Livestock and Big data

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Dairy cows in the world in 2009

- 247.6 millions
  - Europe: 39.9 millions
  - India: 38.5 millions
  - South America: 34.3 millions
  - North and Central America: 15.4 millions
  - China: 12.8 millions
French herbivores livestock
- cattle, goats and sheep -

- 18.9 million cattle
- 1 million dairy sheep
- 900,000 goats
- 17.8 Milliards € (23.1 Billion dollars)
- 27% of French agricultural production
- 209 000 farms (1 farm on 2)
- 15 millions Ha (37 ac)
  - incl. 9.8 which still budding
- 3.7 Md€ trade surplus (4.8 Billion dollars)
French Identification National Base

- 250,000
- 2,000
- 50
- 70
- 250

10,000,000 movements / an
7,800,000 births / an

- Farmers
- Commercial operators
- Markets
- Knackers
- Slaughterhouses
- Identification National Base
- Regional databases
- Birth
- Passport
- Movement
- Tag
- Orders

Tags’ production

Global Forum
Shaping the future 2012
The data stored into the French national genetic information system for cattle

<table>
<thead>
<tr>
<th>Year 2010</th>
<th>Quantity</th>
<th>Number of new lines per year</th>
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<tbody>
<tr>
<td>Farms</td>
<td>928 000</td>
<td>34 900</td>
</tr>
<tr>
<td>Cattle</td>
<td>151 670 000</td>
<td>7 838 000</td>
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<tr>
<td>Entry / Exit</td>
<td>173 547 000</td>
<td>10 310 000</td>
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<tr>
<td>Certified relatives</td>
<td>76 900 000</td>
<td>3 935 000</td>
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<tr>
<td>Dairy Herd Improvement</td>
<td>595 519 000</td>
<td>25 993 000</td>
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<tr>
<td>Weight</td>
<td>33 490 000</td>
<td>1 561 000</td>
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<tr>
<td>Weaning score</td>
<td>7 825 000</td>
<td>419 000</td>
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<tr>
<td>Inseminations</td>
<td>112 902 000</td>
<td>7 013 000</td>
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<td></td>
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</table>
French livestock databases’ cartography

- RICA
- RA
- XIXs/70/78/00
- SNIG
- R-INRA
- Bov.-Ov.
- 66/97/03/05/11
- 71/87
- RECP
- 81/90/07
- BD-Compta
- CHEP
- BD-CPC
- Appui-Tech-Ov.
- .../92
- BDNI
- 66/97/98
- ODR
- NORMABEV
- OVINFOS
- ECOPHYTO
- INOSYS
- OBS-AVI
- ENQ-AVI
- GTE- LAP
- 83/95
- GTE-PTB
- GTE-P
- R-PALM
- GTE-PALM
- QUNIMIEUX
- GTE-PP
- GTE-PTB
- GTT T
- BDPORC
- 04/07/09
- SPIE
- 60/91
- 66/97/98
- 66/97/03/05/11
- 71/87
- 81/90/07
- .../92
- 1960
- 1970
- 1980
- 1990
- 2000
- 2010
Old developments and recent deployment

- 1970: Utilisation of RFID for livestock
- 1980: Milk meters, podometers
- 1990: Computerisation and automatic storage of data
- 2000: First robots
- 2010: Explosion in the supply of sensors
Example: milking robots

Number of farms equipped with at least one milking robot in France
What can be measured?

- Position of the tail
- Vaginal temperature
- Abdominal contractions
- Quantity, composition and physico-chemical characteristics of milk
- Body state (lean / fat)
- Heart rate
- Emission of methane
- Amount of ingested food
- Rumination noise
- Ruminal pH and temperature
- Weight
- Presence of hormones, enzymes
- Gait
- Position and activity of the animal

- 57 identified tools
- 13 constructors
The farm of the future

- Energy
- Equipement automation
- Herd monitoring
- Water management
- Online services
- Smart buildings
- Effluent or waste management
Dematerialisation:
e.g. traceability of meat
New data > Big data > Open data

- Health and environment data
- Genomics data
- Identification and traceability data
- Financial data
- Text
- Calculation
- Images
- Knowledge