

SMART DAIRY FARMING (SDF)



INFOBROKER BASES FOR SHARING DATA AND CHAIN COOPERATION

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SDF cooperation

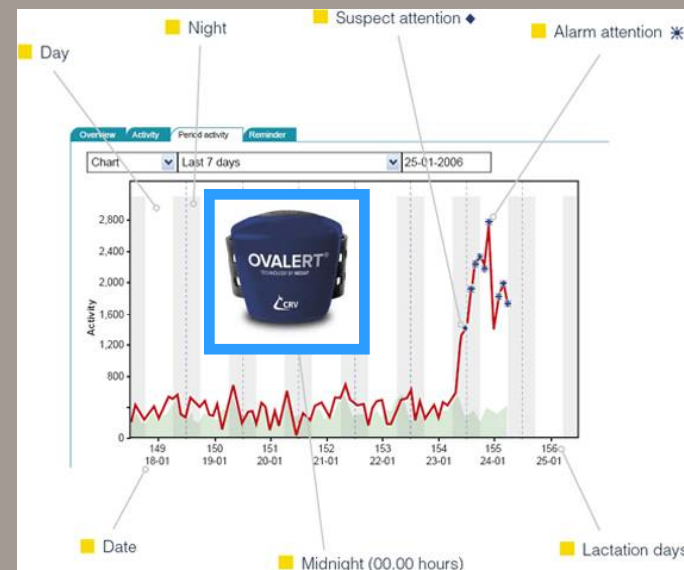


- Chain partners
- Farmers
- Equipment manufacturers
- Research institutes
- Supplying companies



Sensor systems used on Dairy farms

- Identification systems 8-ties
 - => sensor systems
 - Concentrate dispensers
 - Milk measurement
 - Activity measurement
- Straightforward system mostly focusing on one aspect
- SDF: holistic approach
 - Working instructions
 - Data of different sources
 - Online data exchange

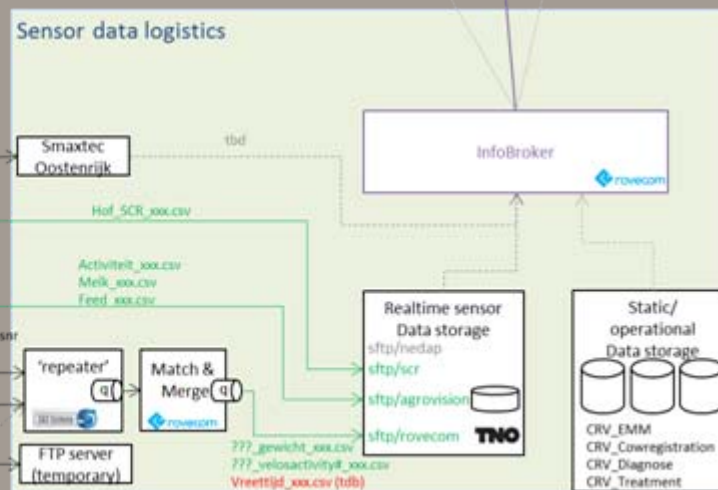
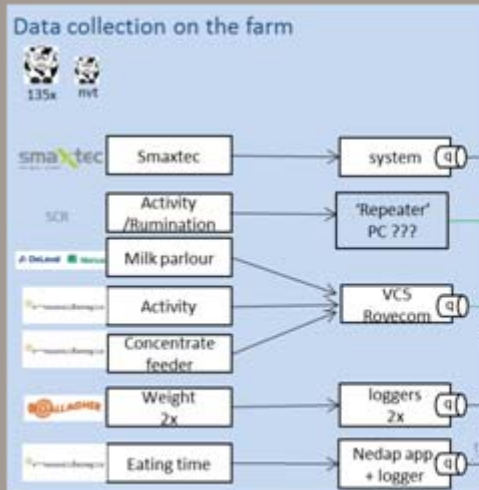
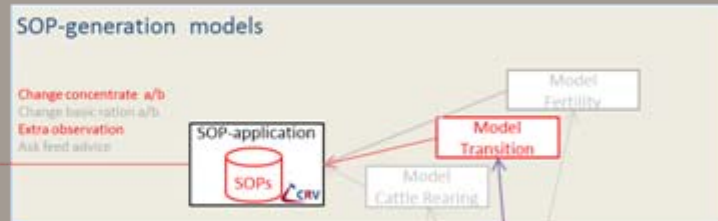


Goal SDF

- Increase lifespan of dairy cows
- Standard operating procedures focus on critical processes:
 - Young stock rearing
 - Illness prevention / treatment
 - Selection of animals
 - Feeding during transition period
 - Optimization of the drying off
 - Good preparation for lactation
 - Fertility
 - Insemination on the right moment
 - Good accompanying of calving
 - Signaling pregnancy complications



Data collection <> challenges



- Data availability
- Online data access
- Sensor specific data
- Completeness data
- Well timed availability



Sensors / standard operating procedures

| Working instructions: | Transition | | | Young stock | | | Fertility | | |
|--|--------------------|--------------------|--------------|----------------|-----------------------------|--------------|------------------------------|--------------------|--------------------|
| | Adjust concentrate | Optimal drying off | Check animal | Adjust weaning | Take animal to drinking box | Check health | Positive insemination advice | Fertility research | Optimal drying off |
| Sensors | | | | | | | | | |
| Bolus (pH, temperature & drinking events) | S,H | S,H | S,H | | | | | | |
| Activity / Rumination (SCR) | S,H,B | S,H,B | S,H,B | | | | A | A | A |
| Activity (Ovalert) | | | | R | R | R | | | |
| <u>SensOor</u> | | | | | | | A,O | A,O | A,O |
| Weight | S,H,B | S,H,B | S,H,B | R,D | R,D | R,D | A,O | A,O | A,O |
| Concentrate dispensing | S,H,B | S,H,B | S,H,B | | | | | | |
| Milk recording | S,H,B | S,H,B | S,H,B | | | | A,O | A,O | A,O |
| Fat, protein, milk temperature, conductivity | S | S | S | | | | | | |
| Visits milk robot + concentrate box | S,H,B | S,H,B | S,H,B | | | | | | |
| Eating time / activity (<u>Nedap</u>) | H | H | H | | | | | | |
| Cell count | B | B | B | | | | | | |
| Milk temperature, conductivity | B | B | B | | | | | | |
| Stall temperature / RH | | | | R,D | R,D | R,D | | | |
| Calf feeder | | | | R,D | R,D | R,D | | | |
| Water recording | | | | R,D | R,D | R,D | | | |
| Animal height measurement | | | | R,D | R,D | R,D | | | |
| Position in stall measurement | | | | D | D | D | | | |
| Camera's | | | | | | | A,O | A,O | A,O |

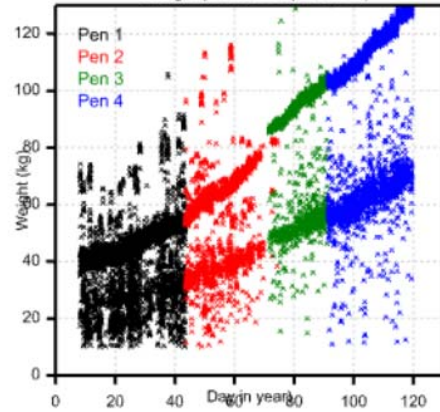
Working instructions en sensors used on the 7 farms (S,H,B,R,D,A,O).

Activity & weight installed on every farm

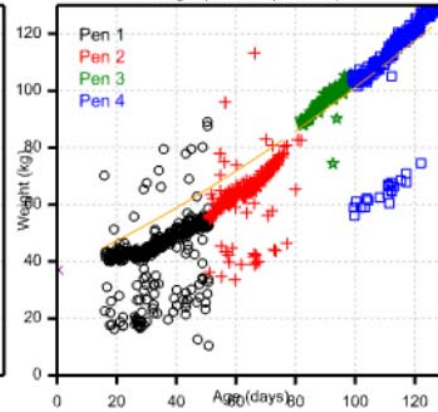


Converting data into information

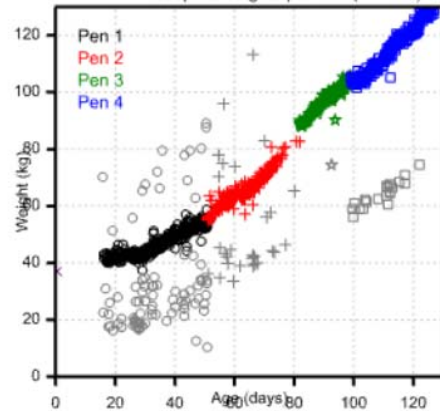
Calf 4463 NL 746644638, born 25-Dec-2014
Weight per 5 secs (n=39893)



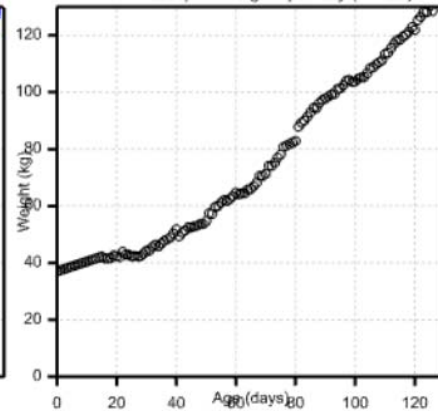
Weight per visit (n=1333)



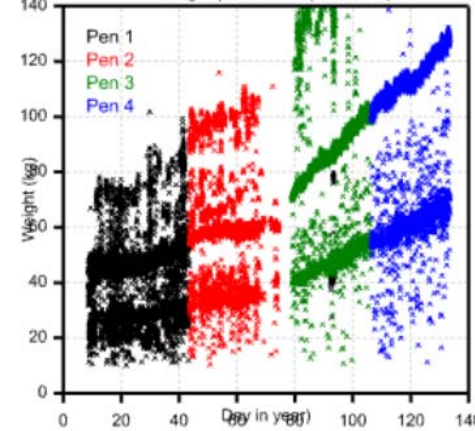
Accepted weights per visit (n=1188)



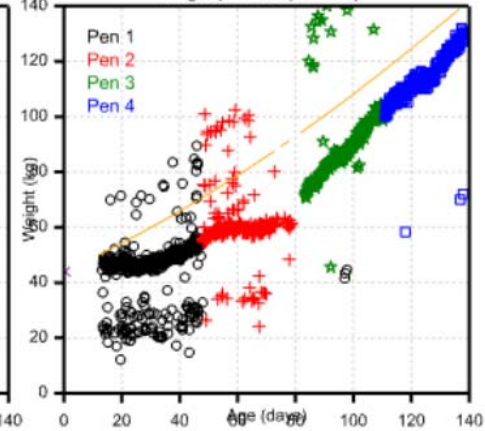
Accepted weights per day (n=127)



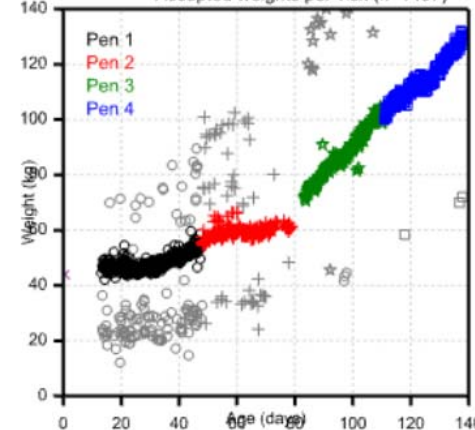
Calf 4464 NL 746644645, born 28-Dec-2014
Weight per 5 secs (n=68061)



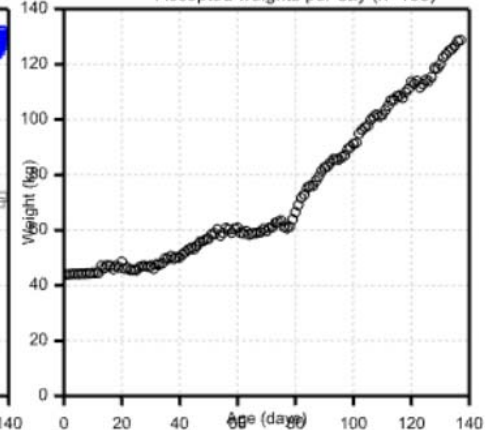
Weight per visit (n=1711)



Accepted weights per visit (n=1497)



Accepted weights per day (n=138)



Value of sensor measurements

- Veterinarian up to 8 observations for treatment advice
- This in most cases be replaced by one sensor
- Combining sensor information for better:
 - Reliability
 - Advice

| | milk yield | milk temp. | electrical conduct. | activity | conc. intake |
|------------------------|------------|------------|---------------------|----------|--------------|
| oestrus | -/0 | + | 0 | + | -/0 |
| mastitis | - | + | + | 0 | -/0 |
| other infect. diseases | - | + | 0 | - | -/0 |
| metabolic diseases | - | 0 | 0 | - | - |
| lameness | - | 0 | 0 | - | -/0 |



Data processing



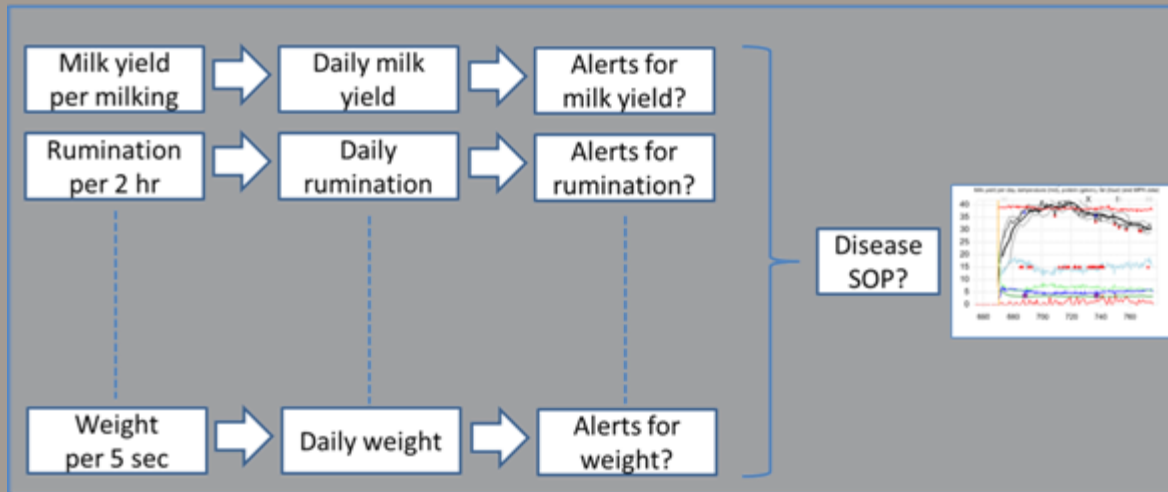
sensor data

single alerts

SOPs

graphs

OLD



Level alert
Trend alert
Index alert

NEW

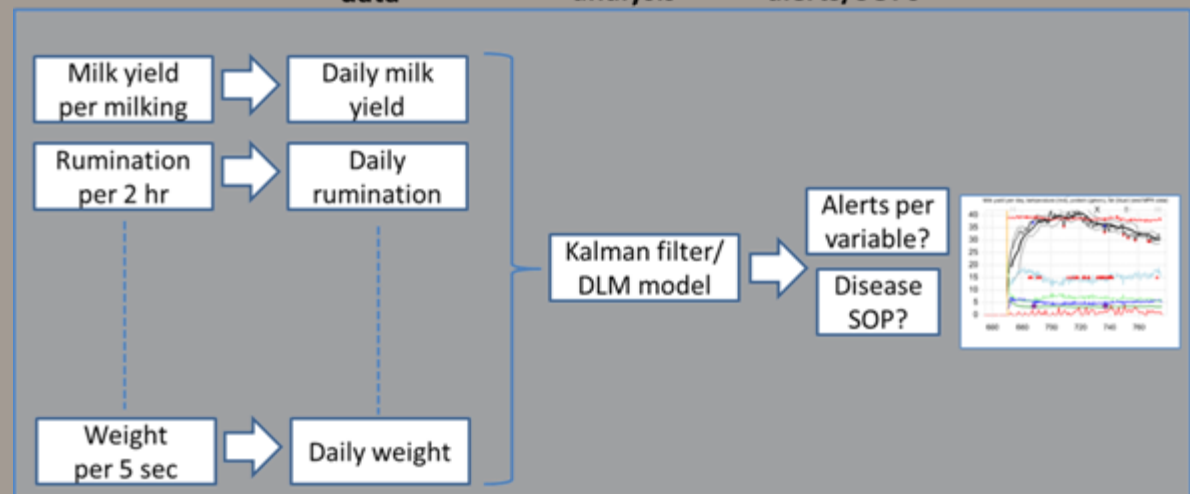
sensor data

pre-processed data

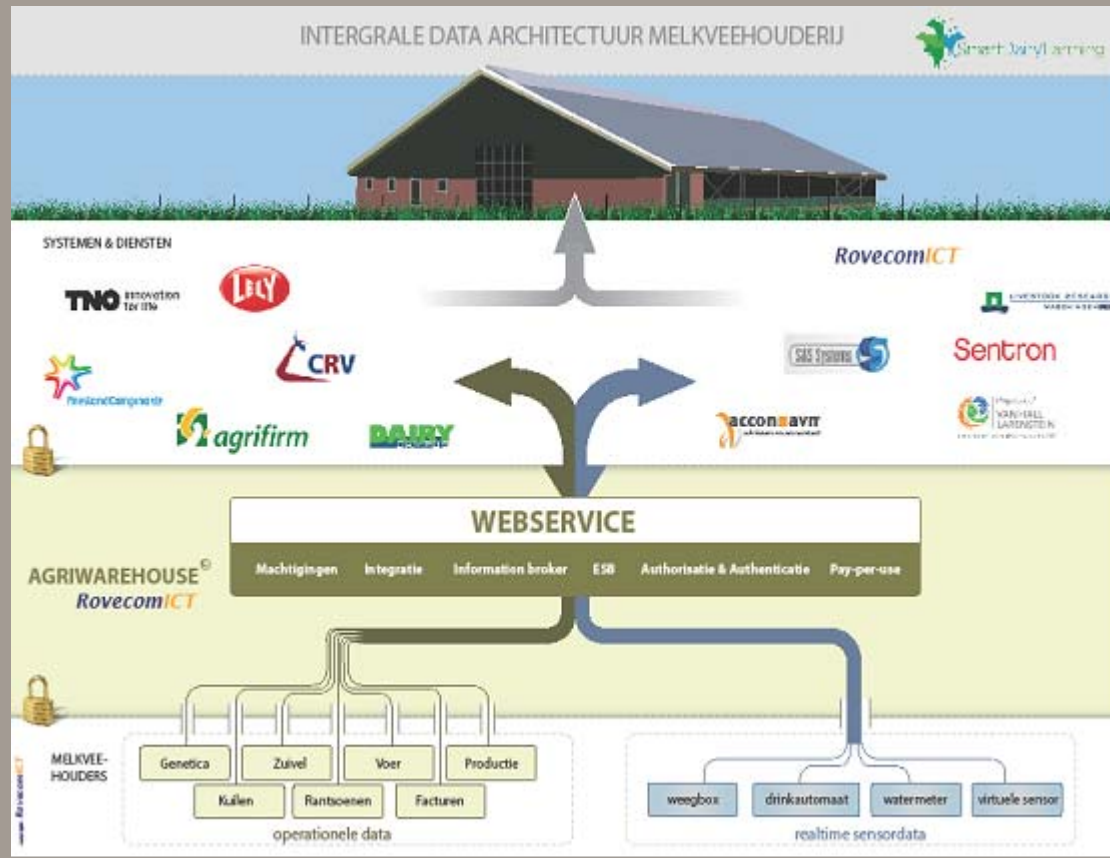
multivariate analysis

multivariate alerts/SOPs

graphs



SDF continues => special focus InfoBroker



Questions?

Thank you for your attention!

