Food and Agriculture Organization of the United Nations

Animal identification and recording : FAO's integrated and multipurpose approach

Badi Besbes

Animal Production and Genetic Resources Unit

Plan

1. Definitions
2. FAO’s concept and approach
3. FAO’s guidelines
4. FAO’s related activities

Definitions

- Animal recording is a generic term that integrates animal identification and registration, animal traceability, animal health information and animal performance recording
- Animal identification means the marking of an animal, individually or collectively, by its group, with a unique individual or group identifier
- Animal registration is the process by which information on animals is captured manually or electronically, and then entered and stored to be made accessible to users
- Animal identification & registration is a core functionality of animal identification and recording system and covers both animal identification and animal registration.

Definitions

- Animal traceability means the ability to follow an animal, or group of animals, during all stages of its life
- Animal performance recording refers to the process by which indicators of animal performance are objectively and systematically measured, and related data including parentage, breed characteristics and test events are collected, recorded, calculated and stored and made accessible to users
- Animal health information recording refers to the process by which indicators of the health status of animal populations and related data on prevention, surveillance and outbreak management are systematically collected, recorded, calculated and stored and made accessible to users

Animal identification, a tool to

Authentication, preventing theft, and locating and rescuing animals

- Proof of ownership
  - *Resolving ownership disputes*
- Theft control
- Locate stray animals

Management payment of subsidies and preventing fraud

- Correct payment of subsidies or taxes
- Reduce costs of controls

Animal insurance

- Ease the administration of animal insurance schemes
- Mitigate fraudulent insurance claims

Animal traceability, a tool to

Food Safety and quality control

- identify, trace and control animal movements
- identify, trace and recall unsafe foods (and feeds) at any stage of the food production and distribution chain
- risk management

Value addition to products

- protect from deceptive practices and fraud in the market place and unsubstantiated product claims (e.g. geographic indication, food quality)

Export and certification

- Compliance with SPS standards
- Ensure inspection and certification for animal health

Animal health information, a tool to

Disease prevention and control

- Define the health status of animal populations
- Plan surveillance and control strategy
- Fulfil international obligation of disease notification
- Facilitate early detection and rapid response
- Facilitate the performance of risk assessment studies

Estimation of disease losses and management of veterinary health

- Facilitate estimation of disease incidence and impact on production
- Help to reduce disease incidence and decrease resultant animal losses

Animal performance recording, a tool to

Establishment of baseline animal performance levels

- Generate data on production on species basis, production environment and ecological zone, or at breed level (Characterization)
- Develop national strategies and programs

Evaluation of production system alternatives

- Improve production practices (i.e. feeding, housing, breeds/crosses)

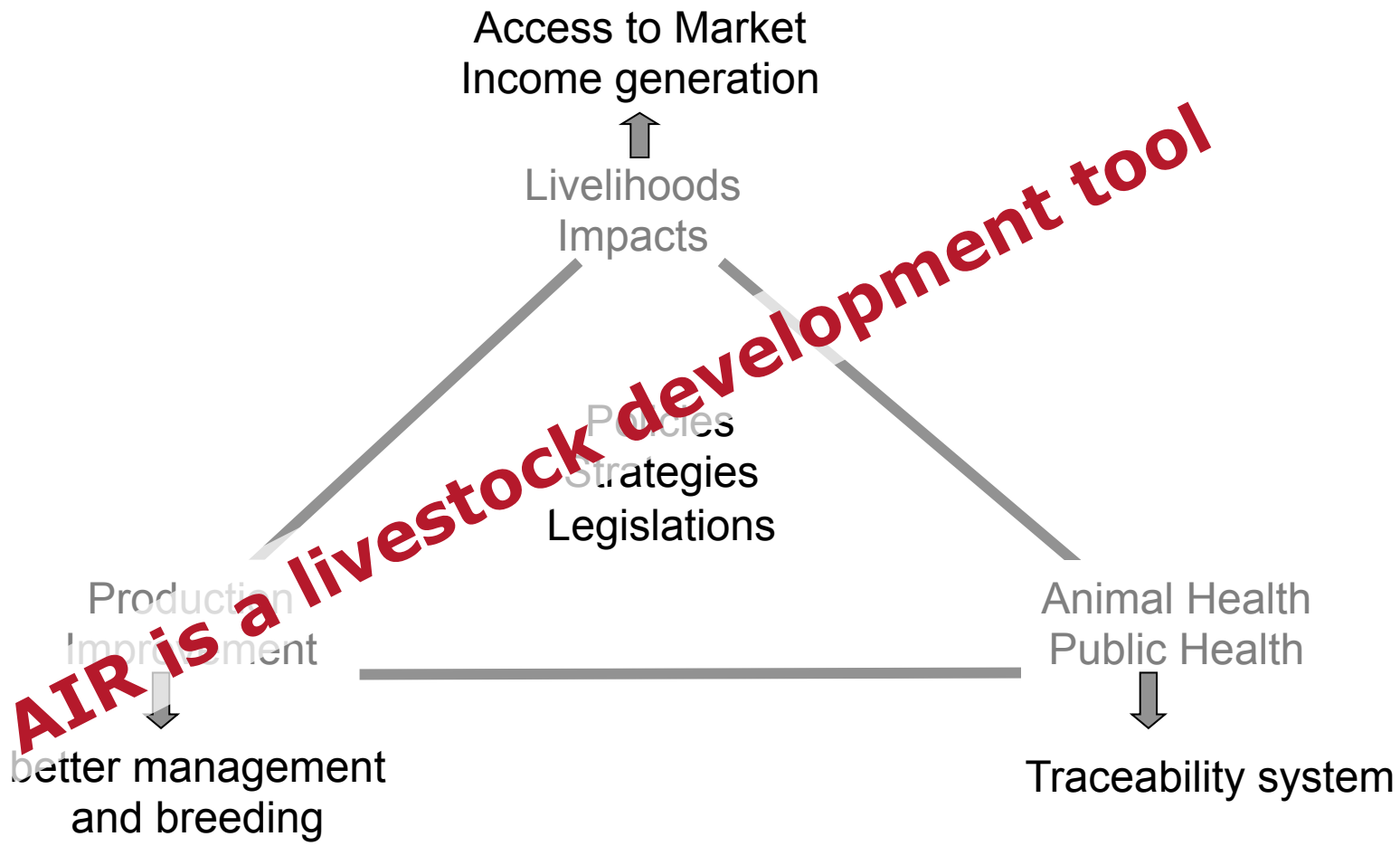
Individual animal management

- Assist in managing day-to-day farm operations
- But, difficult to demonstrate for small-scale operations

Genetic improvement

- Identify and mate superior animals
- Permanent and cumulative
- Maintenance of parentage records

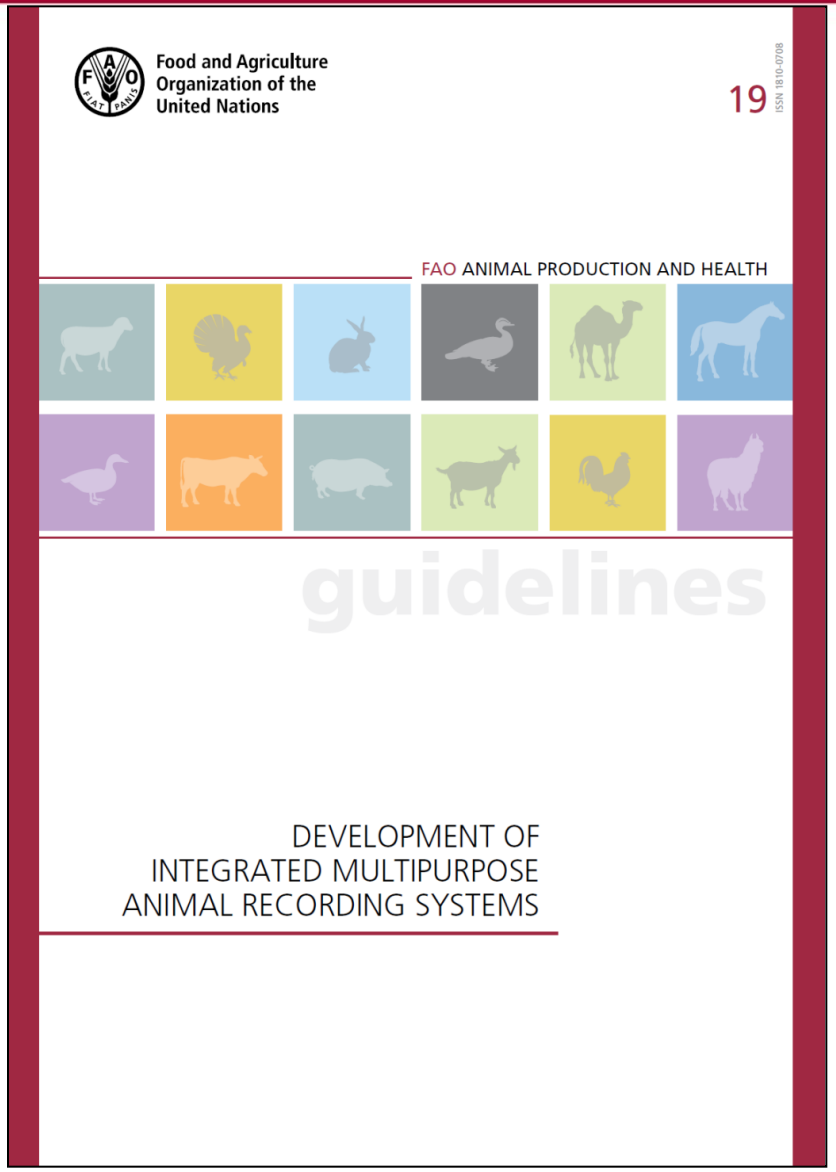
AIR: FAO integrated multipurpose approach



AIR: FAO integrated multipurpose approach

This multipurpose and integrated approach increases acceptance and distribution of costs among all stakeholders

Guidelines


Food and Agriculture Organization of the United Nations
19
ISSN 1810-0708
FAO ANIMAL PRODUCTION AND HEALTH
guidelines
DEVELOPMENT OF INTEGRATED MULTIPURPOSE ANIMAL RECORDING SYSTEMS

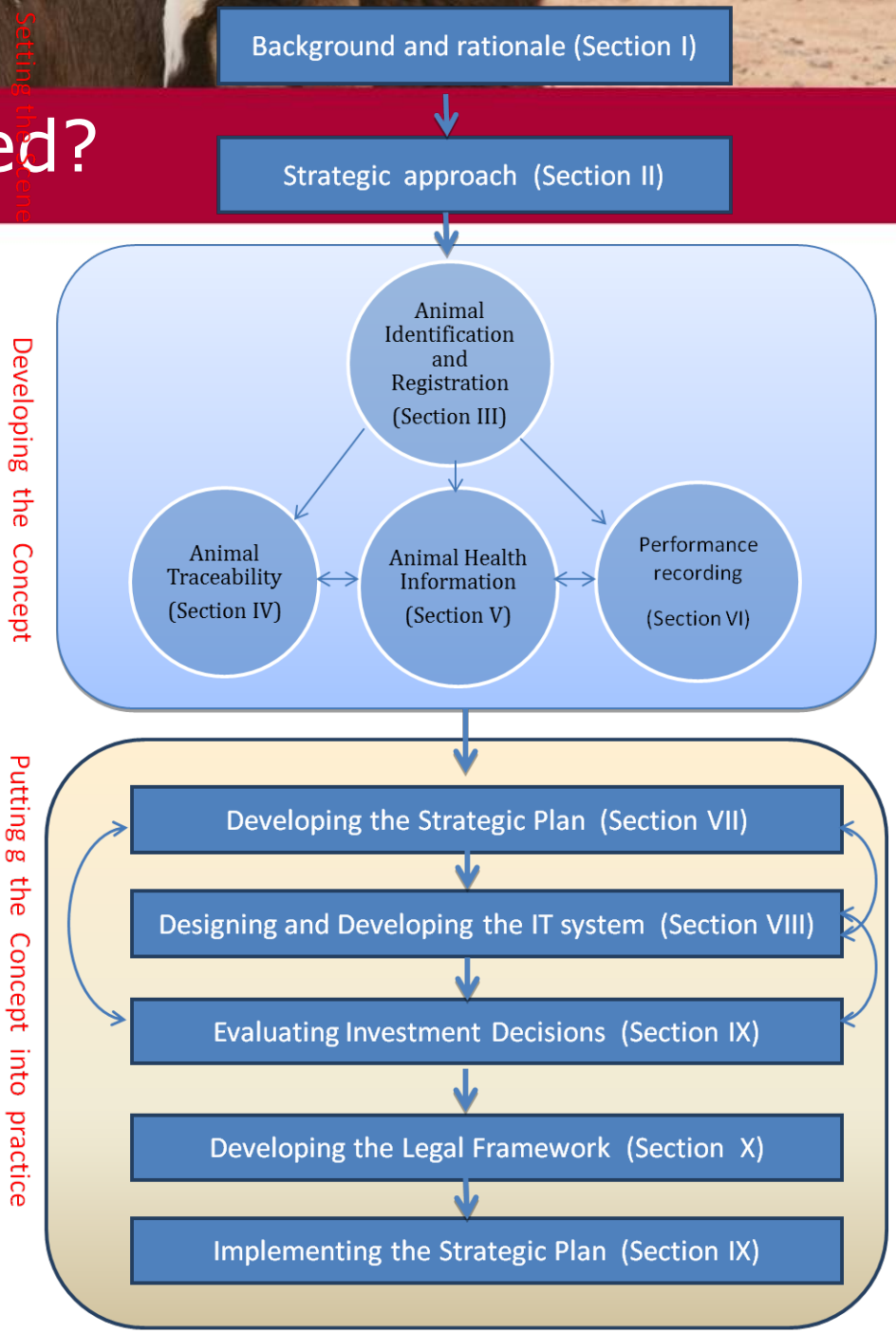
What are they about?

Assist in the planning and implementation of animal recording systems

- Take the user through a step-by-step decision-making process, leading to the establishment of AIR systems
- Explain how to plan and implement AIR systems, technically and operationally
- Inform on the necessary conditions for such development, their implications and the possible time frame in which the planned activities could be implemented

How are they structured?

- Divided into:
  - 3 parts
  - 11 sections



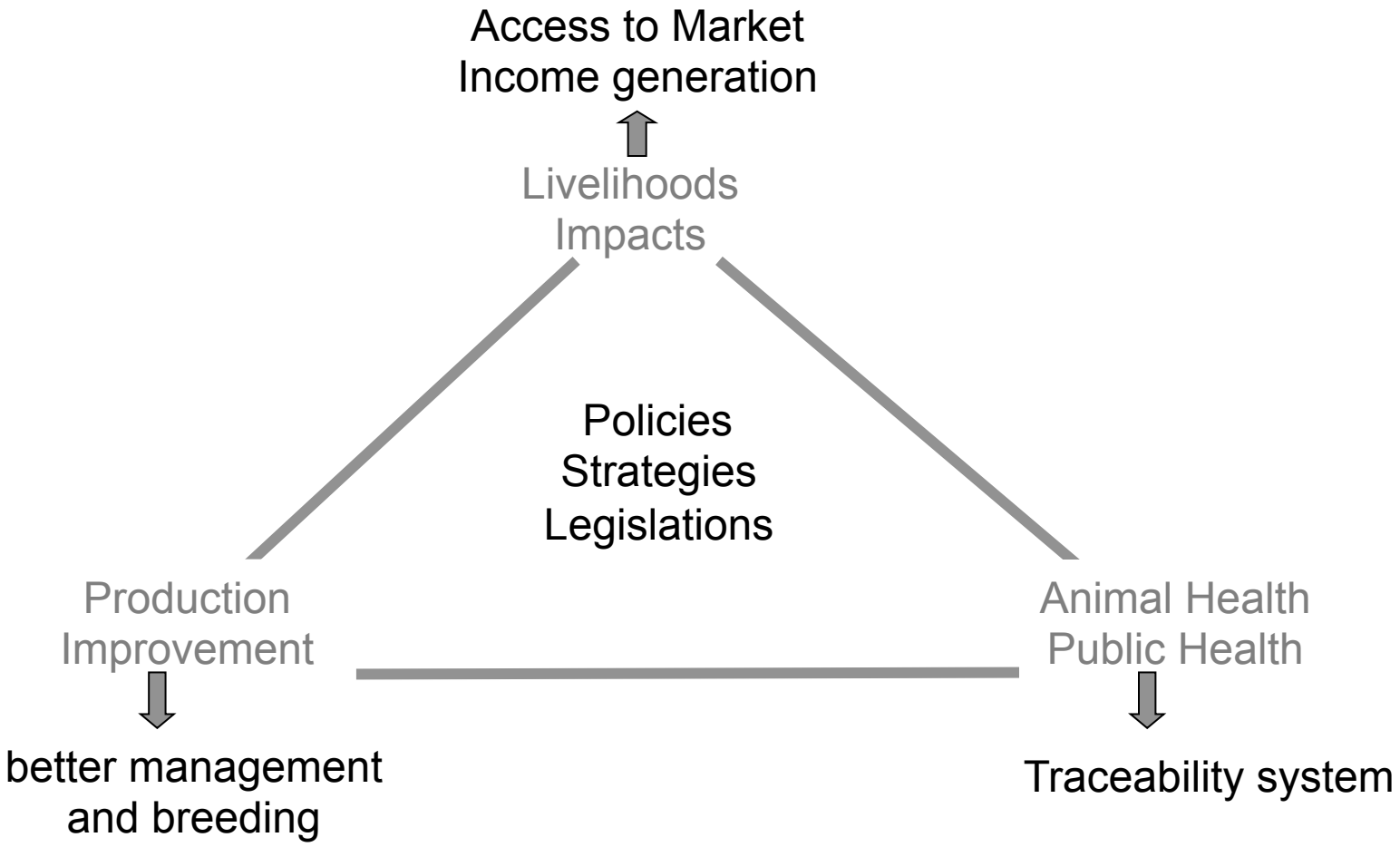
PART 1: SETTING THE SCENE

Section I: Background and rationale

- Outlines the potential benefits and beneficiaries of AIR systems
- Gives overview of AIR that have been implemented in a number of developed and developing countries, and highlights the lessons learned from these experiences
  - E.g need to broaden the scope of AIR by adopting a multipurpose approach
- Reviews existing guidelines and their applicability in developing countries, in general, and in small-scale production environments, in particular

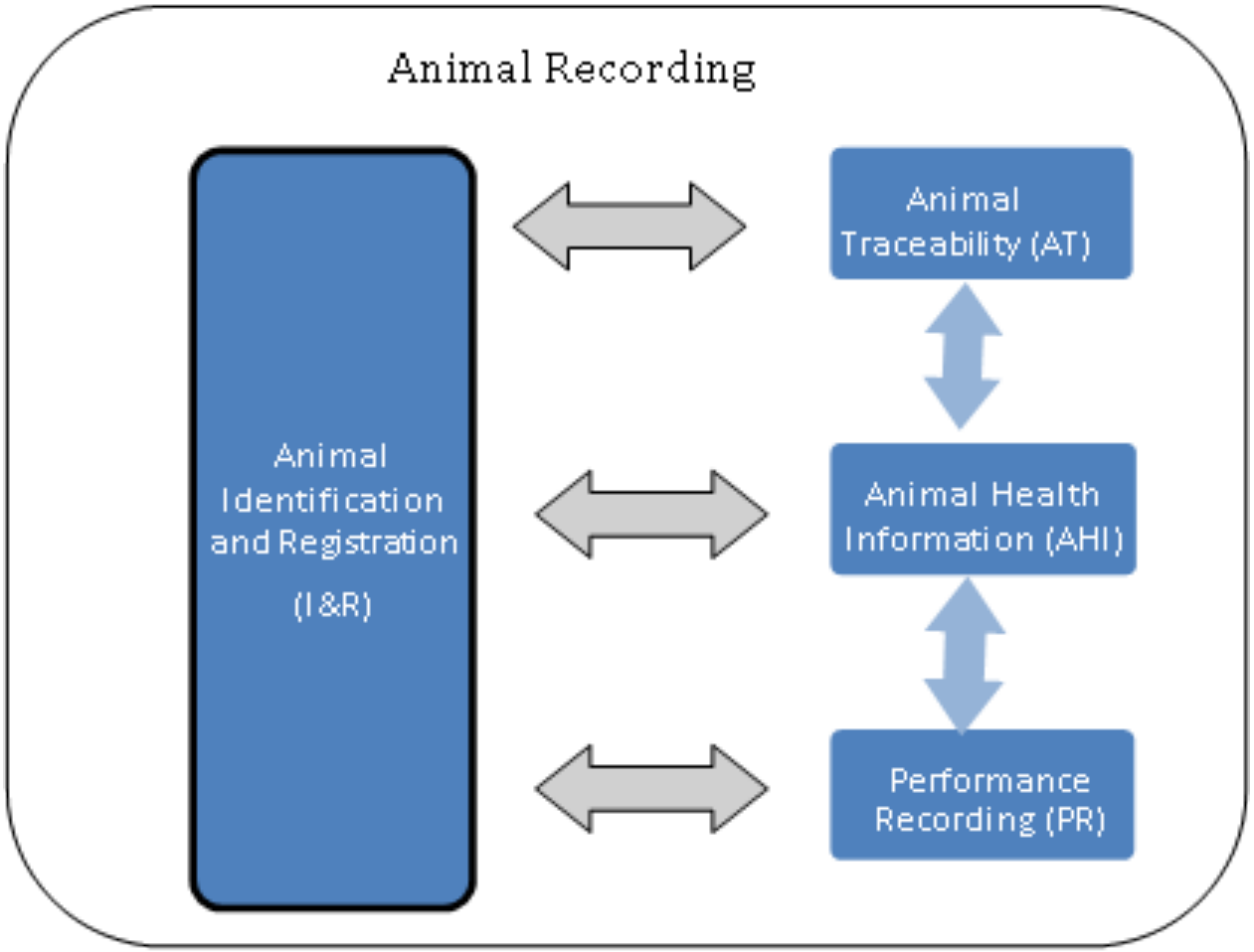
Section II: Strategic approach

The concept of a multipurpose approach



Section II: Strategic approach

The multipurpose integrated systems



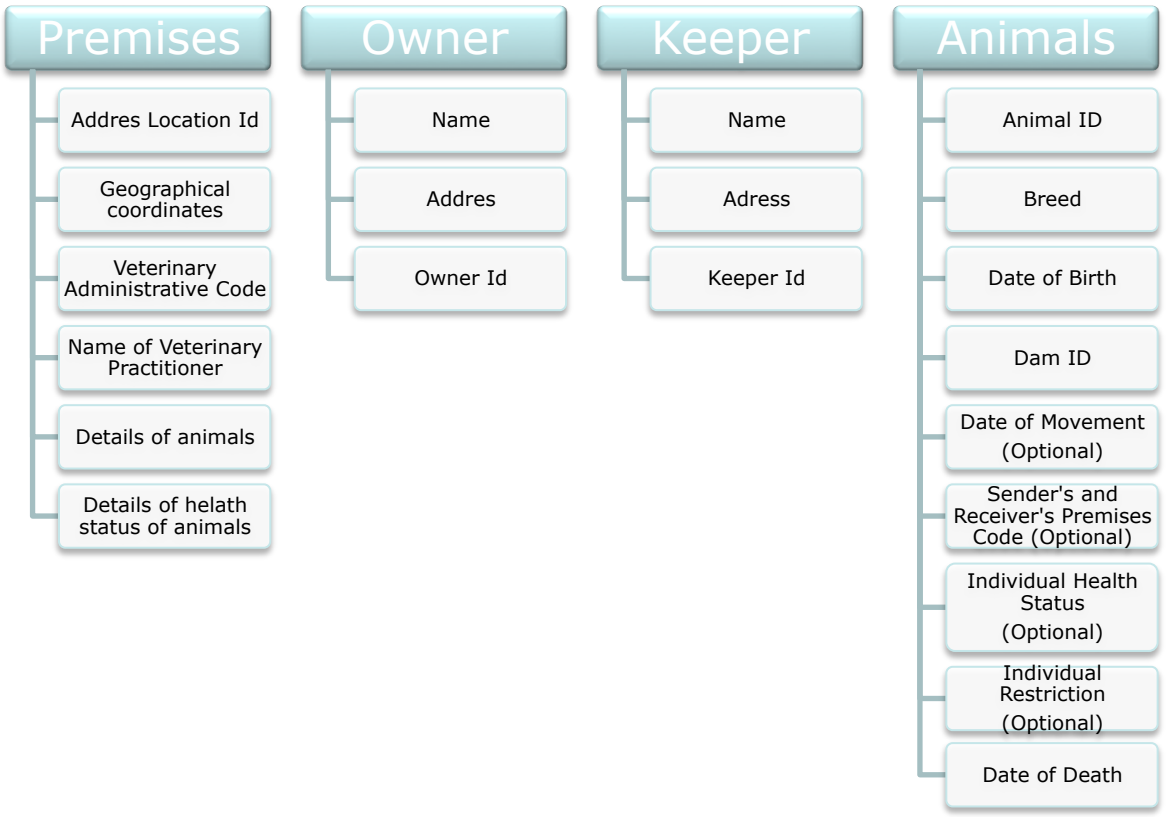
PART 2: DEVELOPPING THE CONCEPT

Section III: A. Identification & Registration

Objective: Describe the elements of I&R and provide guidance on how to choose the method of animal identification

Concept: I&R refers to identification and registration of premises, keepers and owners, and animals.

An integrated view



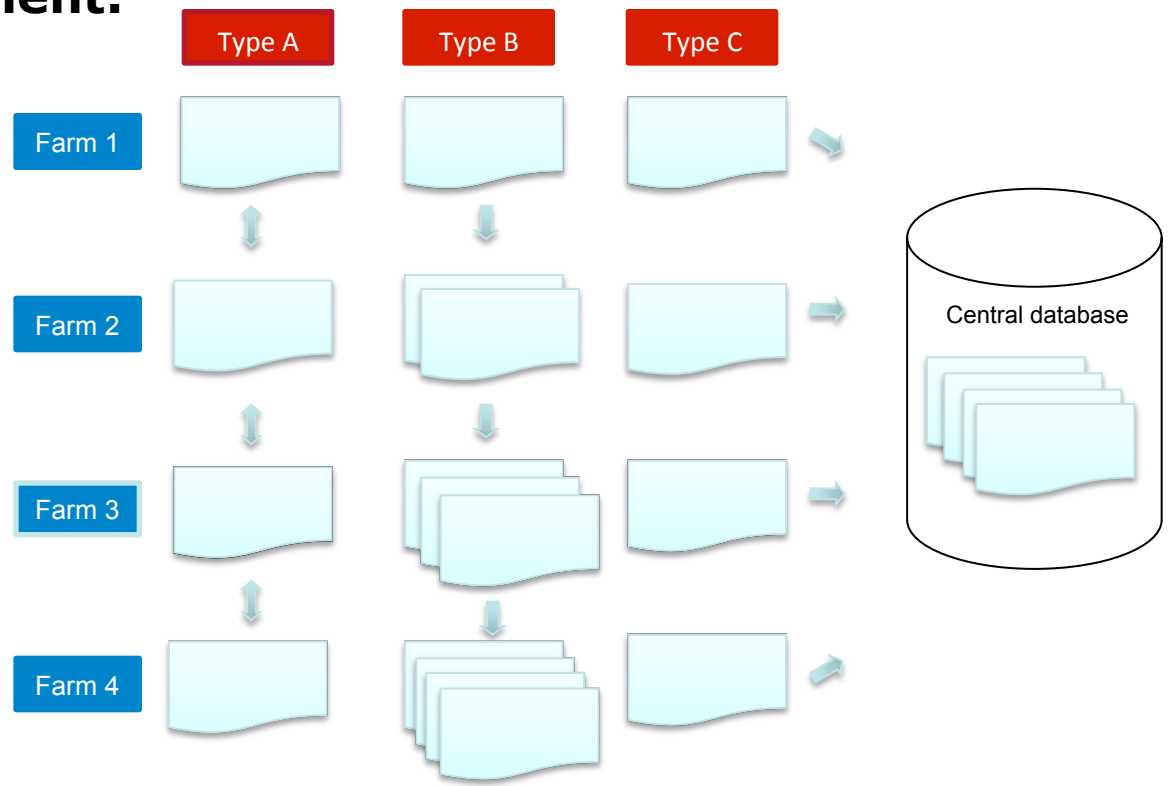
Section IV: Animal Traceability

Definition: Animal traceability refers to the ability to access the history of an animal or a group of animals through all its life.

Objective: Describe the types of AT systems and their requisite elements, considering the local situation and the objectives

Tracing animal movement:

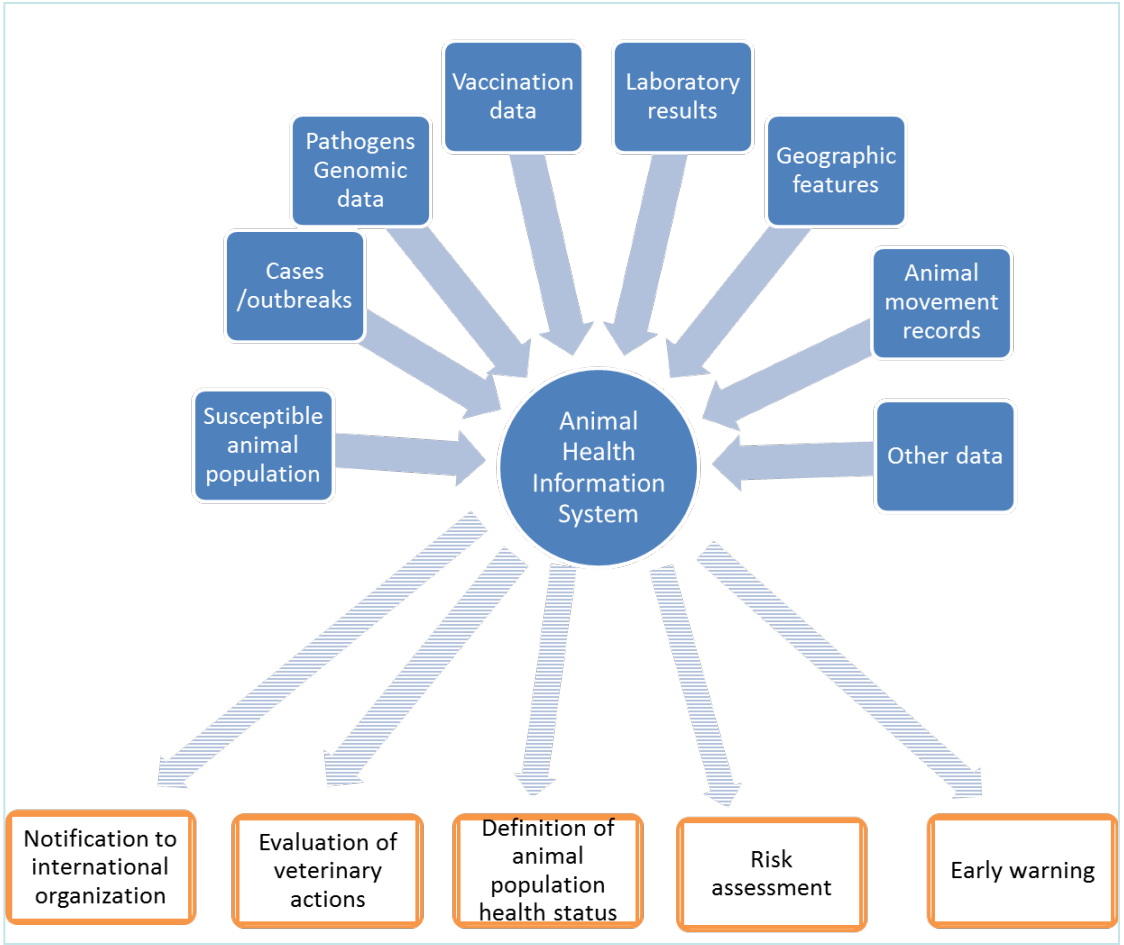
➔ I&R is a prerequisite of a functional AT system



Section V: Animal health information

Objective: describe the elements of an AHI system and provide guidance on how they may be used and integrated with other relevant systems

Inputs & deliverables of AHIS

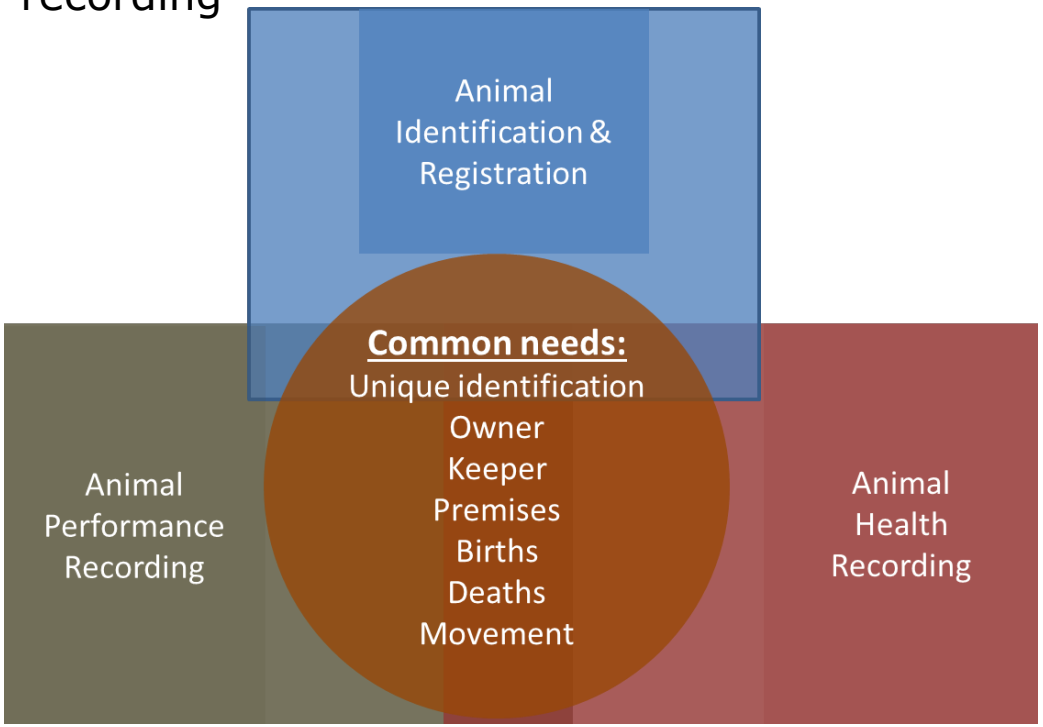


Section VI: Performance recording

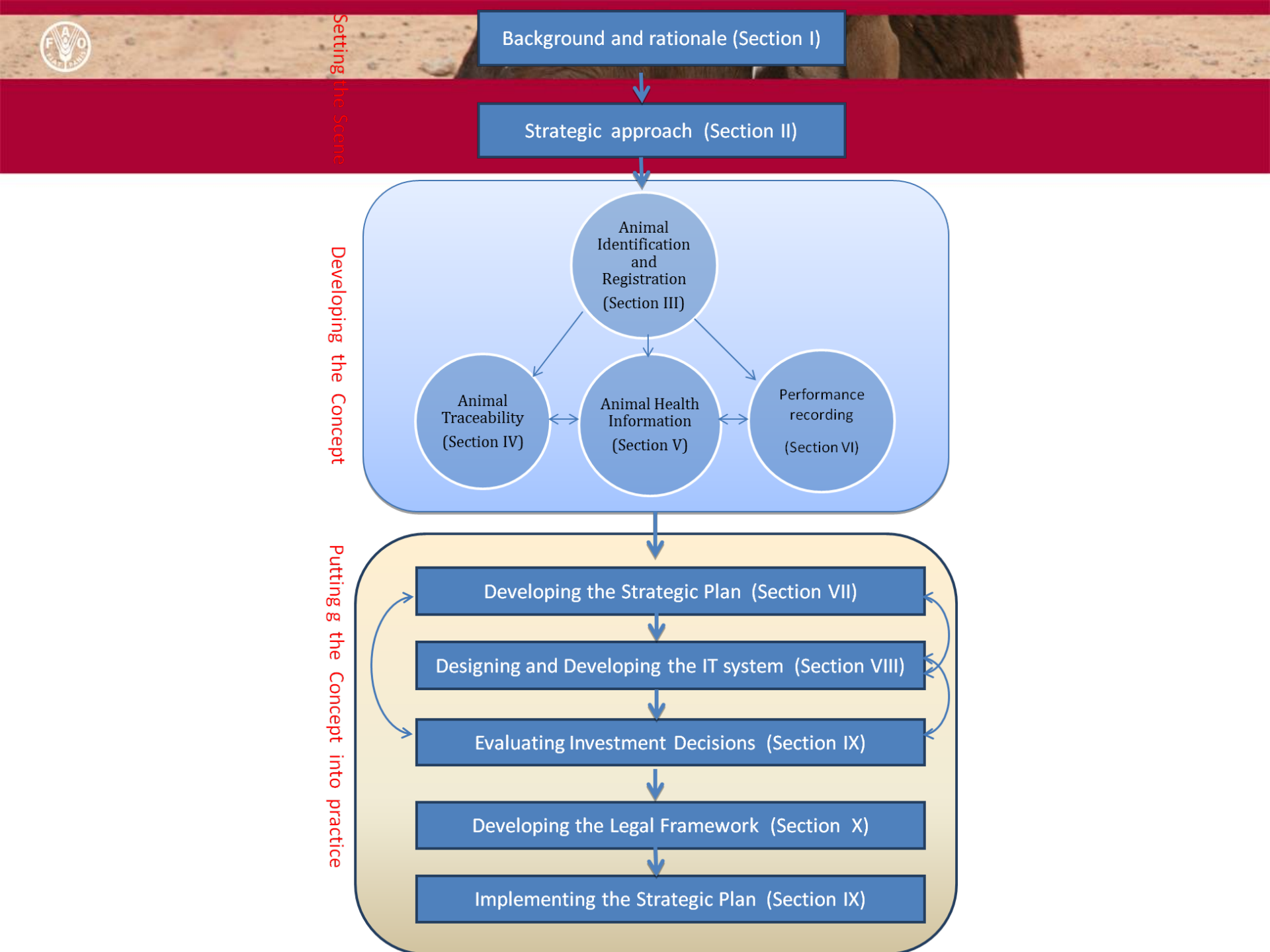
Objective: Put PR in more general context of national animal recording, highlighting the linkages between PR, I&R, AT and AHI.

Describe the different types of PR, and the elements of such systems, as well as the data that should be collected or provided in each case.

➔ Examples based mainly on dairy recording



PART 3: PUTTING THE CONCEPT INTO PRACTICE


Setting the Scene
Background and rationale (Section I)
Strategic approach (Section II)
Developing the Concept
Animal Identification and Registration (Section III)
Animal Traceability (Section IV)
Animal Health Information (Section V)
Performance recording (Section VI)
Putting g the Concept into practice
Developing the Strategic Plan (Section VII)
Designing and Developing the IT system (Section VIII)
Evaluating Investment Decisions (Section IX)
Developing the Legal Framework (Section X)
Implementing the Strategic Plan (Section IX)

Section VII: Developing the strategic plan: Provide guidance on how to develop a strategic plan for establishing an AIR, taking into account the specifics of its components

Section VIII: Designing and developing the IT system: Provide guidance for procuring or developing a software application for an AIR system and for setting up the necessary computer hardware

Section IX: Evaluating investment decisions: Provide a clear breakdown of costs and benefits of an AIR, particularly an AITS, to facilitate their evaluation and identify ways for equitable distribution of costs among beneficiaries

Section X: Developing the legal framework: Provide an overview of key steps and considerations to develop a legal framework for an AIR system, and highlight key policy and regulatory decisions to be made when implementing such a system

Section XI: Implementing the animal recording system: Provide guidance on how to implement the AIR system, based on the established strategic plan

Before any AIRS is deployed in a large area, it is advisable to test all its functionalities in a pilot area. Both in the pilot region and during roll-out, the implementation activities can be categorized within three phases: preparatory, execution and maintenance phase

Development & validation of the Guidelines

Draft Outlines developed in collaboration with ICAR/WG-DC

- 1st expert meeting (Oct. 2011) to discuss the draft outlines
- 2nd expert meeting (June 2013) to review the 1st draft GL
- 3rd expert meeting (June 2014) to review the 2nd draft GL

4 workshops (Botswana, Tunisia, Chile and Morocco), attended by a total of 236 scientists, technicians, and policy-makers, from 57 countries, contributed to validate the outlines, shape the conceptual approach and integrate the lessons learned from countries experiences

FAO's activities in AIR

- Technical cooperation projects for formulating legislation and designing national AI&R systems; e.g. Chile, Uganda, Malawi, Lesotho, Moldova, Ukraine, India, Swaziland, Tanzania, WBGS, Ethiopia, Suriname, Georgia

- Organization of Symposia and workshops: South Africa, 2015, Morocco, 2012, Chile, 2011, Hungary 2008; Finland 2006; Tunisia 2004; Switzerland 2002; Slovenia 2000; Poland 1998; India 1997

- Support to ICAR WG for Developing Countries

THANK YOU FOR YOUR ATTENTION

Elements of the AITS

- Elements

1. Identification of location or premises (establishments), where animals are housed or otherwise handled

➔Farms/households, livestock markets, fairs and exhibition sites, slaughterhouses, mountain/village pastures, borders inspections posts, etc

➔ Identification of keeper and owner (keeper # Establishment)

➔ In the event of the registration of establishments is not applicable e.g. transhumance systems, the animal keeper, the keeper's place of residence and the species kept should be recorded

Elements of the AITS

- Elements
  2. Identification of the animals
     a. Animal Numbering system
     - ✓ ID to be as short as possible; as long as necessary
     - ✓ The animal numbering system should comply with ISO standard
       - 15 digits maximum composed of a leading numerical 3-digit ISO country code followed by 12 digits running number maximum
       - Plastic eartag or printed documents: 2 letters [e.g.
       - TN] + 12 digits maximum
       - For running number, at least 8 digits for a population of around 100,000 cattle

Elements of the AITS

- Elements
  2. dentification of the animals
     b. Methods of identification

	Readibility		Theft	Costs	Electronic
	Visual	Electron.reader	control		media transfer
Village brand	+	Θ	+	+++	Θ
Farm brand	+	Θ	++	+++	Θ
Visual tag with bar code	+	+	ΘΘΘ	+++	+
RFID tag	+	+++	ΘΘΘ	ΘΘΘ	+++
Bolus +simple empty tag*	+	+++	+++	ΘΘΘ	+++

Designing the AITS Strategy

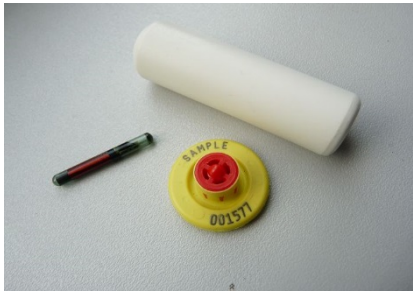
- Basic Considerations
  - Sharing of experience is important, however there is no “blueprint” or “turnkey solution” which can be copied
  - The industry provides a broad variation and quality of items (from single ear tags to integrated system components for RFID devices, readers and database applications)
  - Building up technical competence within national institutions is indispensable
  - Autonomous planning and operation of AITS and/or contracting of “system providers”

Designing the AITS Strategy

- Legal framework
  - Without legal framework
    - The system remains voluntary and may not be recognized by trading partners
    - Various stakeholders adopt different and incompatible systems

      ➔ AITS needs to be compulsory and nation wide (movements)
  - Primary legislation
    - Separate AIT law or additional articles in the veterinary/animal health law
    - Definition/specification of competent authority
    - Constitutional matters have to be taken into account (for ex. for sanctions, data security, property)
  - Secondary legislation
    - Book of Rules for each species (e.g. technical features; amendments can be made more easily)

Designing the AITS Strategy



- System Design
  - Identification means
    - Eartags, RFID eartags, bolus
    - Objective, quality, costs, loss rates
  - Organization of data capture
    - Contracted field operators
    - Livestock keepers
  - Communication of AIT events to the central application
    - flexible approach of different strategies/technologies of data entry/ capture, paper-based, scanners, RFID readers, web-based interfaces or smatphones
    - Minimizing communication breaks for maximum reliability of data
  - Organization of plausibility checks and corrections
    - Field level, regional level , central level

Designing the AITS Strategy

- IT system Strategy
  - Limited number of commercial AIT Off the-shelf software supplier or specialised AIT software development firms
  - Off-the–shelf software of AIT software supplier may provide fast solutions but bear the risk of software not sufficiently customized to the needs of the client, dependency and lack of integration with existing systems
  - AIT software tenders should be based on detailed technical specifications; reference installations and qualified staff
  - Software development according to functional requirements, business processes and workflows derived from legal base

Designing an AITS Strategy

- IT system Software
  - Setting up and maintenance of IT infrastructure (hardware) in-house or hosting outside the competent authority
  - Availability of qualified IT staff to set up and maintain the application
  - Existing IT strategy and data exchange with other IT systems within or outside the institution
  - Commercial software or licence free open source products for operating and database management systems
  - State of the art technology (web-based, utilisation of different means for data entry…)

Designing an AITS Strategy

- Costs
  - System costs : often underestimated
    - Costs for setting-up the system
      - IT solution, hardware, eartags or other identification devices, documents, publicity and training
      - Costs for maintaining the system
    - AIT-unit, field services, control services, eartags or other identification devices, communication, documents
  - Costs for other stakeholders to comply with the system
    - Livestock farmers, slaughterhouses, industry, livestock markets

Cost structure AITS

description	€, per new born calf
Ear tags and forms	0,40 - 0,70
AITS unit, regional offices for data entry	0,50 - 0,70
Depreciation/maintenance of hard- and software	0,30 - 0,50
Tagging and mov. recording service incl. transport fee	1,00 - 3,00
AITS control	0,50 - 1,00
Total costs	2,70 - 5,90

* Source: F. Schmitt (aggregated from several projects)

Phased implementation of the AITS

- Careful planning and preparation beforehand is needed
- There is only little possibility for modification and adaptation in a later stage of implementation
- Phases:
  - Phase 1: **Planning phase** of around 6 to 12 months
  - Phase 2: **Preparation phase** of at least 12 months
  - Phase 3: **Implementation phase** and **system roll-out**