Data exchange with robots and sensors
Animal Data Exchange Initiative

Achievements and prospects

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Content

- Main features of the current situation
- Presentation of the ADE standard
- Implementation
Standards


2005: the ISO standard includes network issues (ISO Agrinet)
Data exchange

Equipment  →  Third party software  →  Milk recording data base

Equipment  →  Milk recording data base

X
Main features

- Standards are ageing and no more maintained.
- Standard are little implemented.
- Third party software are complex, often costly and difficult to be changed.
The requirements for a new standard

1. A world standard with local specificities (code list, animal and location identification…)
2. Direct connection of the equipment with recording organization data bases
3. Reduce the delay between capture and transmission
4. Data exchange in both ways:
   - Equipment to recording organizations
   - Recording organizations to equipment
5. Easy to implement and to maintain
6. Low operating cost
7. Keep the standard alive
Overview of the ADE standard

- Part 1: interchange agreement
- Part 2: exchange architecture
- Part 3: message architecture
- Part 4: data dictionary
- Part 5: technical mapping
- Part 6: implementation procedure
- Part 7: applicable references
Part 1: inter change agreement

Before any data exchange
An agreement between the owner of the equipment, the farmer, and the recording organization should specify:

- Type of identifiers (Animals, location...)
- Responsibility in case of error
- Service level (24/24...)
- Authentication procedure
- ...

www.idele.fr
Part 2: general architecture

Data base = URL adress (www.xxxxxxxxxxxxxxxx)
Part 3: message architecture

- **Standard part**
  - Sender
  - Receiver
  - Request result

- **Specific part**
Part 3: message architecture

- Standard part
  - Sender
  - Receiver
  - Authentification

- Specific part
### Part 4: data dictionary

<table>
<thead>
<tr>
<th>Business process</th>
<th>milking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data definition:</td>
<td>100 items</td>
</tr>
<tr>
<td>Request and response description:</td>
<td>4 messages</td>
</tr>
<tr>
<td>Code list (ICAR, ISO...):</td>
<td>15 code lists</td>
</tr>
</tbody>
</table>
Basic content of data dictionary

<table>
<thead>
<tr>
<th>NAME</th>
<th>DESCRIPTION</th>
<th>ADED IDENTIFIER</th>
<th>XML TAG</th>
<th>TYPE</th>
</tr>
</thead>
</table>


## Part 5: technical mapping

<table>
<thead>
<tr>
<th>Web Service Description Language (WSDL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>XML data schema (xsd)</td>
</tr>
<tr>
<td>XML response and request schema (xsd)</td>
</tr>
<tr>
<td>Interface specification: operation / input / output</td>
</tr>
</tbody>
</table>

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ISO Schema (ADIS)
Part 6: implementation procedure

- UNCEFACT
- ICAR WSDL
- ICAR Test Platform
- National code list

Equipment software
- Client Interface
- Data base connection

Recording organization
- Server interface
- Data base connection
Part 7: applicable standards

- Data dictionary: ISO
- Transport: TCP/IP
- Communication: http or https
- Web service description: WSDL / W3C
- Messaging: SOAP / W3C
- Data types: UNCEFACT
- Core components: UNCEFACT
Implementation of the ADE standard

- Pilot implementation
- Operational release 1.1 (May 2014)
- Operational release 1.2 (January 2015)
- Operational release 1.2 (January 2016)
Pilot implementation

Two data flows:
- Equipment to recording organizations: **milking result**
- Recording organizations to equipment: **animal data**

3 manufacturers: Delaval, Fullwood, Lely

3 recording organizations, CRV (Netherlands), LKV Bayern (Germany), FGE / FCEL (France)

About 100 farmers
The operational phase v 1.1

- The standard may be used by any manufacturer and any recording organization

- 3 data flows:
  - Equipment to recording organizations: milking result
  - Recording organizations to equipment: animal data
  - Recording organizations to equipment: milk analysis

- An organization to keep alive the standard

- The funding of the organization to keep alive the standard is sustainable
Thank you for your attention