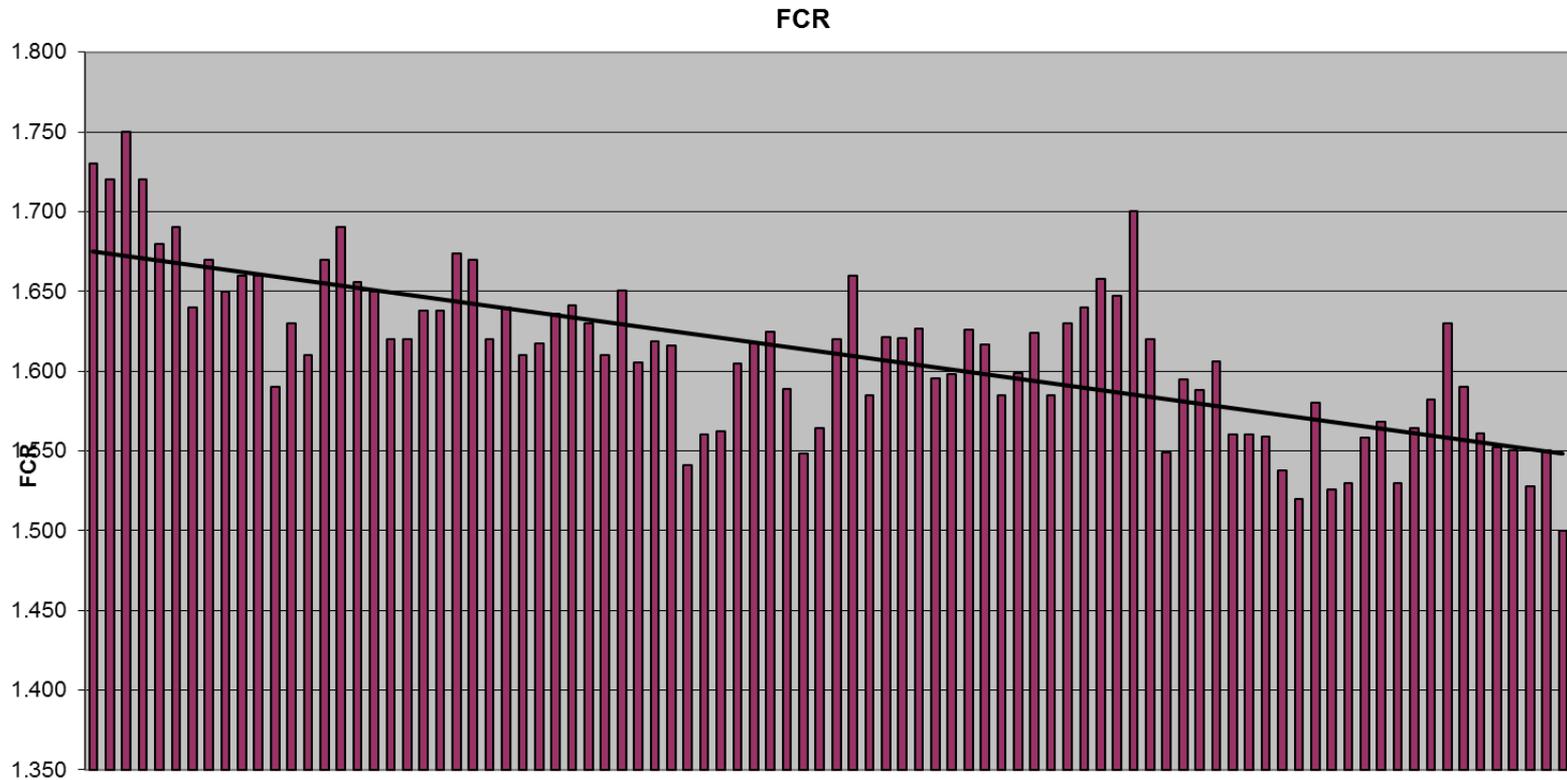
Active in Australia



Case Study to look at Precision Farming

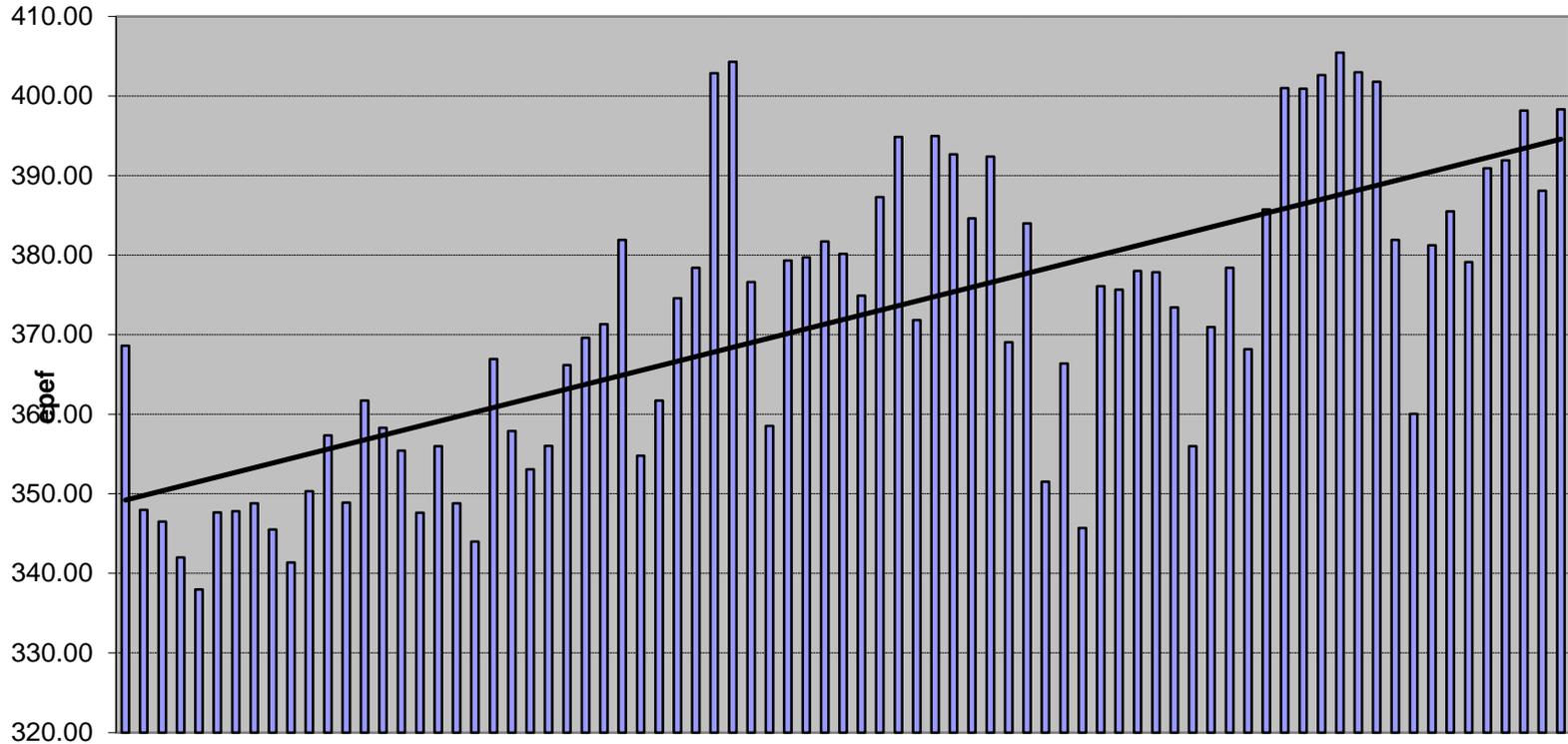
- Lower Farm
- 180,000 birds
- 4 houses 320' x 74' (100mtr x 23mtr)
- Fancom MTT ventilation
- UFH
- Biomass heating
- Single entry point
- Eyenamics, microphones, CCTV, Porphyrio, etc

FCR at Lower Farm

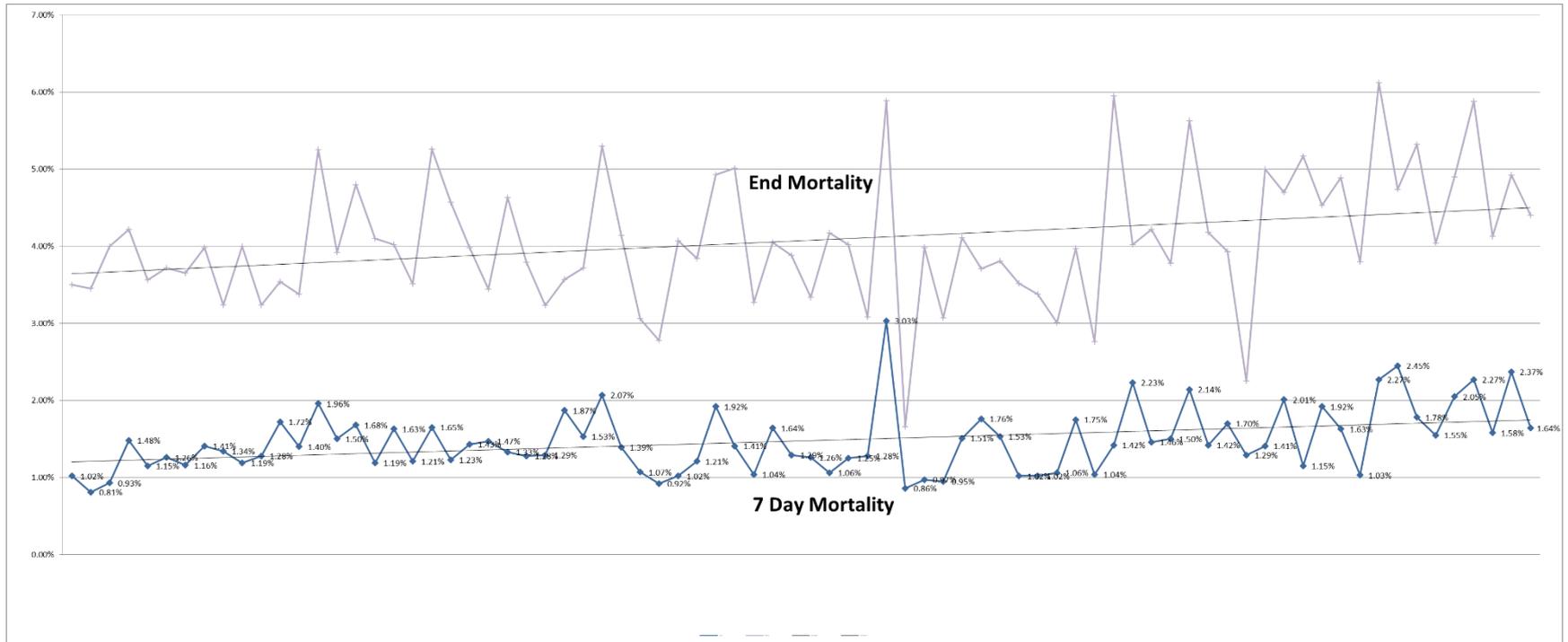


EPEF

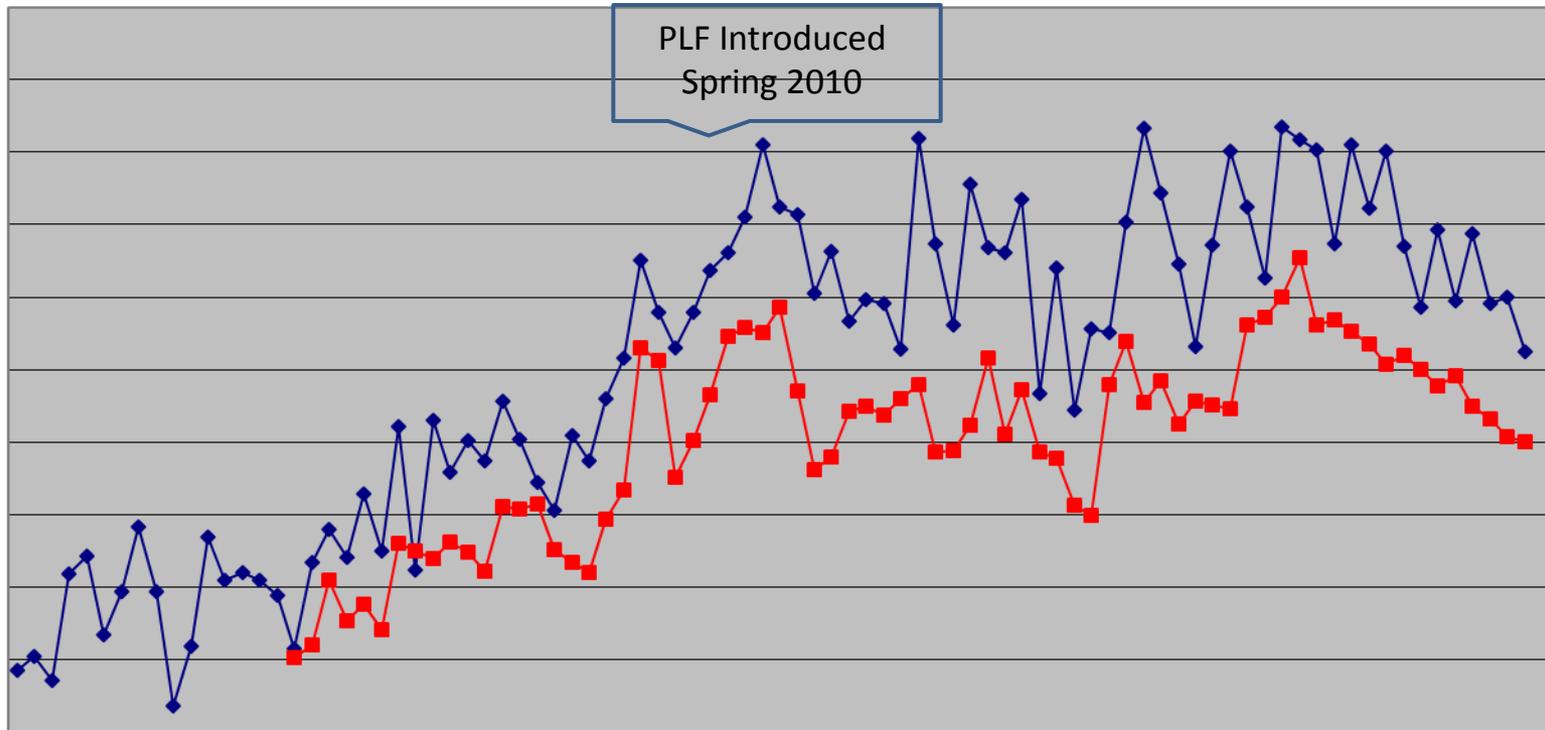
Lower Farm epef



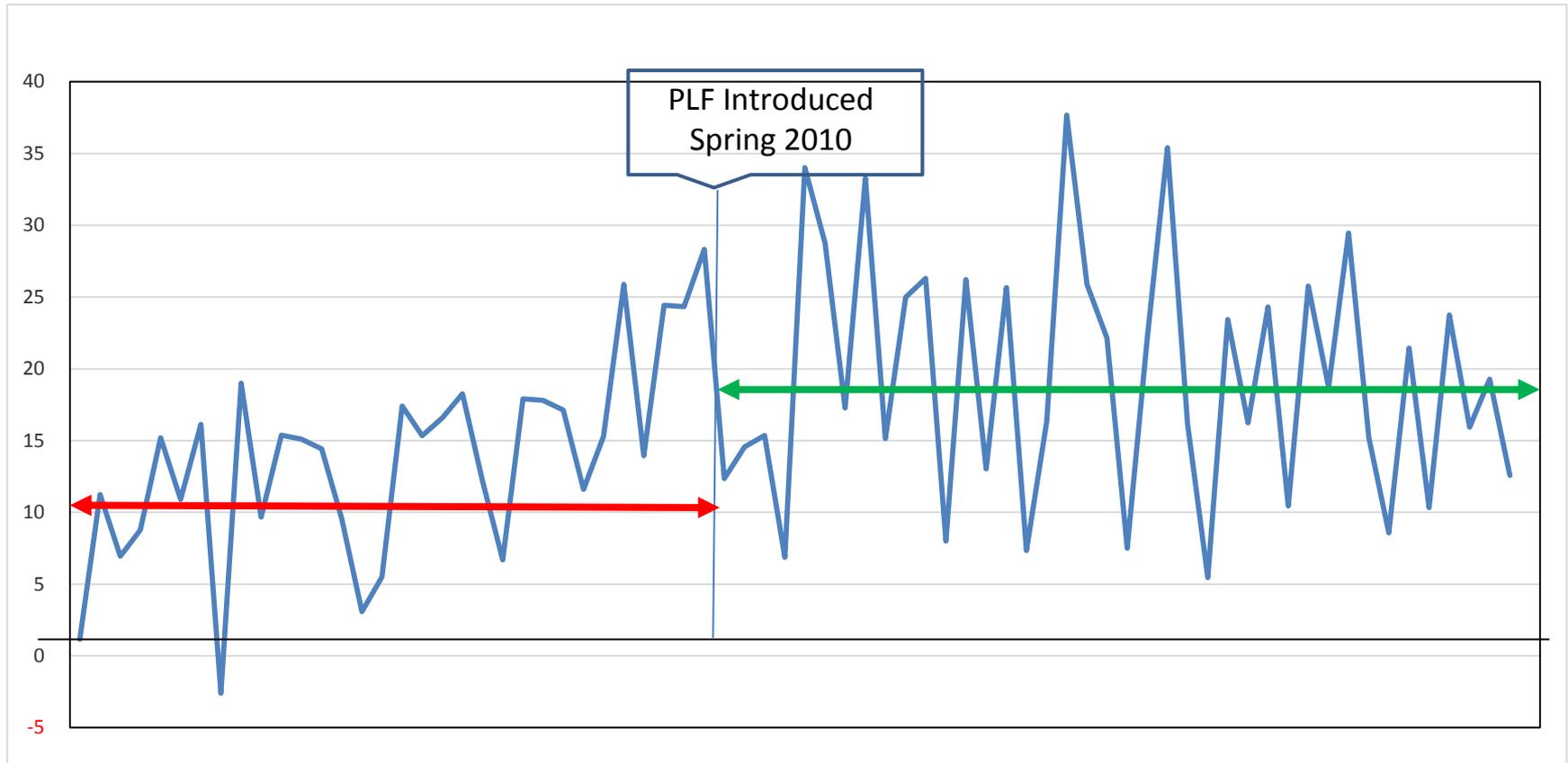
Lower Farm Mortality



Has Precision Paid For Itself?



Increased Margin (Over 6 years +240,000 Euros)



The Current Problem on Farm

- Birds reach kill weight quicker
- Margins are reducing
- Technology developing faster than farmers can understand it
- Recruiting farm staff is difficult
- Essential to consider prevention and/or react fast to an issue
- A more demanding bird, skills demand on staff, tighter margins leading to increased risks.
- Facility design needs to consider all the above – technology, biosecurity, staff expectations, demands on staff, efficiency, etc

The Possible Solution

- As with when you buy modern vehicles they are monitored automatically during use by remote services
- As with new drivers being monitored by trackers new or inexperienced farm staff can be monitored
- Centralised data monitoring has the capability to monitor every shed every day through imagery & data
- Experienced data analyst and specifically designed software can see trends as they are happening rather than just an alarm based system

How Do We Achieve This?

- An understanding of the chickens from farming chickens
- Skilled Staff who have worked on farms
- Remote access to data and imagery
- Development of software for analysis
- Close communication with the farm manager
- Continual analysis of trials data
- Implementation of innovation

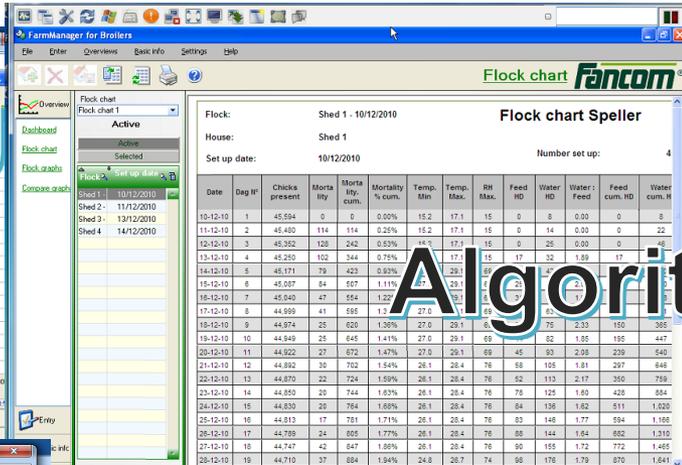
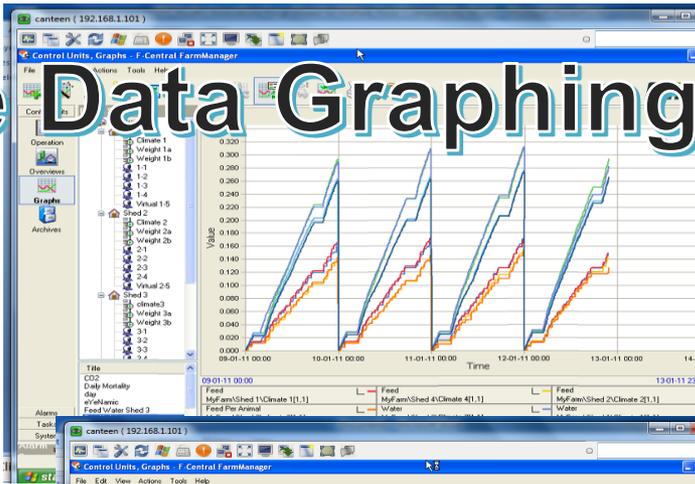
OPTIFarm

- Unique service - not just data gathering
- Making management decisions on the data
- Helping to remotely optimise /control facilities
- Potential add on to veterinary services
- Proven potential to reduce anti biotic usage
- Potential to monitor supply chain
- Embracing business intelligence



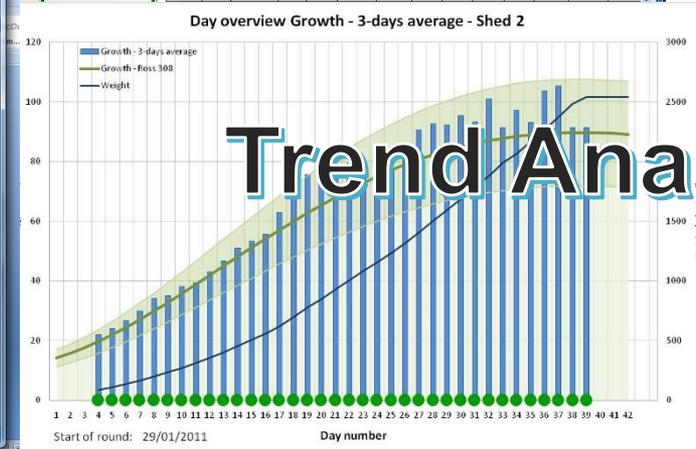
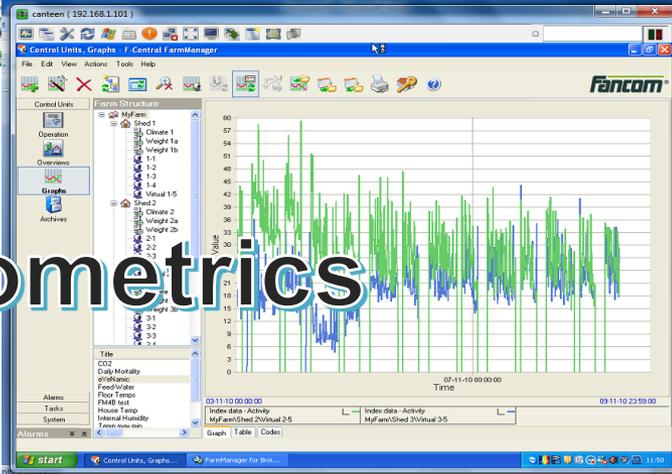
Continual Monitoring of Birds Data

Live Data Graphing



Algorithms

Biometrics



Trend Analysis

Monitoring Dashboard

Live monitoring

Multi platform monitoring

Comparison across farm /platform

Multi site monitoring

Client login

Learning software

Instruction to staff

Staff feedback via app

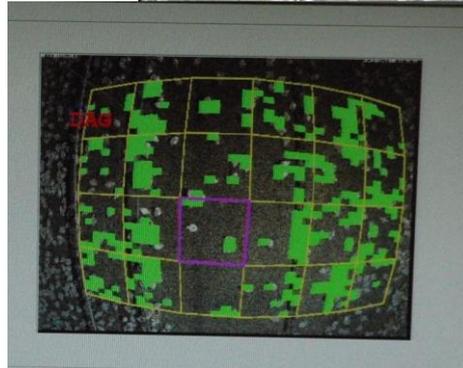


Various Camera Technologies

CCTV



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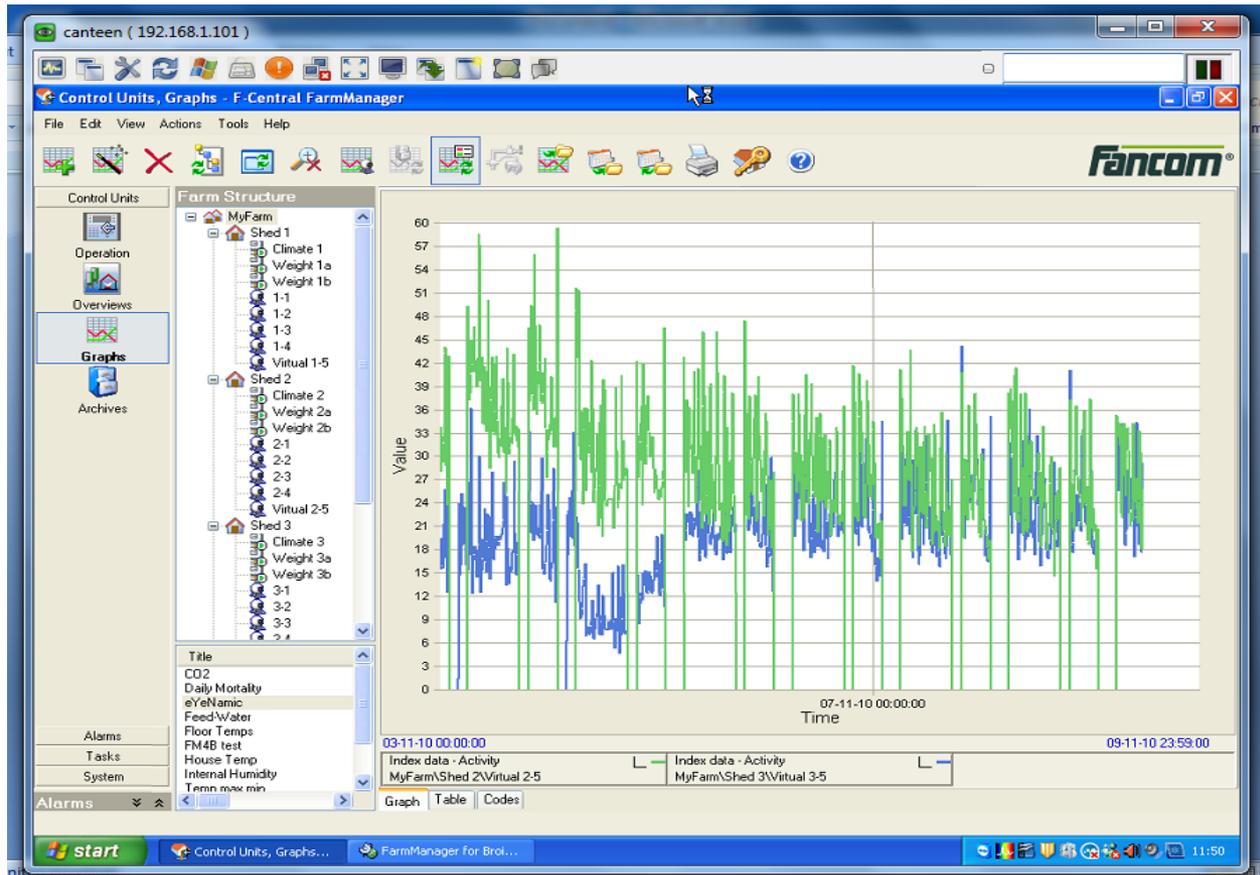


Photographs

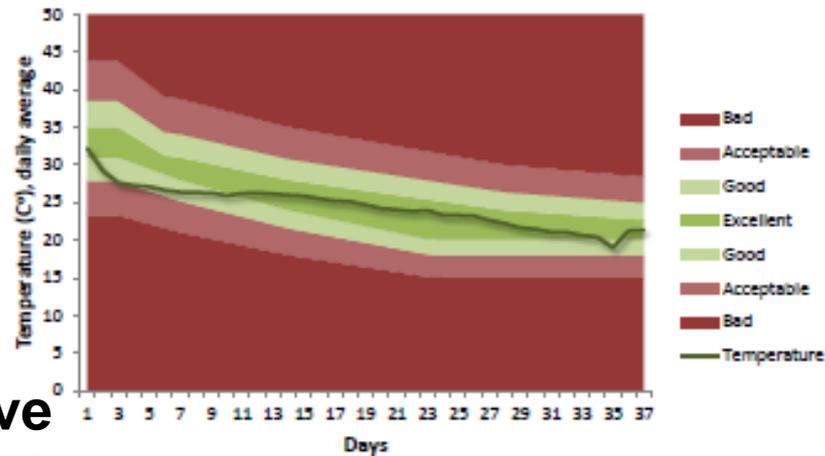


Behavioural Data Management

Managing Poor Chick Activity

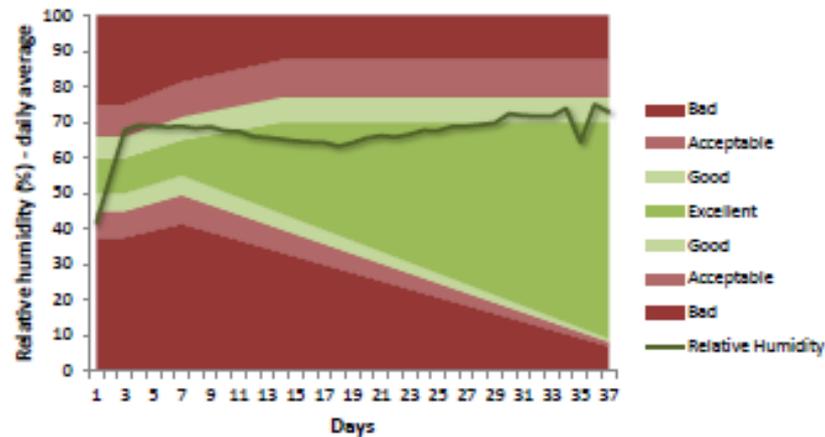


Temperature



Parameters have been developed

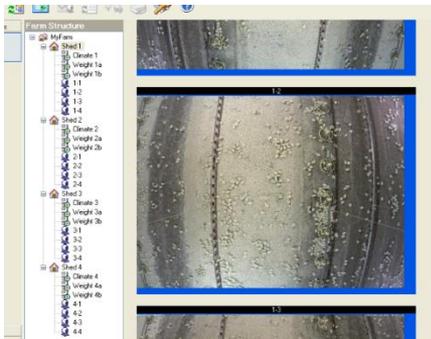
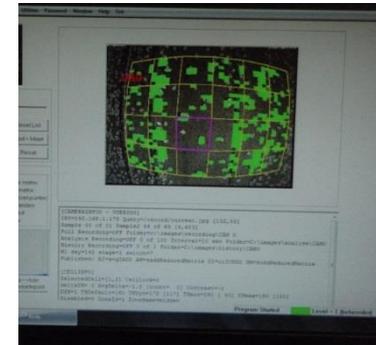
Humidity



Behaviour & Welfare Monitoring

Welfare dashboard - Shed 1

Welfare Criteria	Welfare Measures	Welfare Category
Absence of prolonged hunger	Feed	Excellent 
Absence of prolonged thirst	Water	Excellent 
Comfort around resting	Total duration darkness	Bad 
	Longest darkness period	Bad 
Thermal comfort	Temperature	Good 
	Humidity	Excellent 
	CO2 concentration	n/a
Ease of movement	Stocking Density	Excellent 
	Distribution	Good 
	Activity	Excellent 
Absence of diseases	Mortality	Acceptable 



The Benefits

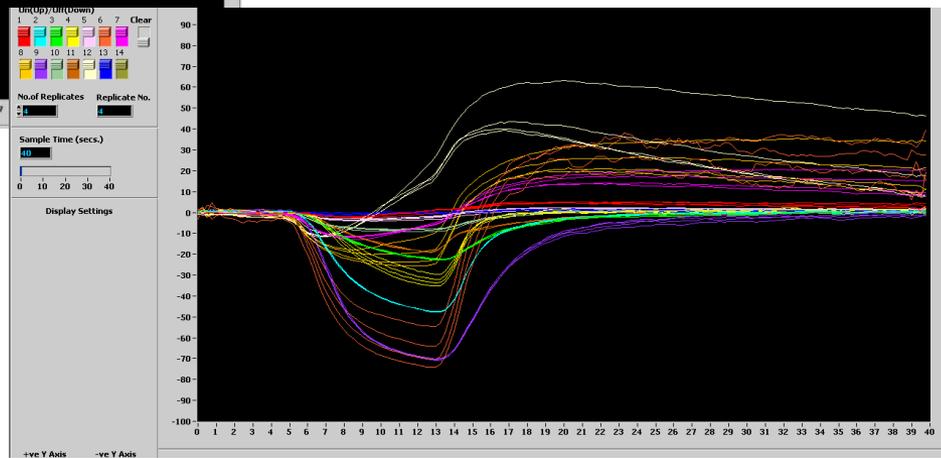
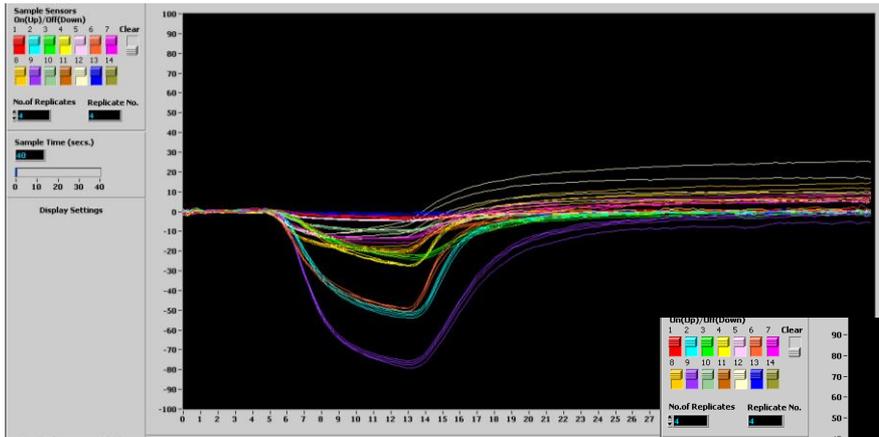
- We know of a problem and raise a concern or, if required, correct it before the farmer even knew there was a problem
- All the technical abilities of the equipment are utilised
- Potential to demonstrate welfare standards achieved
- Data fed back will enhance future management & planning
- Using networking technologies geographic boundaries don't exist

Some of our key future goals

- Immersive technology
- Mobile sensors on robots
- E Noses
- Biometric sensors
- Electronic Water regulators
- Robotic interactions with animals
- More autonomous computer control of sheds



E Nose Trials Graph



Possible Pitfalls

- Initial capital outlay
- Recruitment of staff who see the vision
- Staff that are good with animals normally means poor with technology
- Demands of high pressure cleaning and harsh detergents & disinfectants in the houses
- Poor internet speeds on farm
- Numerous different data formats
- Cost of continual development of technology

Its not all about the Computers!

LED Lighting
Vs
HF
Fluorescent



Sloping Floors & Water Management

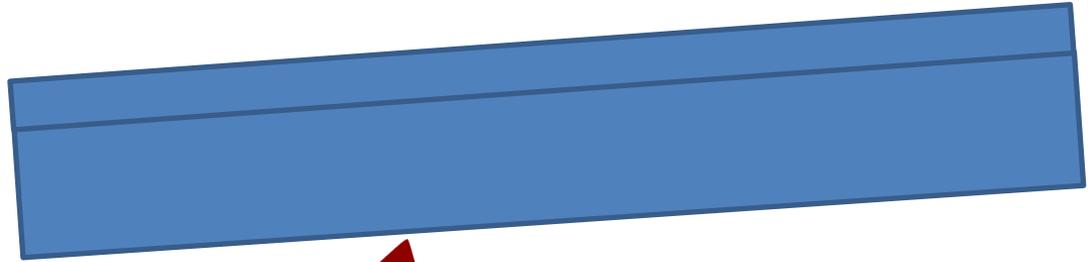
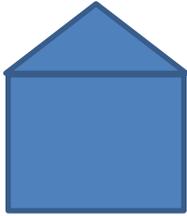
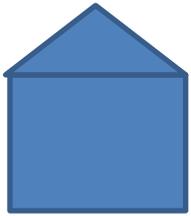


Regulator End
30mm

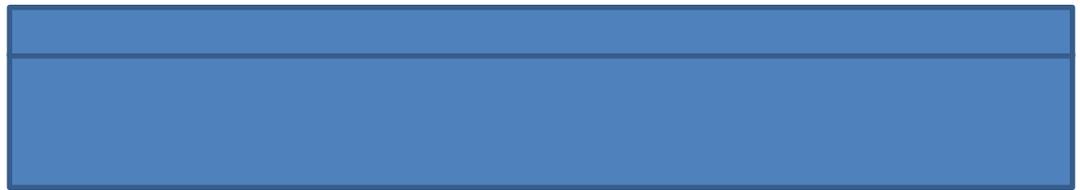
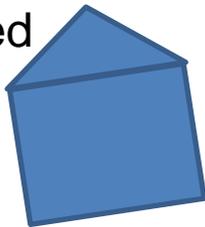
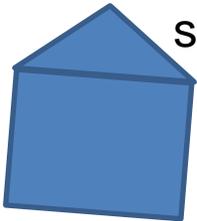
Far End
130mm



Slope back to front of shed



Slope one side to the other in the shed



Blue Chick Feed Paper



Further Development Potentials

- Building designs to incorporate sensors and technology
- Consider individual birds demands and consider variable in house conditions not complete uniformity
- Various in shed areas, feeding, drinking, resting, dust bathing
- Biodegradable Sensors/ Individual bird sensors
- Use of building materials that enhance cleaning and biosecurity, e.g. not naked concrete walls
- Clever ways to clean & disinfect (oxidising paints, ozone, non chemical solutions)



Precision Farming

No super hero required!!



David Speller
david@appliedgroup.org.uk
Twitter: @appliedpoultry
www.applied-group.co.uk
+44 (0)1246 569066

