Current tools and technologies for the identification and traceability

"Animal identification and recording systems for traceability and livestock development in countries of Latin America and the Caribbean"

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Overview

- Introduction
- Identification devices
- Standards
- Databases
- Other technologies
- Discussion & conclusion
- Questions

Introduction

- Radio Frequency Identification, RFID introduced in 70'ties
- Netherlands 1976: 'Cow Identification Systems and their Applications'
- Farm systems based on Collar transponders
- Need for worldwide standard (1991)
  - For all animals
- Injectable transponders
  - Livestock ID ←→ food safety (slaughterhouse recovery)
  - Efficient for companion animals ID

Identification devices

- Injectable transponder
- Bolus
- Ear tag (tag attachment)
- Leg tag

Type	Application	Fraud safety	User friendly	Animal friendly	Farm automation	Food safety
Ear tag	at birth	±	+	±	±	+
Bolus	~ 1 month	+	±	±	-	±
Injectable	at birth	+	±	±	-	-

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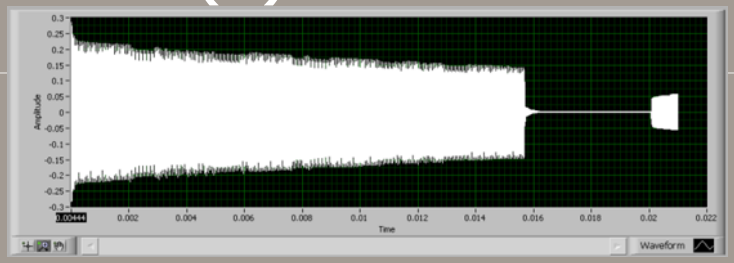
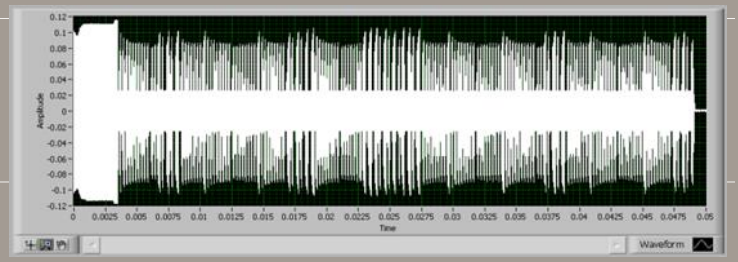
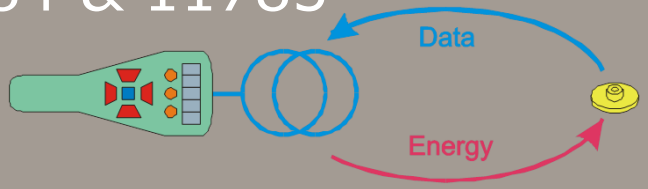
Standards (I)





- Animal RFID standards: ISO 11784 & 11785
  - Full duplex (FDX)
  - Half duplex (HDX)

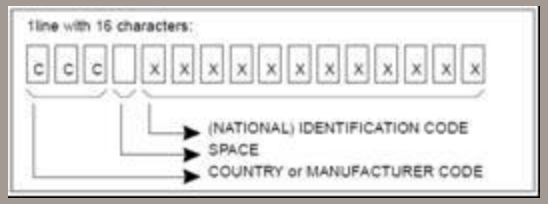


Bit no	Information	Display
1	Animal bit	
2-4	Retag counter	R
5-9	User information (ADDITIONAL INFORMATION)	UU (EU sheep & goat 04)
10-14	Reserved field (for future use)	AAA
15	RUDI-bit	
16	Data block flag	
17-26	Manufacturer/Country code (ISO 3166, Chili 152)	CCC*
27-64	Identification code	XXX XXX XXX XXX*

* Combination of Manufacturer / Country code + Identification code provides a worldwide unique ID codes

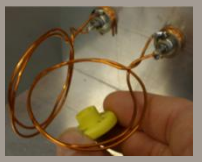
- Information on transceiver display (ISO 24631-6):

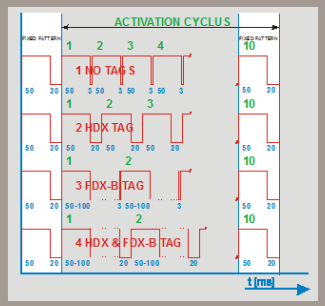
  CCC XXX XXX XXX XXX (mandatory)
  R UU AAA (option)
  - Communication link also included

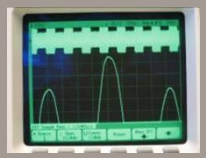


Standards (II)

- ISO 24631-1..5:
  - Conformance tests transponders & transceivers
  - Performance tests transponders & transceivers
  - Granting of manufacturer codes
    - Registration authority (www.icar.org)
    - Publication of:
      - Manufacturers (>100)
      - Approved products (>300)







- Separate we page for products available on market
- Evaluate products on market:
  - ICAR + competent authorities

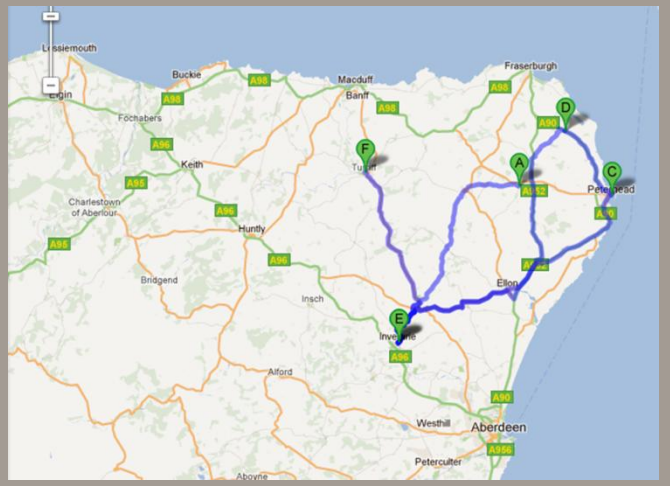
Databases (I)

- Two different databases relevant for animal RFID:
  1. Link between animal and information
     - Governmental or private organization
     - Several databases in one country
  2. Allocation of ID-codes being produced
     - Country coded transponders competent authority responsible
     - Manufacturer code coded transponders manufacturer responsible
  - Unique codes for all animals !!

Databases (II)

Central database versus local register

- Local (on farm) administration system
  - Transports (number of) animals registered centrally
    - Works only with all-in-all-out system
- Central individual registration:
  - Quicker and more effective tracking and tracing
  - Other systems can link to it
  - Quality of data is high
  - Checks are possible



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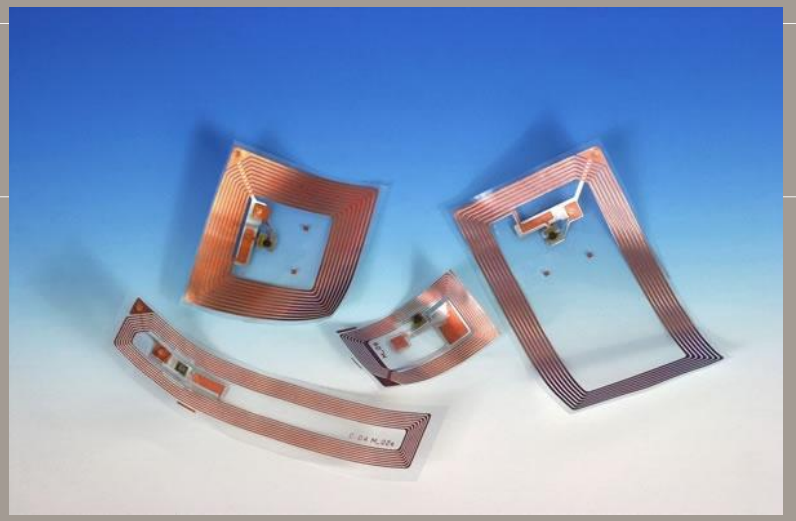
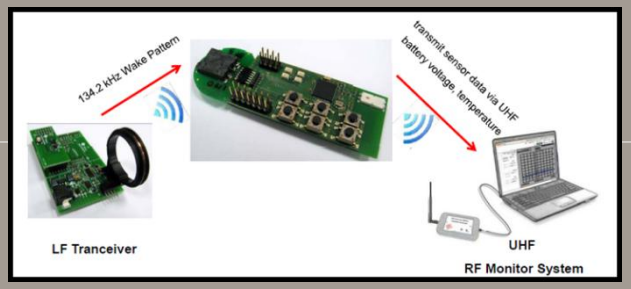
Other technologies (I)

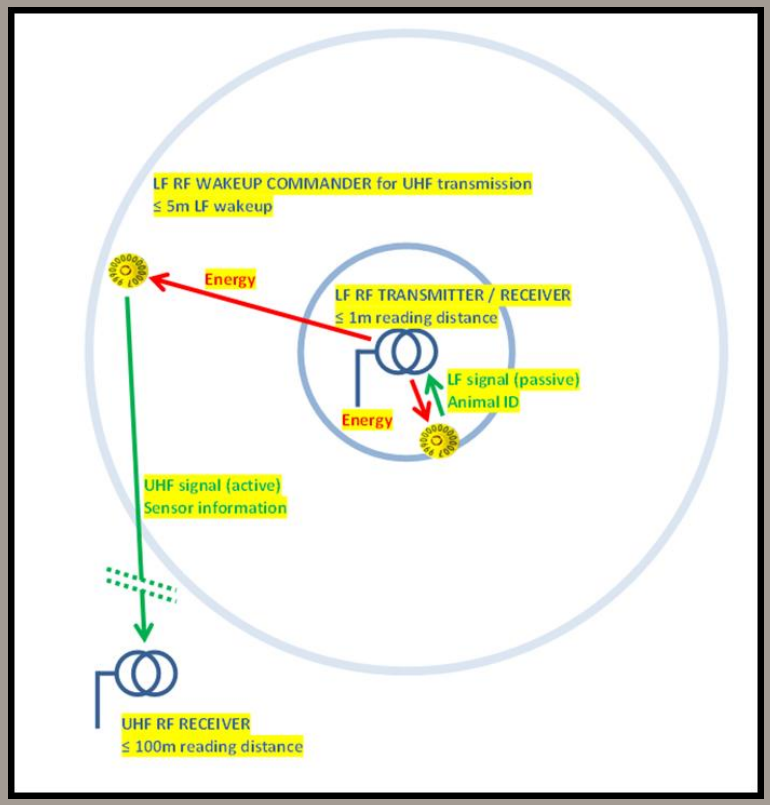


- UHF (ultra high frequency)
  - High data rate
  - High reading distance & Multi tag reading
- LF (low frequency, ISO 11784 & 11785)
  - Penetrates trough meat & skin
  - Reading range meets animal applications
  - Robust technology
- UHF animal identification standardization
  - Will be initiated when meeting market requirements

Other technologies (II)

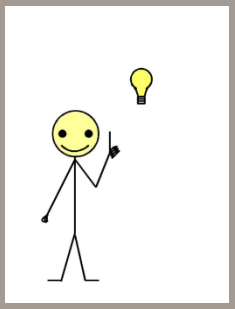


- RFID transponder with combined LF/UHF):
  - Passive LF radio link
  - ISO 11784 / ISO 11785
  - Additional active UHF signal
- Practical use:
  - Detect presence of animal
  - Transmission of data



Discussion & conclusion

- Animal RFID, database registration & recording animal movements
  - Enables worldwide trade of animals
- LF RFID at this stage most suitable technology:
  - Can used as ear tag, bolus & injectable
  - Technology + ID coding is standardized
  - Test procedures are available
  - International RA manufacturers & products
- Food safety: link animal-ID & info in database
- Central database preferable above distributed databases



Questions?

Thank you for your attention!