



PLF:

pathways to commercialisation

Rumen telemetry as an aid to managing  
water intake

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# Introduction

- A brief history of eCow and PLF
- What we thought rumen telemetry would show
- What happened to the dream ?
- How ideas evolve (water intake paper)
- What our experience leads us to.

# History of rumen telemetry

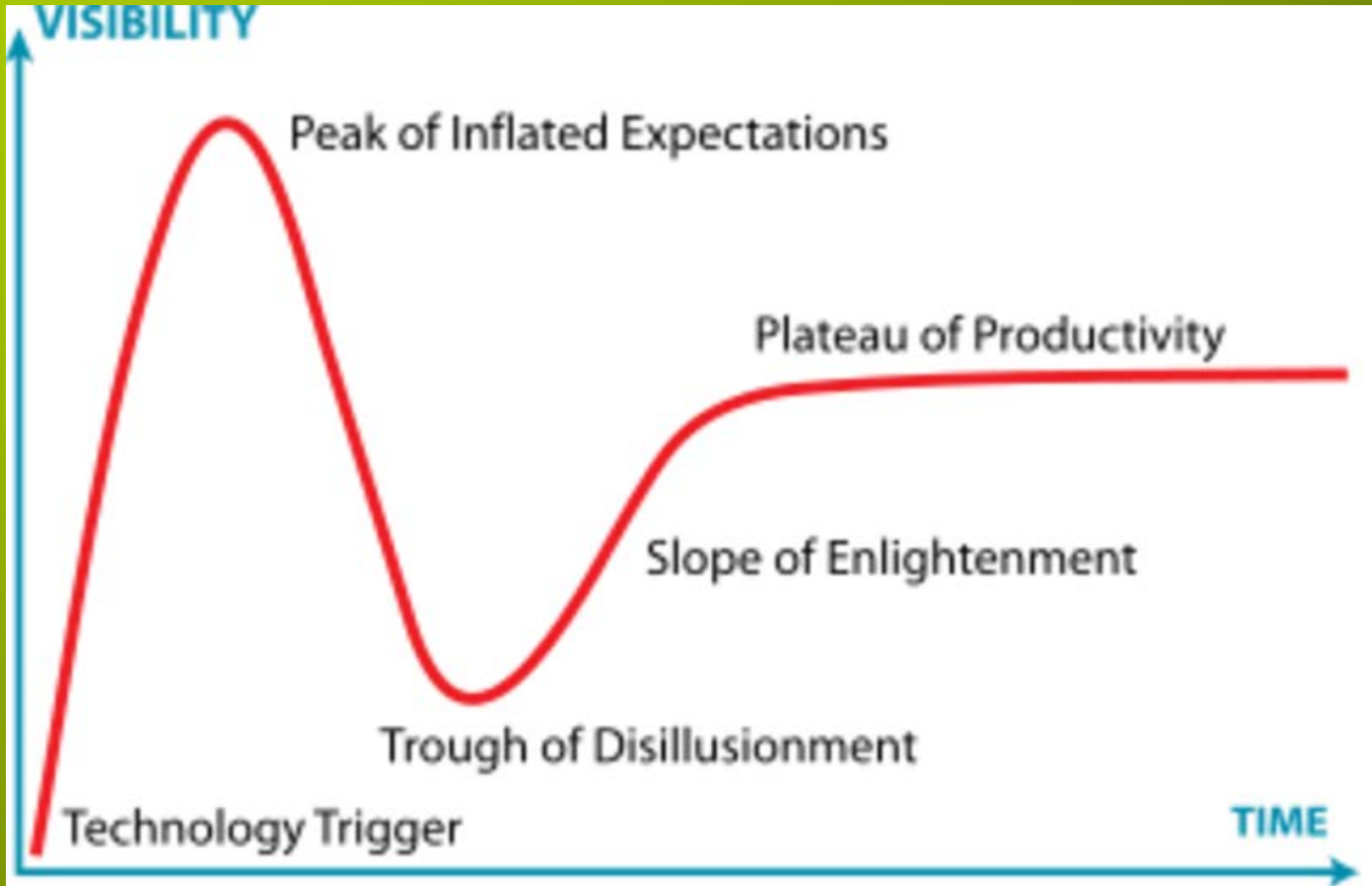
- Patents aplenty in the 1990s and 2000s
  - Identification
  - Temperature
  - Movement
  - pH (proposed)
  - Pressure (penguin studies)
- Silsoe system developed from 2003
- First publication of successful bolus 2008



# A history of rumen telemetry

- Companies formed
  - MAGIIX, Kahne Animal Health, Smaxtec, Well Cow
  - eCow
- Sales developed
  - Research scientists
  - Farmers and nutritionists
- Companies had to be refinanced or died
- Extra features added to boluses

# Gartner hype cycle





# Rumen pH Bolus

- Retained in Reticulo-rumen
- Raw data (pH & T) downloaded to handset
- Handset Uploads to internet
- Bolus lasts over 100 days before sensor fails
- Accurate +/- 0.1 pH per 30 days
- Used >3 per group



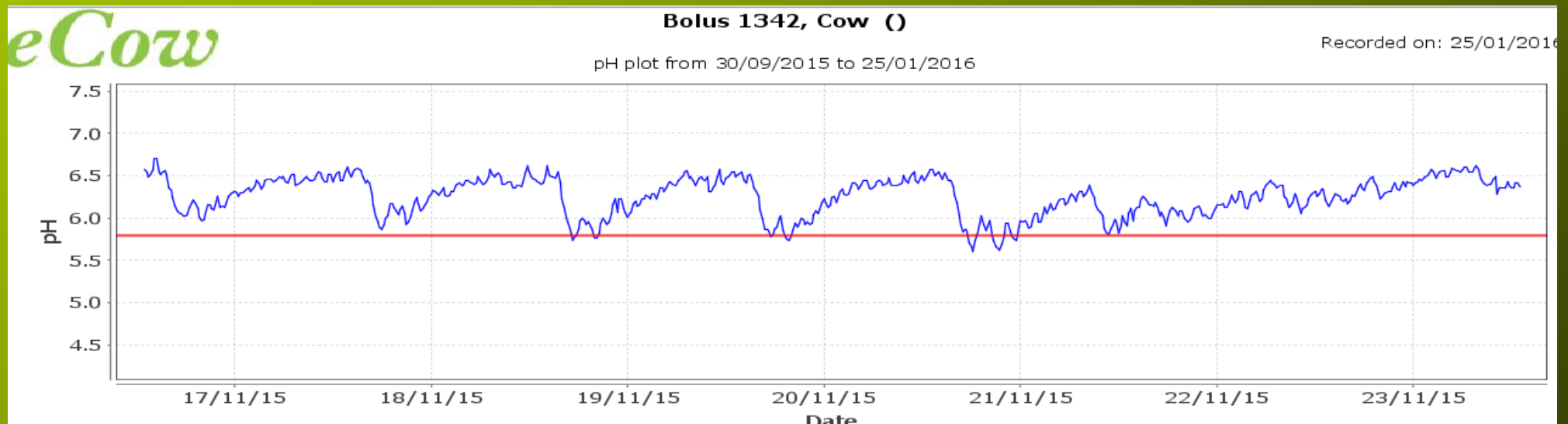


# Cause of pH problems?

- Too much highly digestible energy
- Low quality silage
- Early lactation nutritional requirements
- Faulty feeding equipment
- Poorly designed routines
- Human factors



# Case study: what actually happens



# And the following week

eCow

**Bolus 1342, Cow ( )**

Recorded on: 25/01/2016

pH plot from 30/09/2015 to 25/01/2016

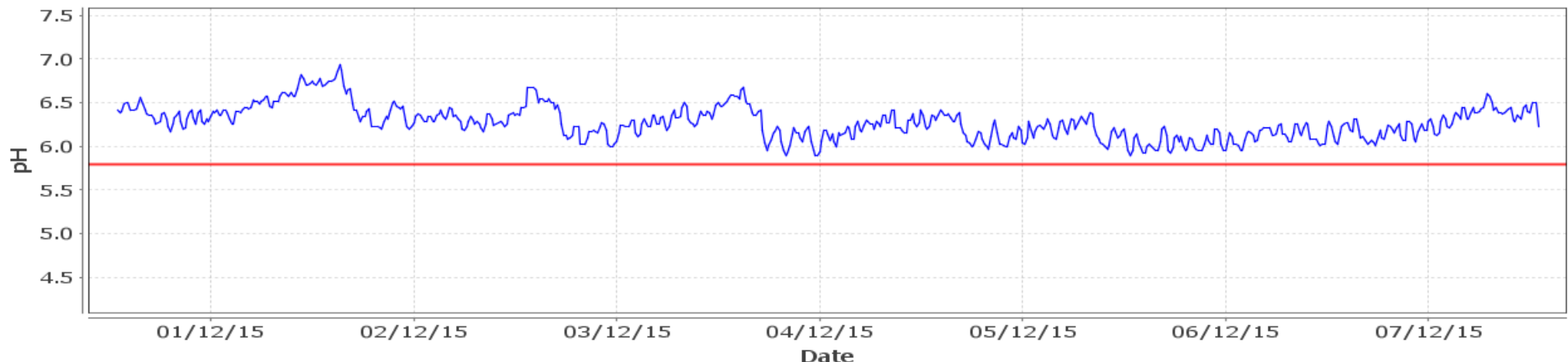


eCow

**Bolus 1342, Cow ( )**

Recorded on: 25/01/2016

pH plot from 30/09/2015 to 25/01/2016





# Simple Conclusion

This animal was not fed on weekends

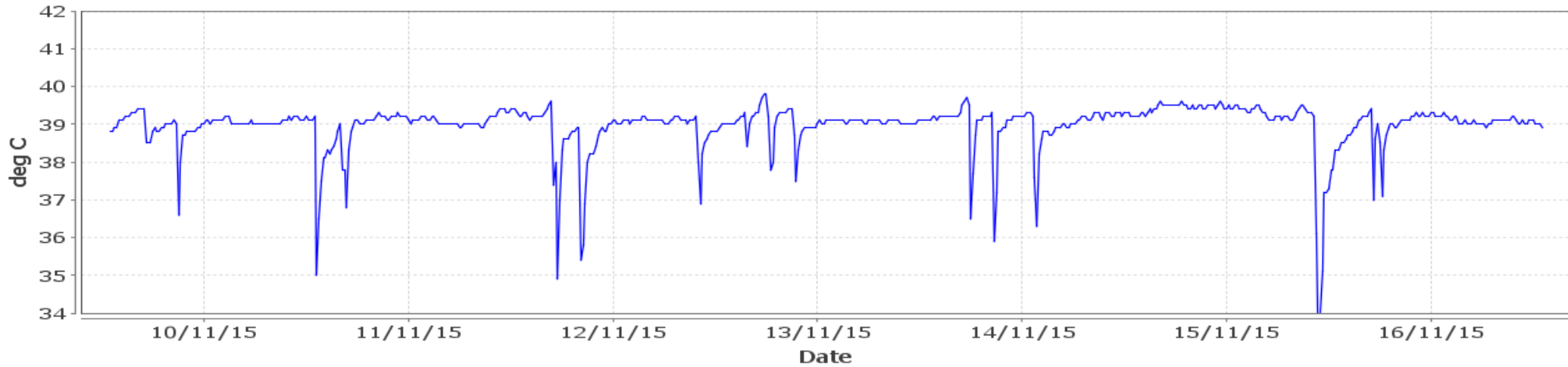
# Temperature Profiles

**eCow**

**Bolus 1342, Cow ( )**

Recorded on: 25/01/2016

Temperature plot from 30/09/2015 to 25/01/2016



Clinical Diagnosis: dehydration

Cause: trough was contaminated  
with faeces

# What is rumen telemetry good for ?

- Detecting sub-acute rumen acidosis
- Replacing rumenocentesis and oro-rumen sampling
- Designing and testing new ration schemes
- Identifying heat stress
- Fixing routines

## eCow future

- Develop equipment for scientists
  - NH<sub>3</sub>
  - Motility
  - NO<sub>3</sub>
- Develop systems to help vets diagnose problems
- Focus on the next big problems
  - [www.virtualvet.eu](http://www.virtualvet.eu) tracking antimicrobials
  - [www.milkalyser.com](http://www.milkalyser.com) improving fertility monitoring

# Summary

- Commercialising PLF requires persistence
- Problems on farms are not theoretical
- Dairy cows are not being pushed to their limits
- Focus on the decision the farmer can make

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