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

▶ **1995: ISO standards for data exchange with 'stationary equipment' (ADIS / ADED).**

▶ **2005: the ISO standard includes network issues (ISO Agrinet)**

Data exchange

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**

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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**

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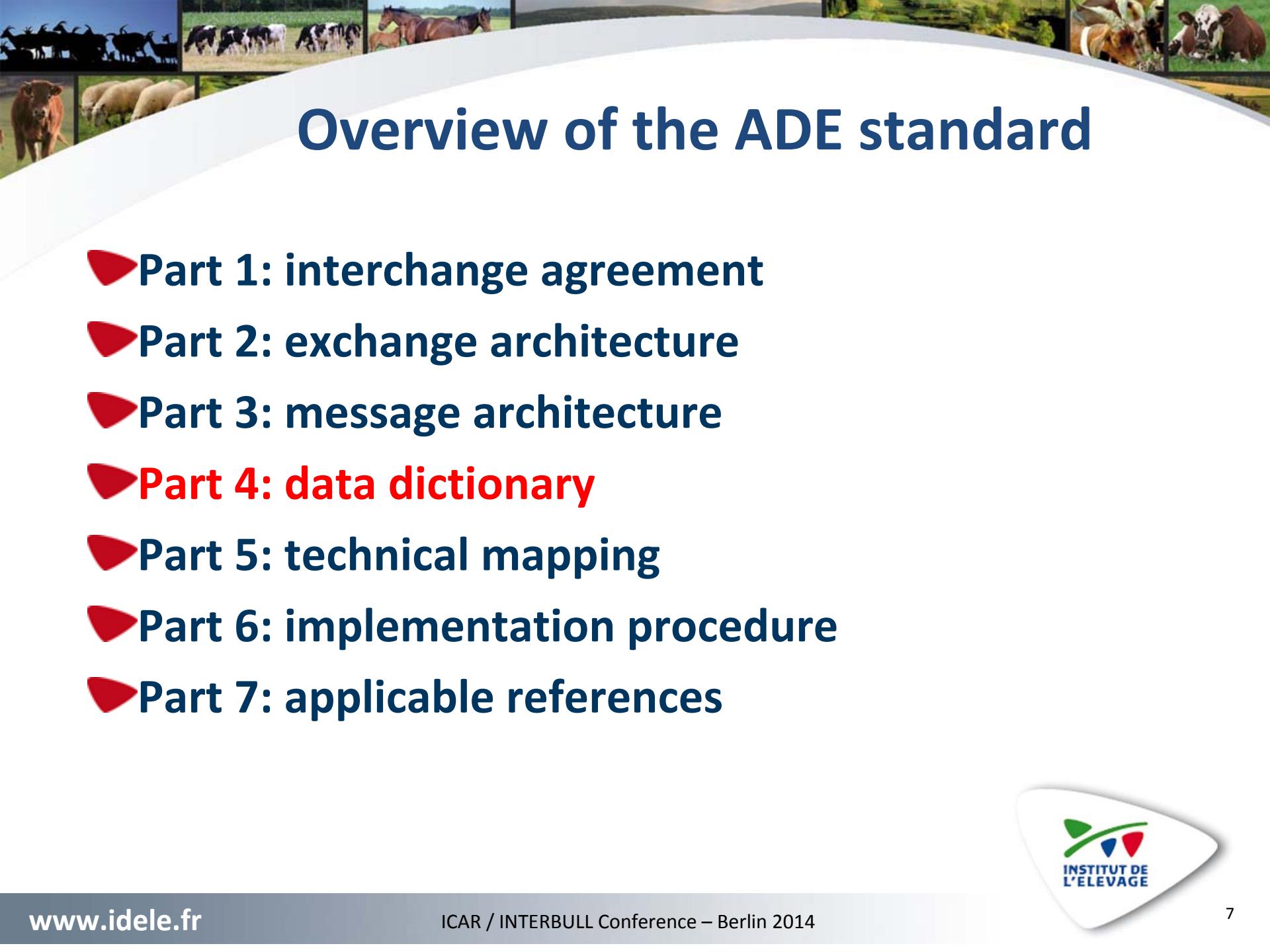
Overview of the ADE standard

▶ **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**
- **...**

Part 2: general architecture

FARM

Equipment

« Client »

Request

Response

Internet

Request

Response

RECORDING ORGANIZATION

Data base

« Server »
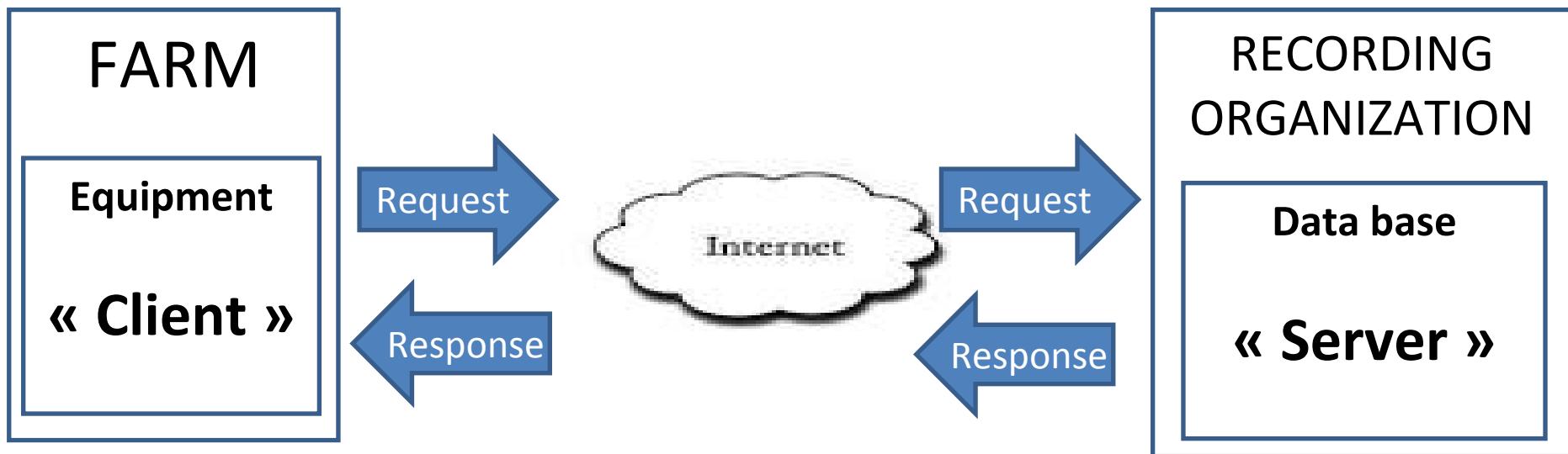
Data base = URL adress (www.xxxxxxxxxxxxxxx)

Part 3: message architecture
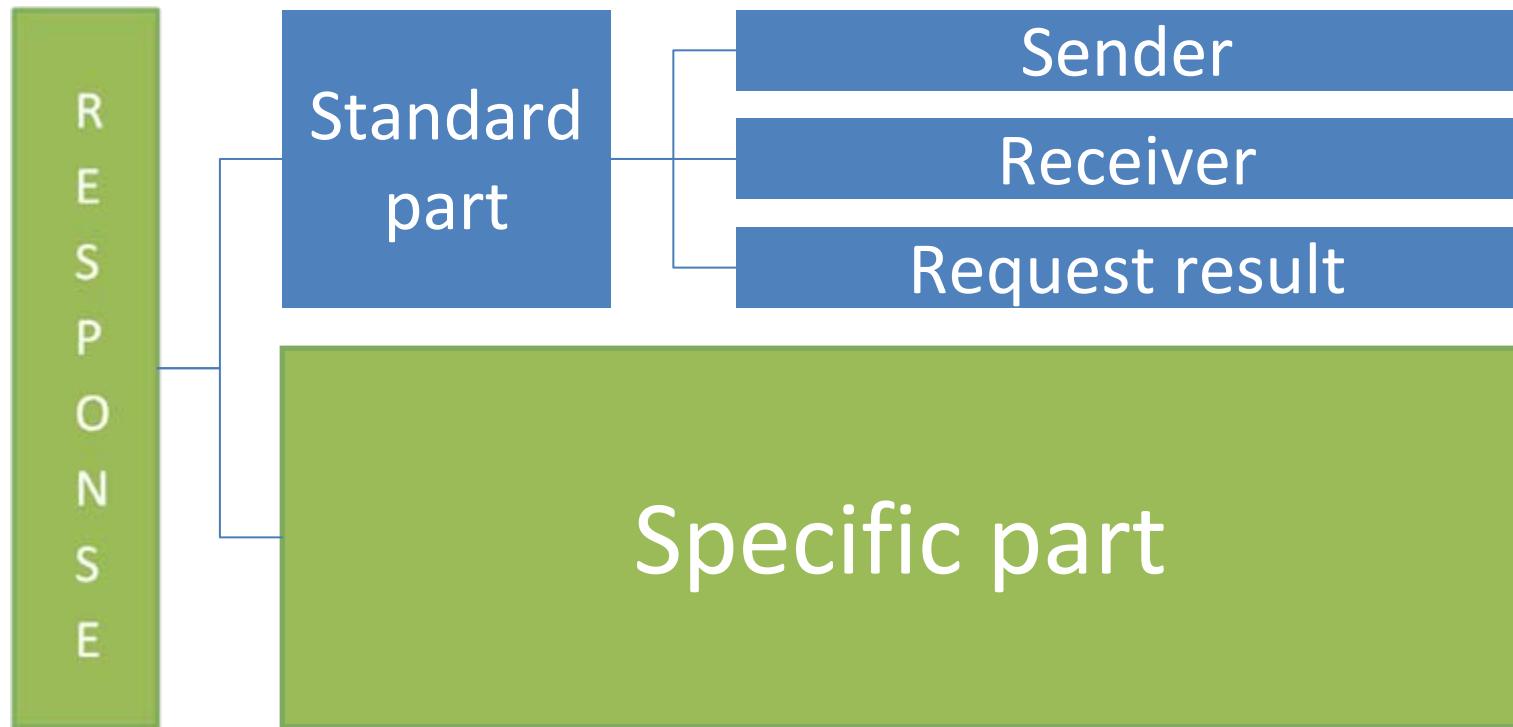
Part 3: message architecture
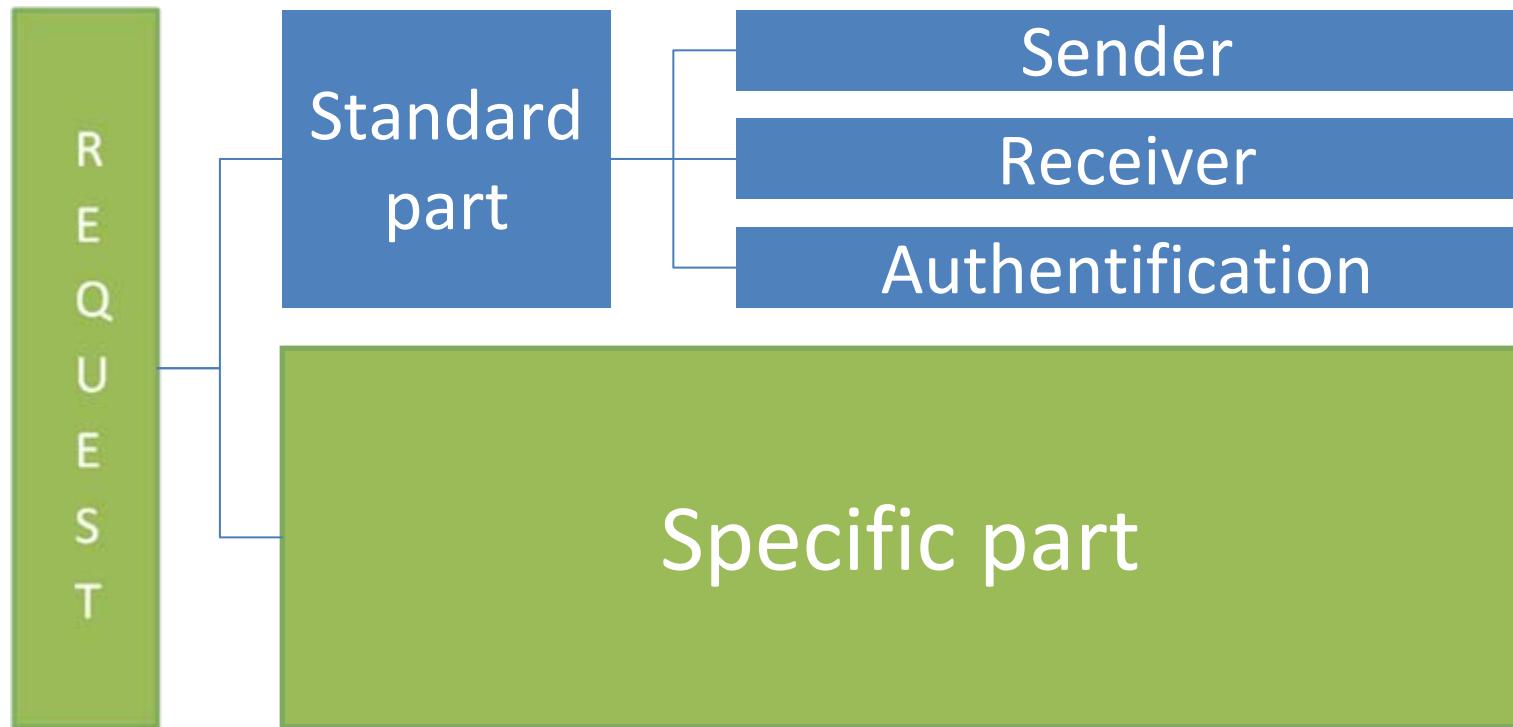
Part 4: data dictionary

Business process :	milking
Data definition: items	100
Request and response description:	4 messages
Code list (ICAR, ISO…):	15 code lists

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Basic content of data dictionnary

NAME
DESCRIPTION
ADED IDENTIFIER
XML TAG
TYPE

Part 5: technical mapping

Web Service Description Language (WSDL)
XML data schema (xsd)
XML response and request schema (xsd)
Interface specification: operation / input / output

ISO Schema (ADIS)

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Part 6: implementation procedure

UNCEFACT

ICAR WSDL

National code list

ICAR Test Platform

Internet

Equipment software

Client Interface

Data base connection

Recording organization

Server interface

Data base connection

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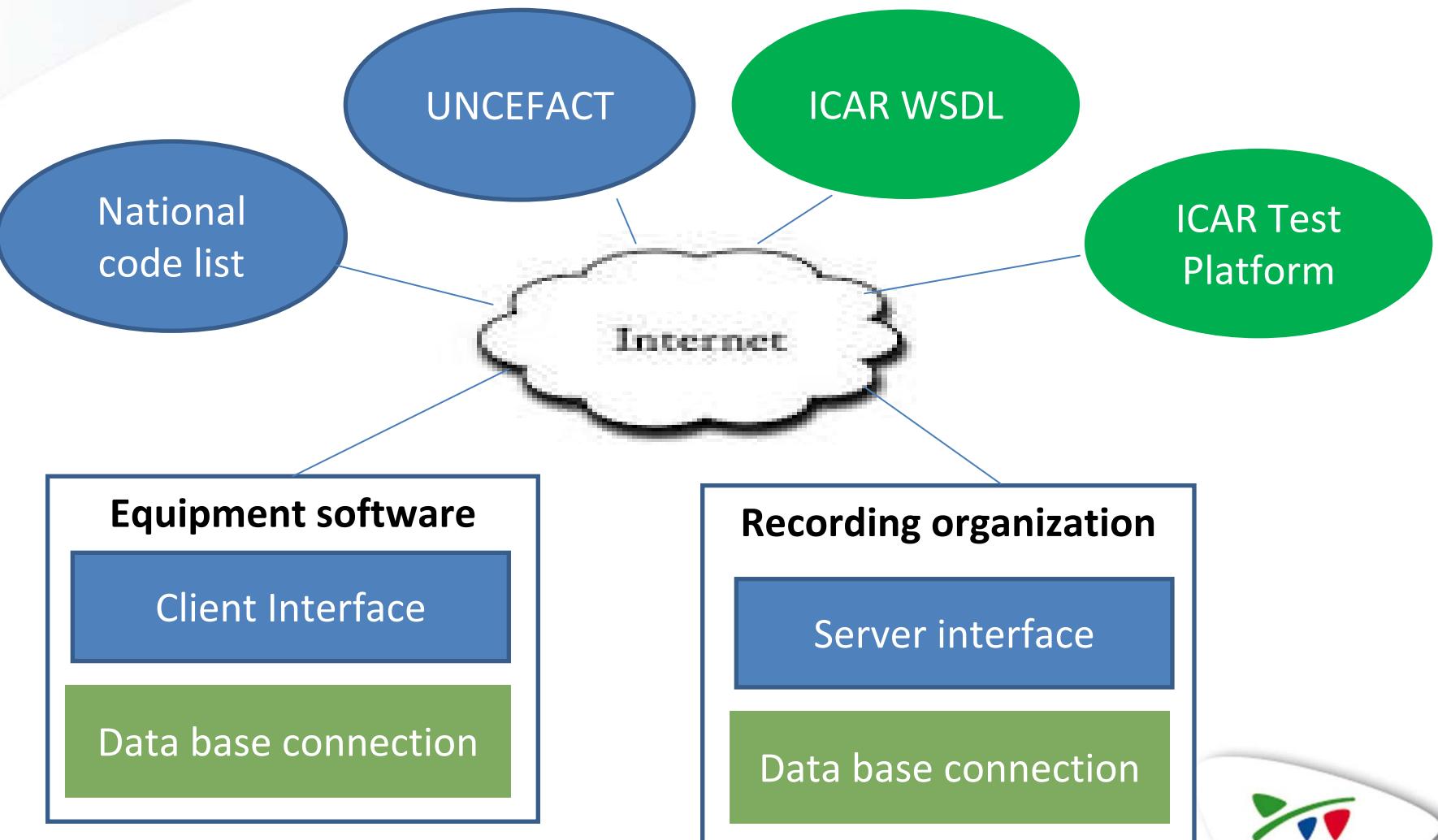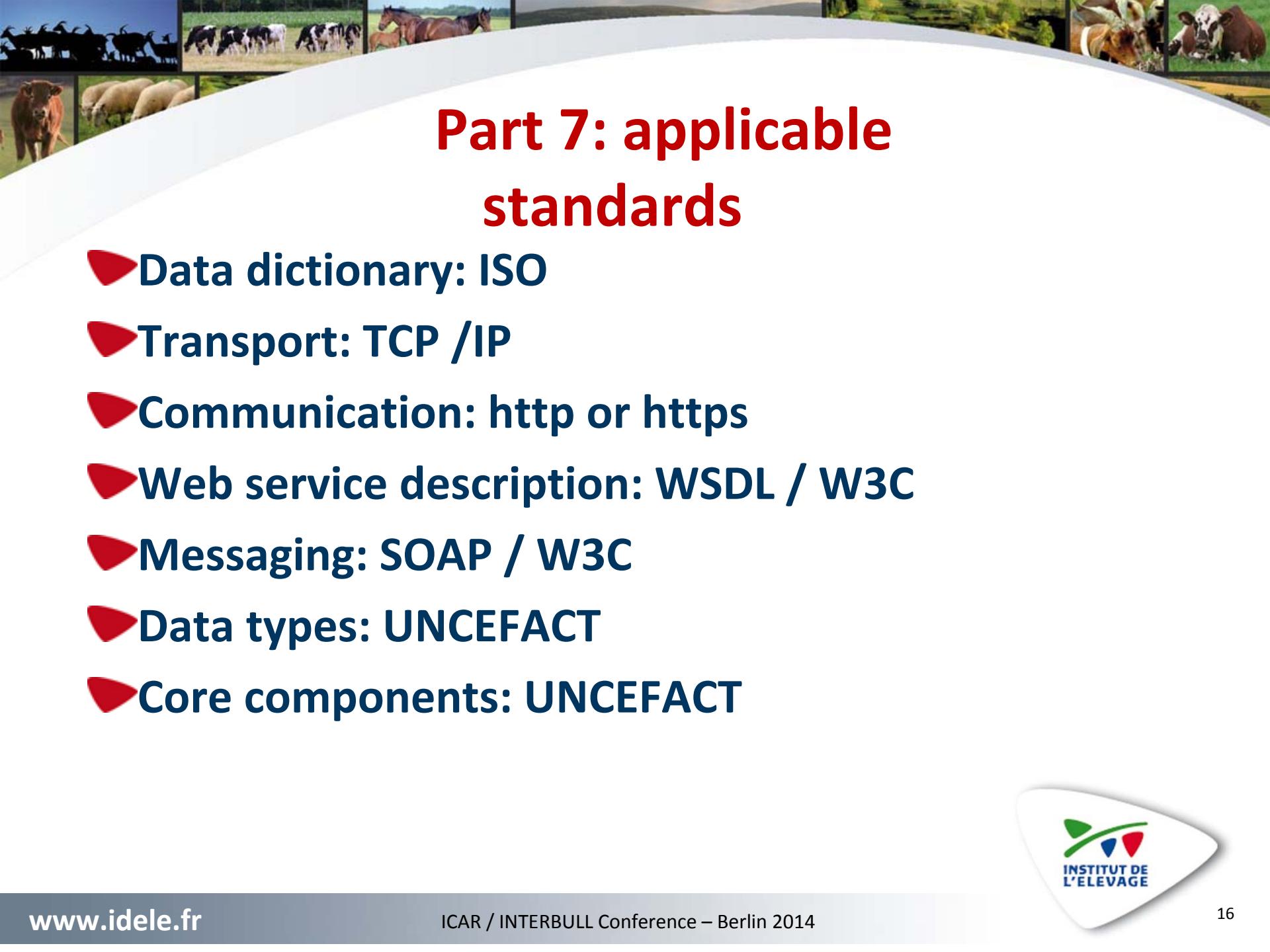
Part 7: applicable standards

▸ **Data dictionary: ISO**

▸ **Transport: TCP /IP**

▸ **Communication: http or https**

▸ **Web service description: WSDL / W3C**

▸ **Messaging: SOAP / W3C**

▸ **Data types: UNCEFACT**

▸ **Core components: UNCEFACT**

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Implementation of the ADE standard

Pilot implementation → Operational release 1.1 → Operational release 1.2

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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**

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Thank you for your attention