



# MmmooOgle [Who am I]

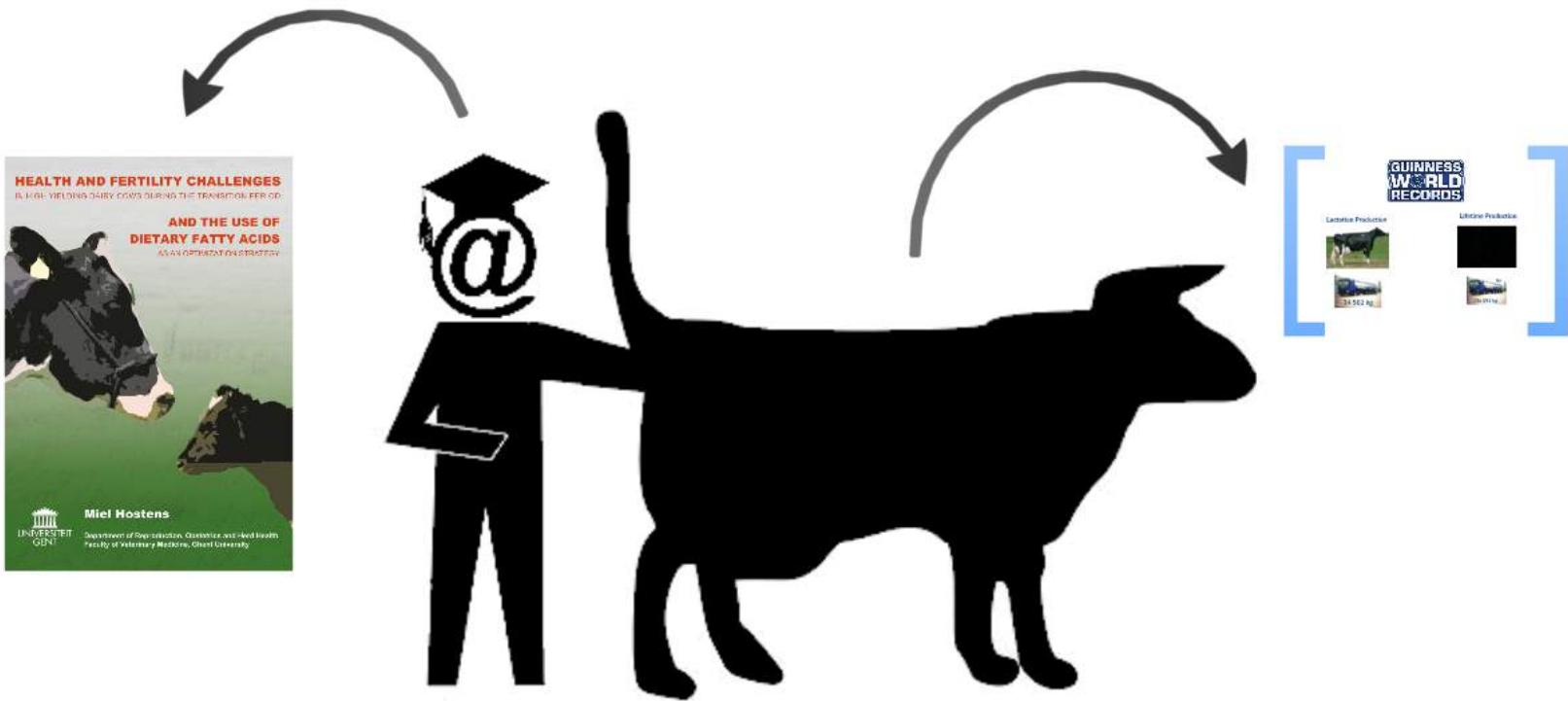




# MmmooOgle [Who am I]



# Who am I



# Lactation Production





34 502 kg

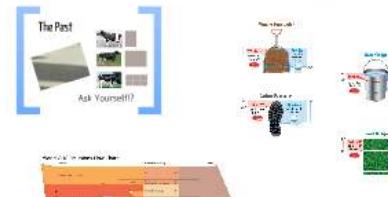
# Challenges

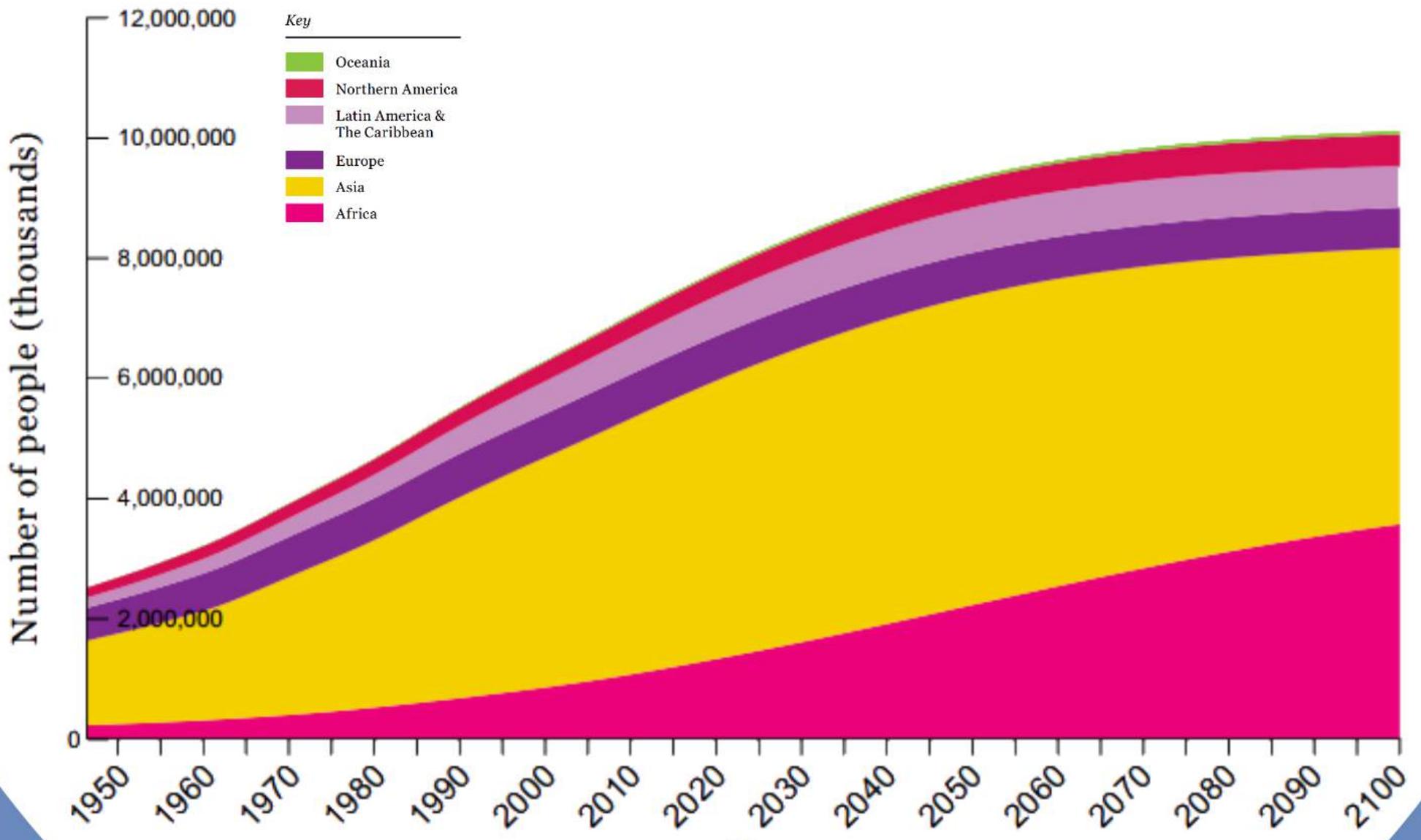
...for the dairy  
sector...

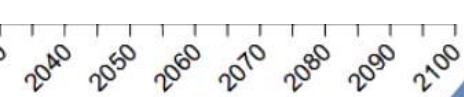
## Growing World Population



## Climate Change







# Food Security & Health

New Chinese milk scandal - this time with a Western culprit

Rajeshni Naidu-Ghelani  
Monday, 5 Aug 2013 | 6:29 AM ET  
**CNBC**



## Health Benefits of Milk + Dairy

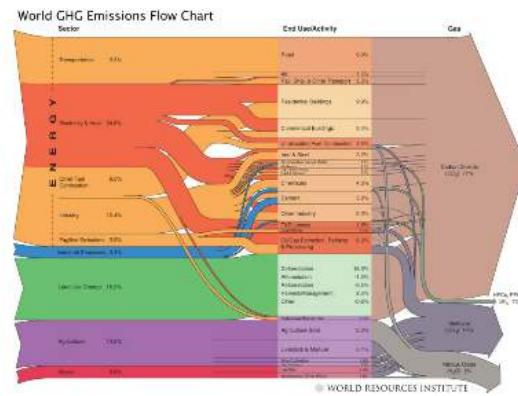
Milk and dairy foods are healthy foods and considered nutrient-rich because they serve as good sources of calcium and vitamin D as well as protein and other essential nutrients. They provide phosphorus, potassium, magnesium, and vitamins A, B12, and riboflavin<sup>1</sup>.

The calcium in [milk](#), [yogurt](#), and [cheese](#) is significant yet most people don't get enough calcium or vitamin D each day<sup>2</sup>. Getting the recommended three servings of dairy per day can help build bone mass, leading to improved bone health throughout the life cycle.

To meet daily calcium requirements, most people should have two to three cups of milk or servings of dairy foods each day. There are many ways to ensure you are eating healthy and getting enough milk and milk products each day. Start with a healthy breakfast of cereal, milk and fruit or a yogurt parfait, include cheese in your lunch or afternoon snack and consider pudding or hot chocolate made with milk as an evening dessert. To learn more about the amounts of food to eat each day, use the [Healthy Eating Planner](#).



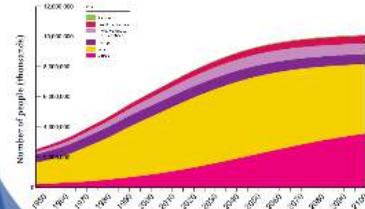
# Climate Change



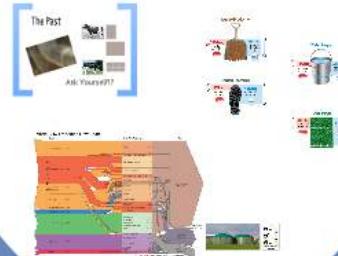
# Challenges

...for the dairy  
sector...

## Growing World Population



## Climate Change



## Food Security & Health



# Trends

Milkprices

World

Technology



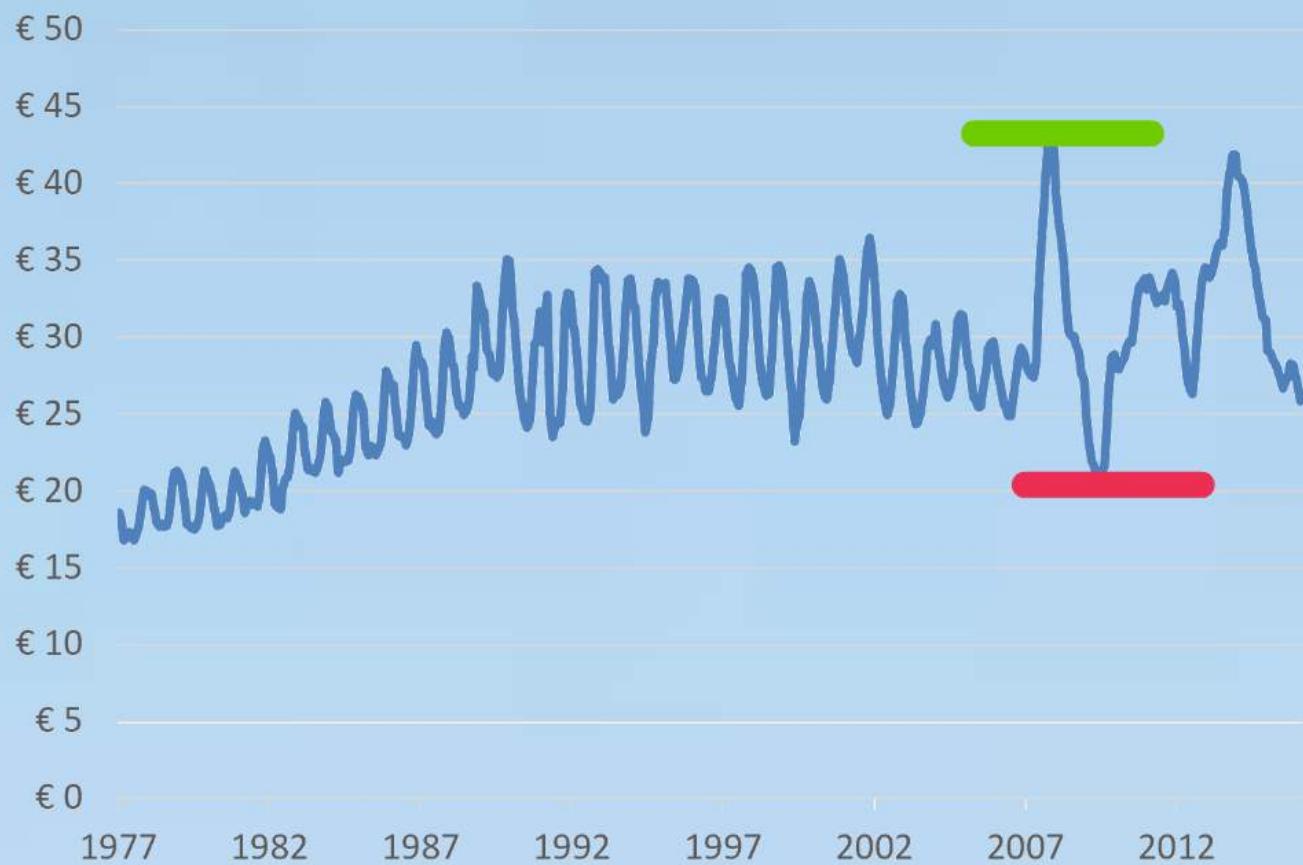
Batch and Streaming



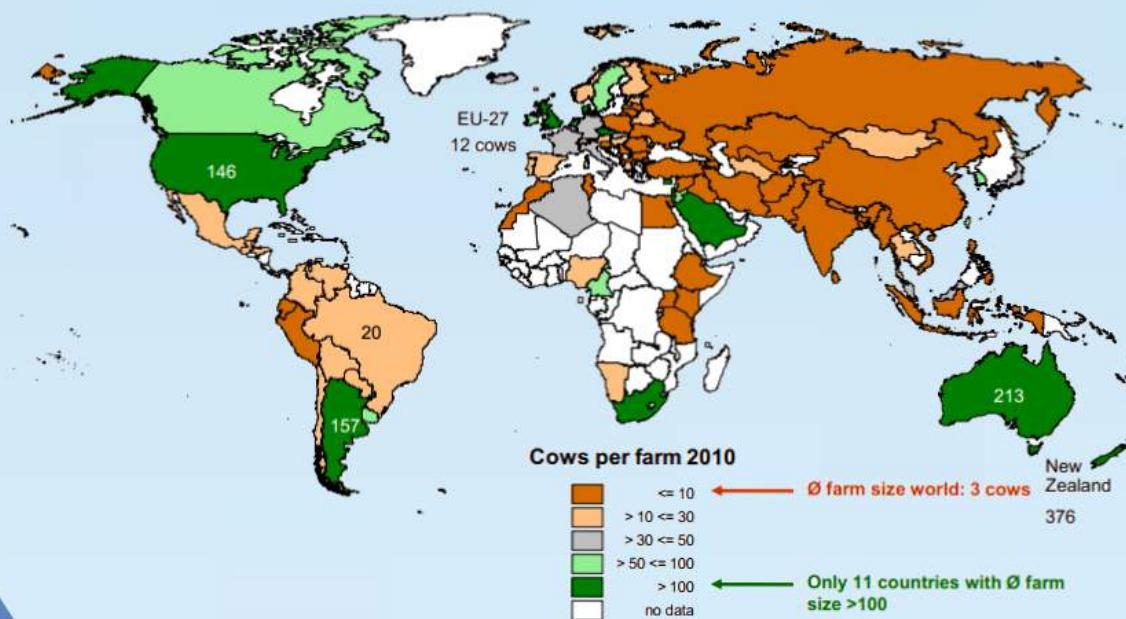
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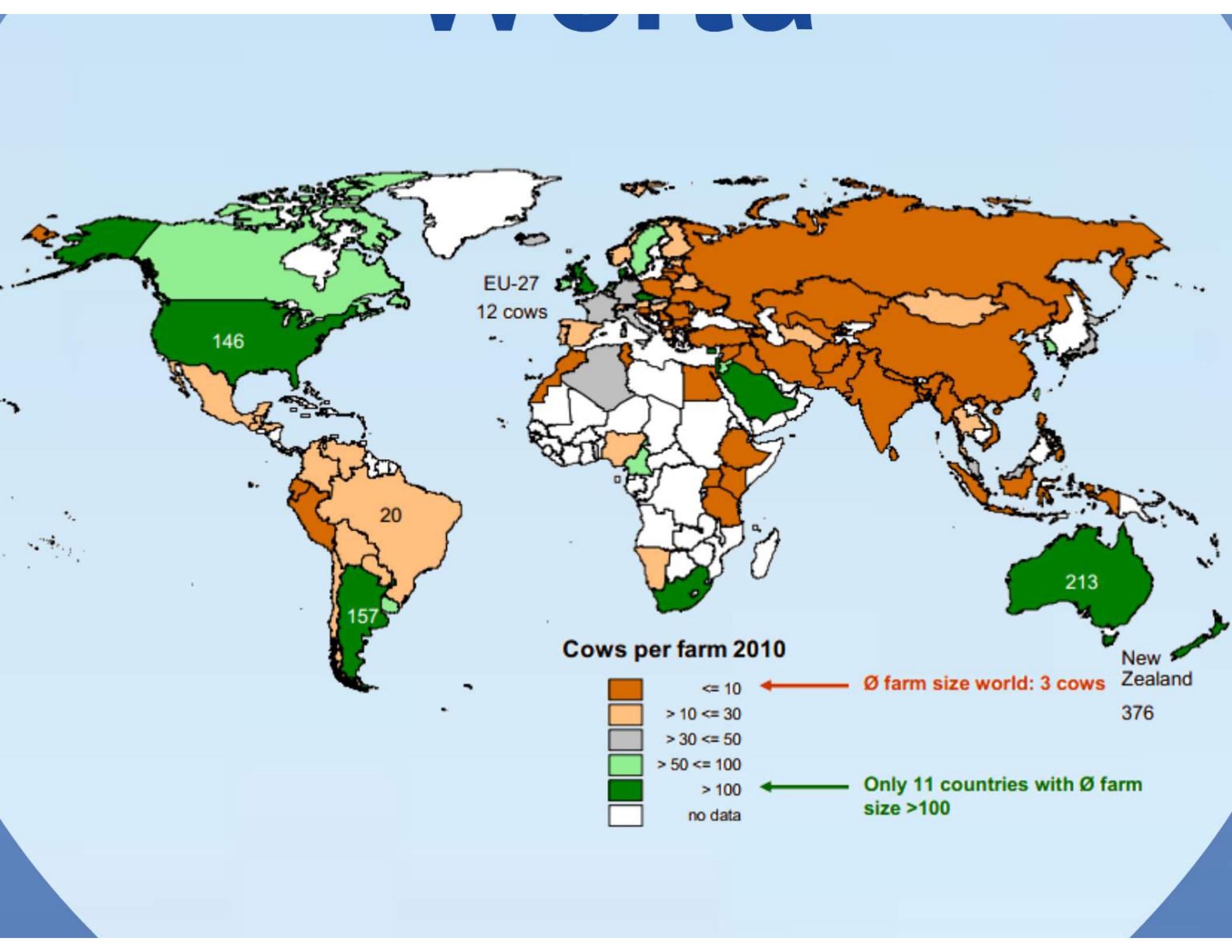
# Milkprices

Belgium milk prices (€/100L)



# World





# Technology



Precision

Dairy

Farming

# Technology



Precision

Dairy

Farming



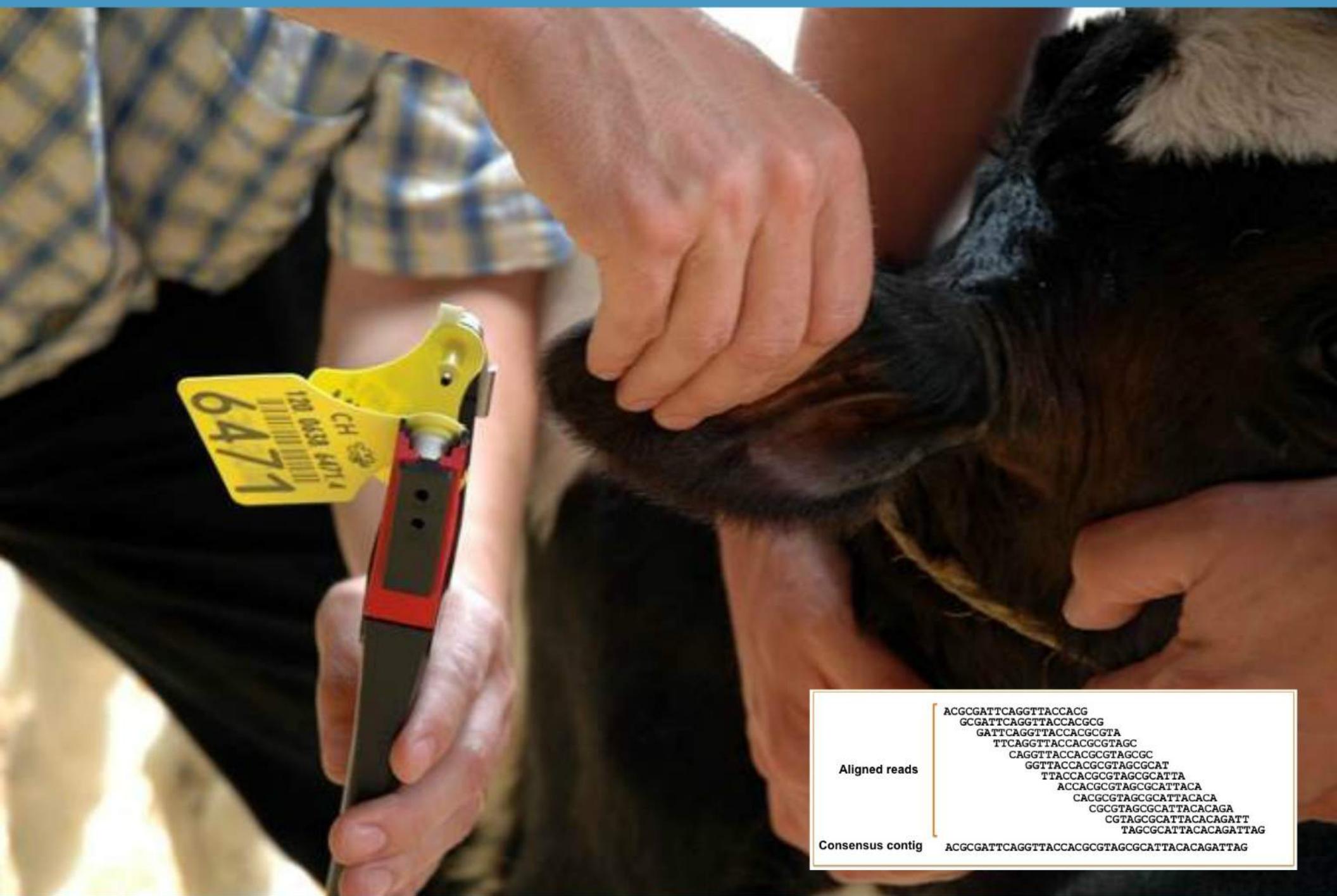
# Batch and Streaming





You Tube



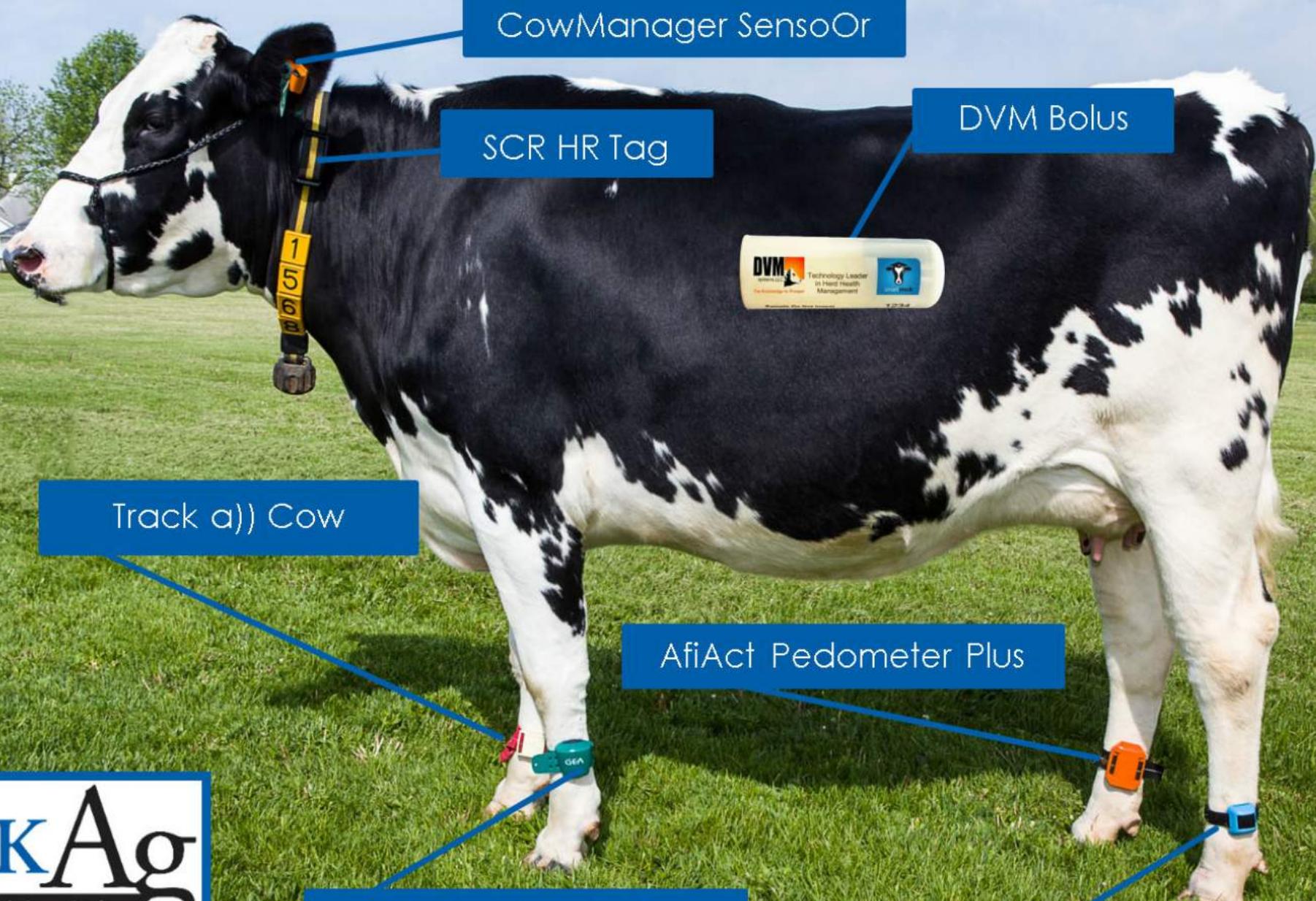


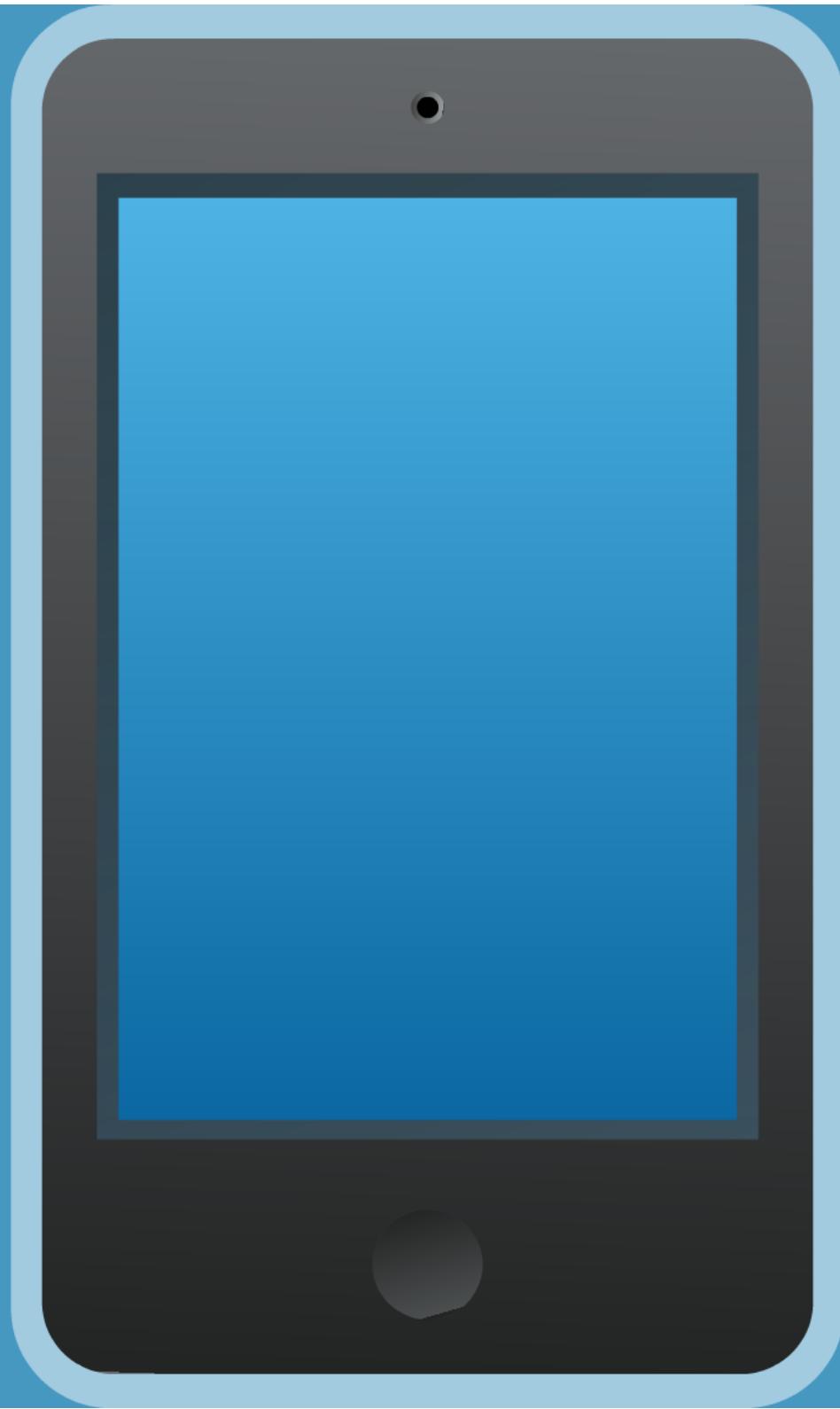
Aligned reads

Consensus contig

```
ACCGCGATTCAAGTTACCAAG  
GCGATTCAAGGTACCAACGGC  
GATTCAAGGTACCAACCGCTA  
TTCAGGTTACCAACGGCTAGC  
CAGGTACCCACGGTAGCGCAT  
TTACCACGGTAGCGCATTA  
ACCCACGGTAGGGCATTACA  
CACCGCTAGGCATTACACA  
CGCGTAGCGCATTACACAGA  
CGTAGCGCATTACACAGATT  
TAGCGCATTACACAGATTAG
```



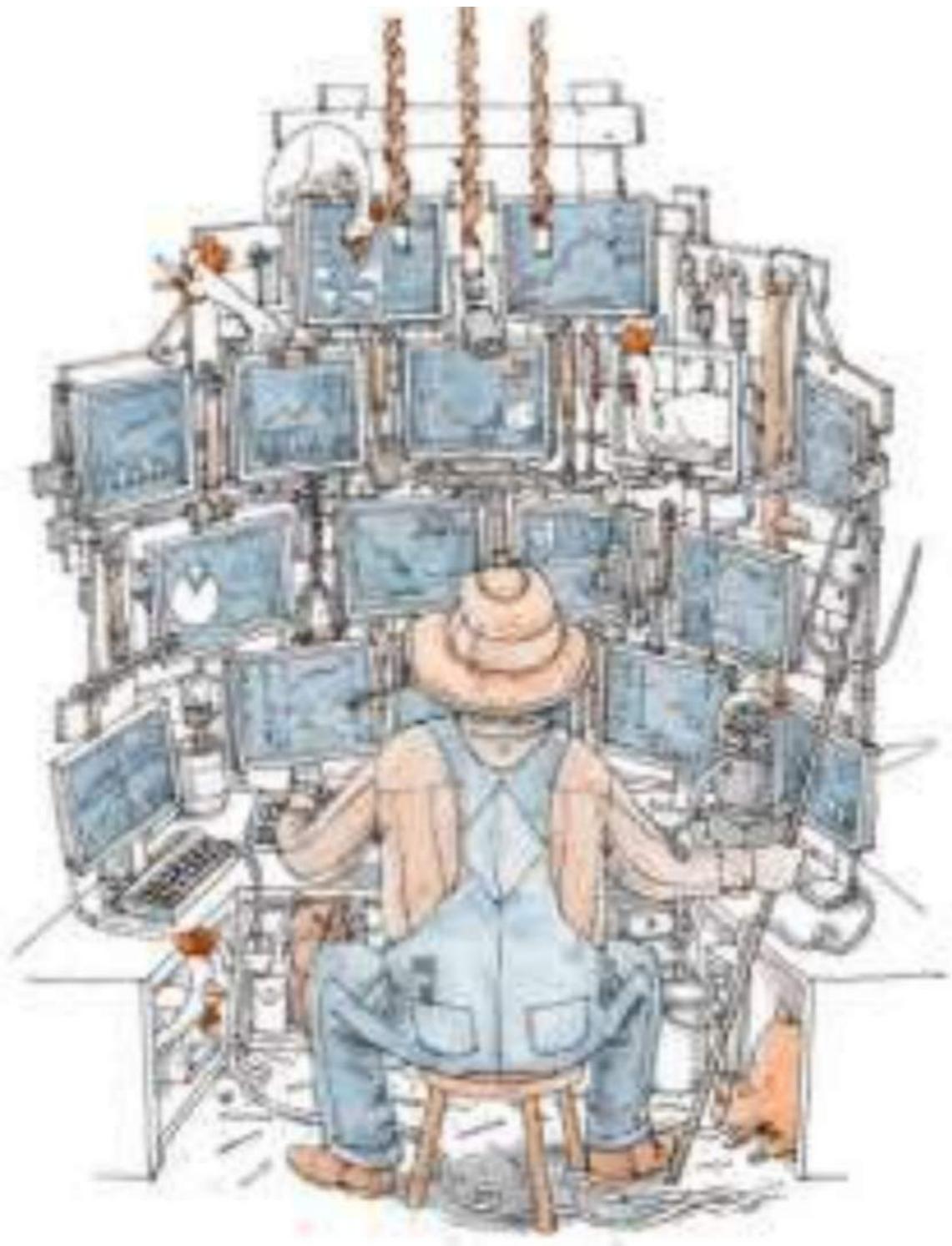


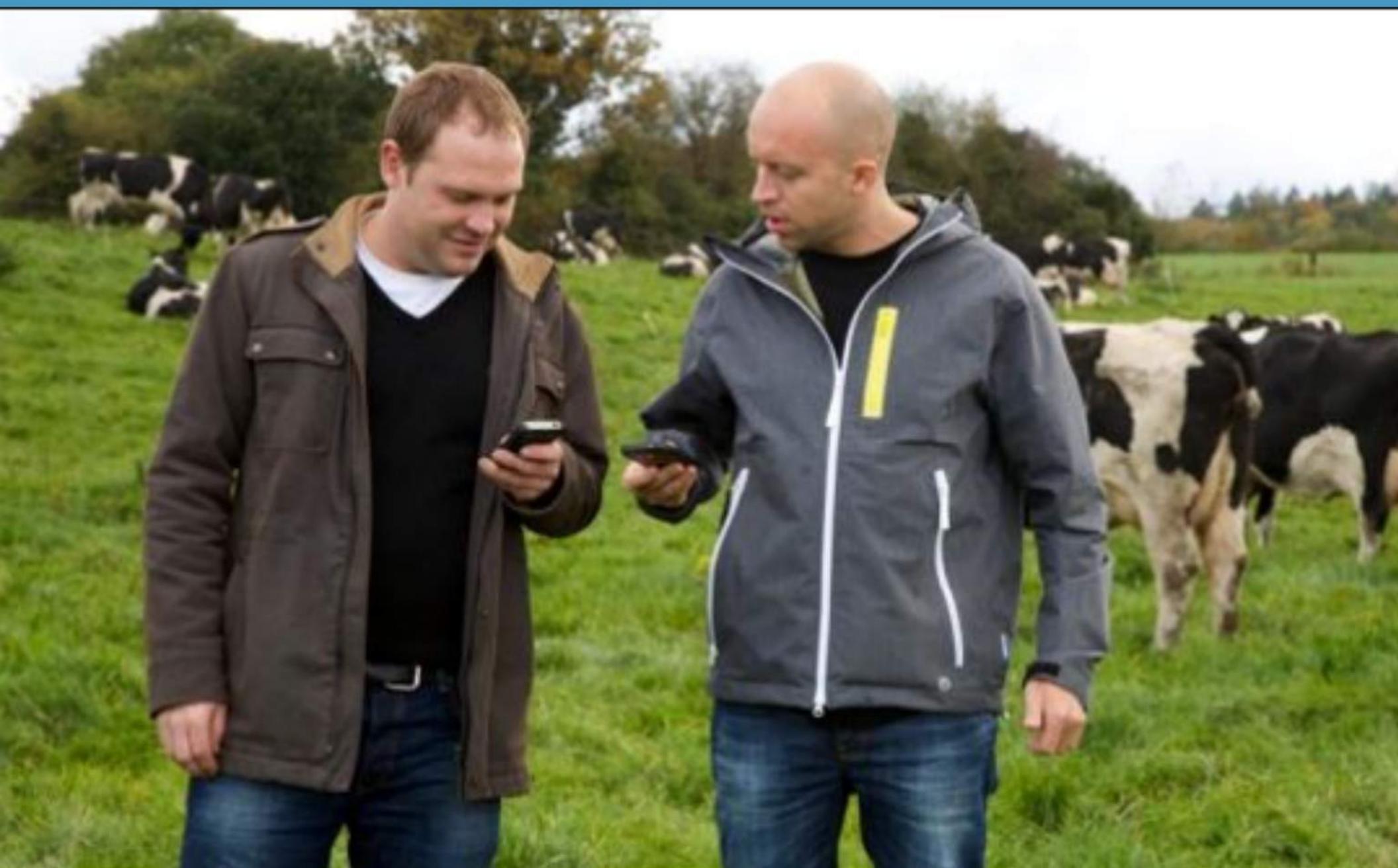


Miel,

We are still very interested in being able to have all of our data from our technologies in a single software program. Is this something that DDW or Moogle has the capability to do. Our herd management software is PCDart. The technologies we have are AfiMilk, AfiLab, DairyMaster, Bella Ag temperature boluses, Agis CowManager, SmartBow, Nedap leg tags, ENGS leg tags. We also have some data coming in from weather stations at the pen level. And, we have manual scores like BCS, locomotion, etc. We'd like to be able to get this in one spot. Is that possible with your program?

Thank you,  
Jeffrey Bewley





## Batch and Streaming



Hi!  
We are still very interested in being able to have all of our data from our technologies in a single software program. Is there something that DOW or Google has the capability to do this? We are currently using a PC-DAT. The technologies we have are Afrikid, AgLab, DairyMaster, RadioAg Temperature Sensors, Agri-CowTracker, SmartCow, Nesting Tag, CowsOn, leg tags, the ability to have multiple sensors at the udder and teat stations at the pen level. And, we have manual scales (use RCS, Lactomat, etc.) Would like to be able to get this in one spot. Is that possible with your program?

Thank you,  
Jeffrey Bewley

## COWS COMMUNICATION

# Problems

## COMPLIANCE





# Solution



## Revolution 1



Dairy Farming 1.0: Hand milking

## Revolution 2



Dairy Farming 2.0: Milking Machines

## Revolution 3



Dairy Farming 3.0: Precision Dairy Farming, Farm Management Software, robots...

## Revolution 4



**MmmooOgle**

Dairy Farming 4.0

"Connected farms"



"From data to  
D€CISIOn\$"

# Revolution 1



Dairy Farming 1.0: Hand milking

# Revolution 2



Dairy Farming 2.0: Milking Machines

# Revolution 3



Dairy Farming 3.0: Precision Dairy farming, Farm Management Software, robots,...

# Revolution 4



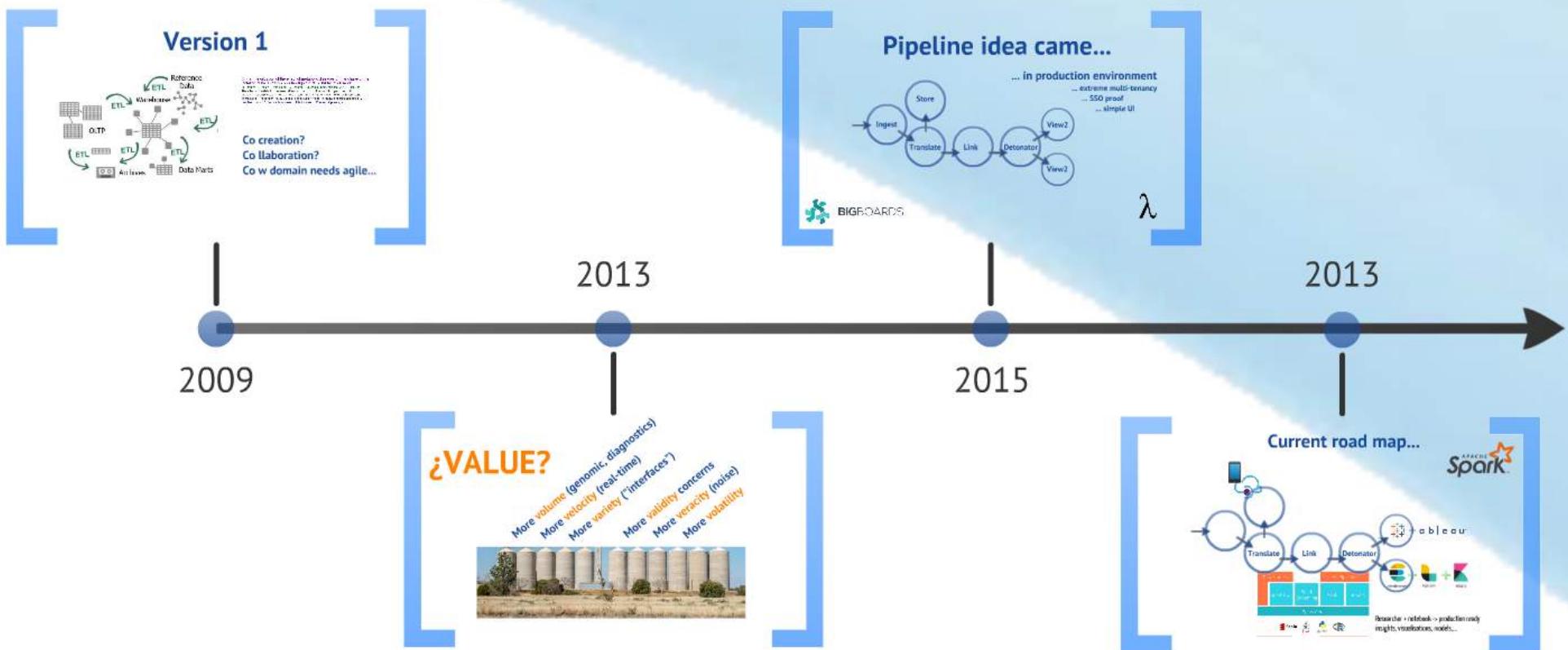
# MmmooOgle

## Dairy Farming 4.0

"Connected farms"



"From data to  
DECISION\$"

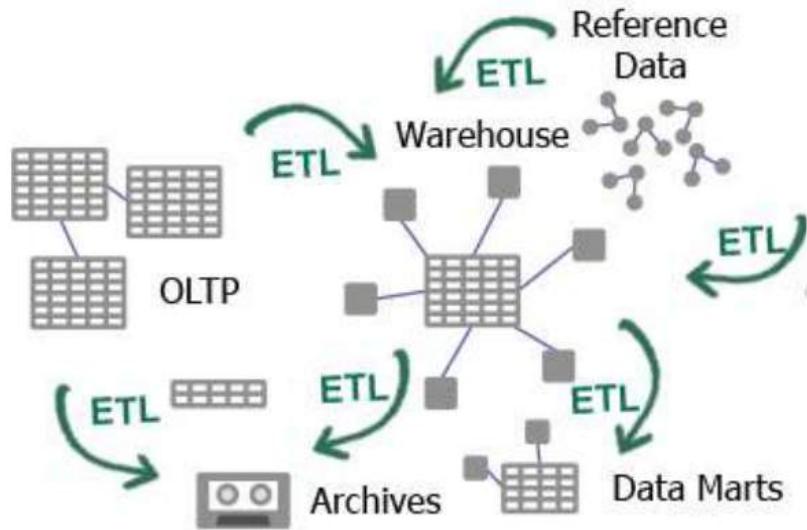




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# Version 1



On-farm evaluation of the effect of metabolic diseases on the shape of the lactation curve in dairy cows through the **MilkBot** lactation model

M Hostens, J Ehrlich, B Van Ranst, G Opsomer - Journal of dairy science, 2012 - Elsevier

The effects of metabolic diseases (MD) occurring during the transition period on milk production of dairy cows have been evaluated in many different ways, often with conflicting conclusions. The present study used a fitted lactation model to analyze specific aspects of ...  
Geciteerd door 12 Verwante artikelen Alle 9 versies Citeren Opgeslagen

Co creation?  
Co llaboration?  
Co w domain needs agile...

# ¿VALUE?

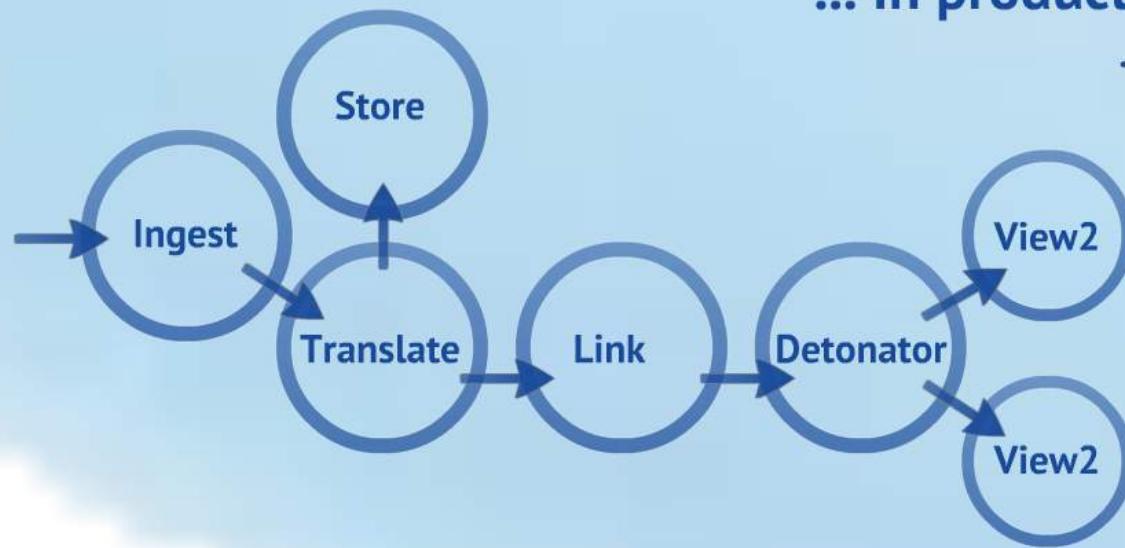
More **volume** (genomic, diagnostics)  
More **velocity** (real-time)  
More **variety** ("interfaces")  
More **validity** concerns  
More **veracity** (noise)  
More **volatility**



# Pipeline idea came...

... in production environment

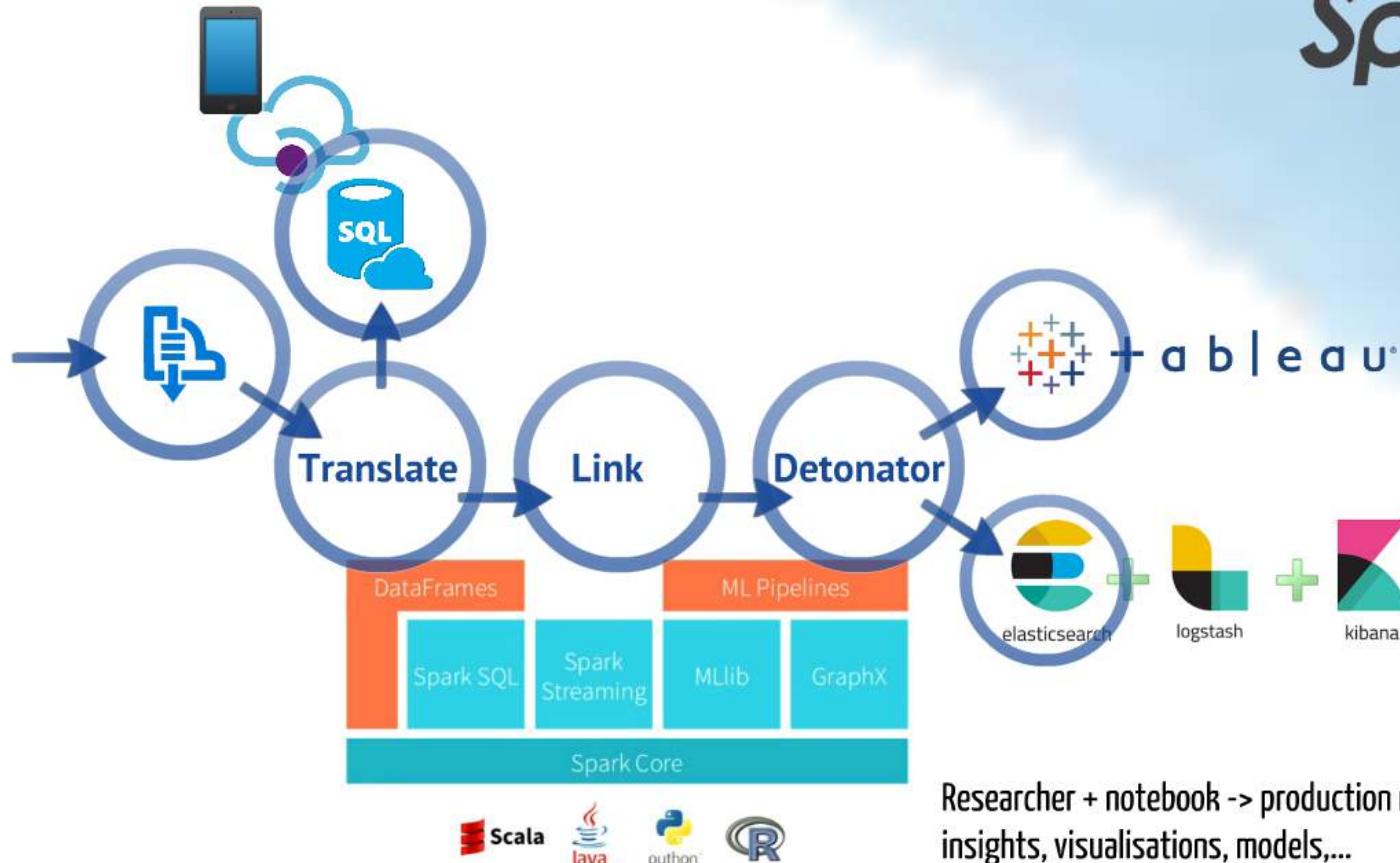
... extreme multi-tenancy  
... SSO proof  
... simple UI



BIGBOARDS

$\lambda$

# Current road map...



# Contact



FACULTEIT DIERGENEESKUNDE  
approved by EAEVE

[www.bovi-analytics.com](http://www.bovi-analytics.com)

[miel.hostens@ugent.be](mailto:miel.hostens@ugent.be)

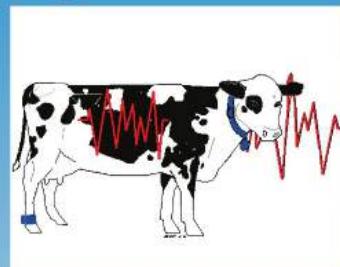
The screenshot shows a document page with the title "Big Data Dairy Management" and the subtitle "Research Project". It includes several sections of text, tables, and figures related to the project's objectives and methodology. At the bottom right, there is a "Discover" button and a link to "http://www.dairydatacenter.be".

[www.mmmoooogle.com](http://www.mmmoooogle.com)

[info@mmmooogle.com](mailto:info@mmmooogle.com)



*31st ADSA Discover Conference on Food  
Animal Agriculture:*



## **Big Data Dairy Management**

November 1-4, 2016 (tentative)

Location TBA near Chicago, IL

Hosted by the American Dairy Science Association®

### **Conference Format**

The Discover Conference Series is designed to provide a format and venue that encourages in-depth discussion of cutting-edge science.

ADSA Discover Conferences<sup>SM</sup> focus on topics of importance to the science of food animal agriculture and are held in a relaxed, informal setting. Sessions for this conference will allow ample time for discussion, networking and relaxation.

### **Program Committee Organizers:**

Jeffrey Bewley, University of Kentucky (Co-Chair)  
Christina Petersson-Wolfe, Virginia Tech (Co-Chair)

Stephen Leblanc, University of Guelph

Alan Fahey, University College Dublin

Albert De Vries, University of Florida

Mike Overton, Elanco

Miel Hostens, Ghent University

Juan M. Tricarico, Innovation Center for U.S. Dairy

## **Big Data Dairy Management**

### **Conference Objective**

Across all industries, the availability of increasingly powerful computers and new technologies provides new business management opportunities. In the last few years, most large companies have embraced the concept of "big data" techniques as part of their management strategy. Definitions of big data vary. But, in general, the term refers to using large data sets for complex decisions where traditional data processing techniques may lack. The key components of big data are analysis, capture, data curation, search, sharing, storage, transfer, visualization, and information privacy. Big data often involves using predictive analytics to analyze existing data sets in new ways. Another key characteristic of big data is merging data from multiple sources into cloud computing. For example, in the dairy industry, big data may involve combining DHI production records, financial records, precision dairy technology data, health records, milk cooperative records, historical weather data, genomic evaluations, ration and feeding management data, and human resource data into one large database. Combining this information helps to improve decision-making, operational efficiency, cost and revenue optimization, and risk management.

The dairy industry remains a perfect application of decision science and big data because: (1) it is characterized by considerable price, weather and biological variation, and uncertainty, (2) technologies, such as those that monitor dairy cow yield, physiology, and behavior are easily available, (3) and the primary output, fluid milk, is difficult to differentiate, increasing the need for alternative means of business differentiation. Big data represents a potential management breakthrough for the dairy industry. Various industry and academic players have been working within this area without a venue to discuss overall strategies and opportunities.

### **Tentative Conference Themes**

- Big data analysis techniques
- Big data: perspectives from other industries
- Data integration and cloud computing
- Data economic considerations
- Sensor data use and management

### **Who Should Attend?**

This program will address issues important to university, government and industry researchers; university extension specialists; software developers, precision dairy technology manufacturers, pharmaceutical companies, genetics providers, consultants, nutritionists, and veterinarians. Graduate students are also invited to attend.

### **Travel**

The conference will be held in the Chicago, IL area. For the latest travel information, go to the DC31 web page at <http://adsa.org/Meetings/DiscoverConferences/31stDiscoverConference.aspx>

### **Registration & Hotel Accommodations**

Information regarding registration and hotel accommodations will be available soon on the DC31 web page.



American Dairy Science Association  
Discover Conference Series  
Phone: 217/356-5146 Fax: 217/398-4119  
Email: [adsa-discover@assochq.org](mailto:adsa-discover@assochq.org)

For complete conference information, including the latest program and registration information, go to:  
<http://www.adsa.org/discover/>



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