Engineers computer and animal specialists applying science and technology to improve animal well-being and farm profitability

Applications for the Livestock Production Chain
1990 - Measured Weight Feed & Feeding Behavior

Confinement disrupted social order - needed to measure unobtrusively
Healthy - visitation >500 times/day

Sick – visitation dropped rapidly <50 times/day

Improved survivability from 12% to >90%
Application #1 Efficiency Measurement

- Animals RFID ear tagged
- RFID antenna in trough rim
- Trough on load cells – 3 gm
- Tag & feed measured many times each second
- Data audited daily – SPC
- Always connected to GrowSafe

Snyder Livestock - Nevada
Residual Feed Intake (RFI) 

Measured FI - Expected FI = RFI

Selection for RFI reduces¹

- Feed Intake - 12%
- Methane - 30%
- Manure NPK - 17% ¹Agrifacts

Cattle Per Animal Savings:

Feedlot = $60+ per 120d
Cow Herd – 10 more animals /100
System Cost On Farm = $15 per animal

¹Agrifacts
Enhanced Breeding Selection

- GrowSafe curating all “allowed” historical client data
- Data processed through standardized server analytic method
  - Site-specific climate data
  - Diet parameter inclusion
  - Daily RFI values using GSB weights
  - Advanced behaviour trait inclusion
  - Audited data to Genetic evaluation

Whole farm efficiency and greenhouse gas mitigation.
2nd App – GrowSafe Beef® - Feedlot

Data acquired when animal drinks:
• Non-invasive
• Weight, water intake and watering behavior measured

Feedlot Cost:Benefit = $1:$6

Always Connected to GrowSafe

Kunz Feedyard - Alberta

US Patent No. 6,868,804
RFID Antenna

• Measures partial body
• Conversion partial to full body and market weight highly accurate
Predictive ‘Learning’ Algorithms

- API’s Integrate feed/treatment/harvest data
- Reports daily weight and growth statistics
- Accurately forecasts future feed intake and weight
- Digitally profiles animal health
  - ID sick 4d+ adv clinical symptoms
  - 24 hrs adv body temp change
- Determines optimum market time
  - When cost begins to exceed value

More Data – More We Learn
3rd App Grazing Cattle Measurement

Integrating animal, plant, weather & soil data
4th App Dairy On Farm Phenotyping

Optimize production, fertility, feed efficiency, animal health and well being
2017 - On Farm Phenotyping – Dairy

- Lactating
- Dry
- Heifer
- Body Weight

Patent Pending
Why So Much Data?

~1B datapoints/system per day

Collecting RFID and sensors continuously enables accurate measurement

Outdoors in the “Real” farm environment

Wind, snow, rain, birds,……….
Continuous measurement enables Novel phenotypes - feeding behavior

“Digital Feeding Signature”
Automated Phenotyping Platform

• Measure, monitor analyse complex traits such as efficiency, growth, stress, adaptability, management, environmental tolerance, disease, metabolism

• Explicit continuous data
  – system and animal statistics, subjective and objective observations, descriptions of management protocols all in a standardized format
Genomic predictors not the complete picture!

How well a genomic test improves the accuracy of an EPD is related to amount of genetic variation marker test explains.

“No QTL for RFI explained > than 2.5% of the genetic variation”

In the age of the genotype phenotype is king!

Source 2016: (Genome wide association of feed intake related traits in beef cattle – feed efficiency consortium)
Our Pride:
Development of unique patented phenotyping technology – 5 continents
Leveraging research through collaboration
• 60+ Universities, 65+ grad students, 2400+ publications

Overnight success after 27 years R & D