

**COST ACTION 18105 (RIBMINS)**  
**RISK BASED MEAT INSPECTION AND INTEGRATED MEAT SAFETY ASSURANCE**

**WG5: YEAR 1 TECHNICAL REPORT**  
**meat safety**  
**assurance system training, communication and monitoring**

**MC Meeting**  
**Copenhagen, 6-8 November 2019.**

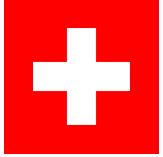
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## YEAR 1: Goals

- Goal 1: Define the list of external stakeholders and provide their contribution to the COST RIBMINS activities
- Goal 2: Define communication strategy
- Goal 3: Define training needs for risk managers

# WG5 group members...more to add...



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# Goal 1: External stakeholders

Established contacts with 16 stakeholders

- **Federation of Veterinarians of Europe (FVE)** active
- **Consumers, Health, Agriculture and Food Executive Agency** n/a
- **DG Health and Food Safety (DG SANTE), EU Commission** n/a
- **Committee on the Environment, Public Health and Food Safety (ENVI), EU Parliament** n/a
- **European Food Safety Authority (EFSA)** active
- **European Centre for Disease Control and Prevention (ECDC)** follower
- **World Health Organization (WHO), Food Safety Department)** n/a
- **Food and Agriculture Organization (FAO), Animal Health and Food Safety** n/a
- **WHO/FAO Codex Alimentarius Commission (CAC)** n/a
- **World Organisation for Animal Health (OIE)** follower
- **European Livestock and Meat Trading Union (UECBV)** active
- **US Department for Agriculture Food Safety Inspection Service (USDA FSIS)** active
- **US Meat Animal Research Center “Roman L. Hruska” (USMARC), USDA Agriculture Research Service (ARS)** active
- **New Zealand Ministry for Primary Industries** n/a
- **Meat & Livestock Australia (MLA)** active
- **Eville & Jones (UK) (recruiter of meat inspectors and OV)s** follower

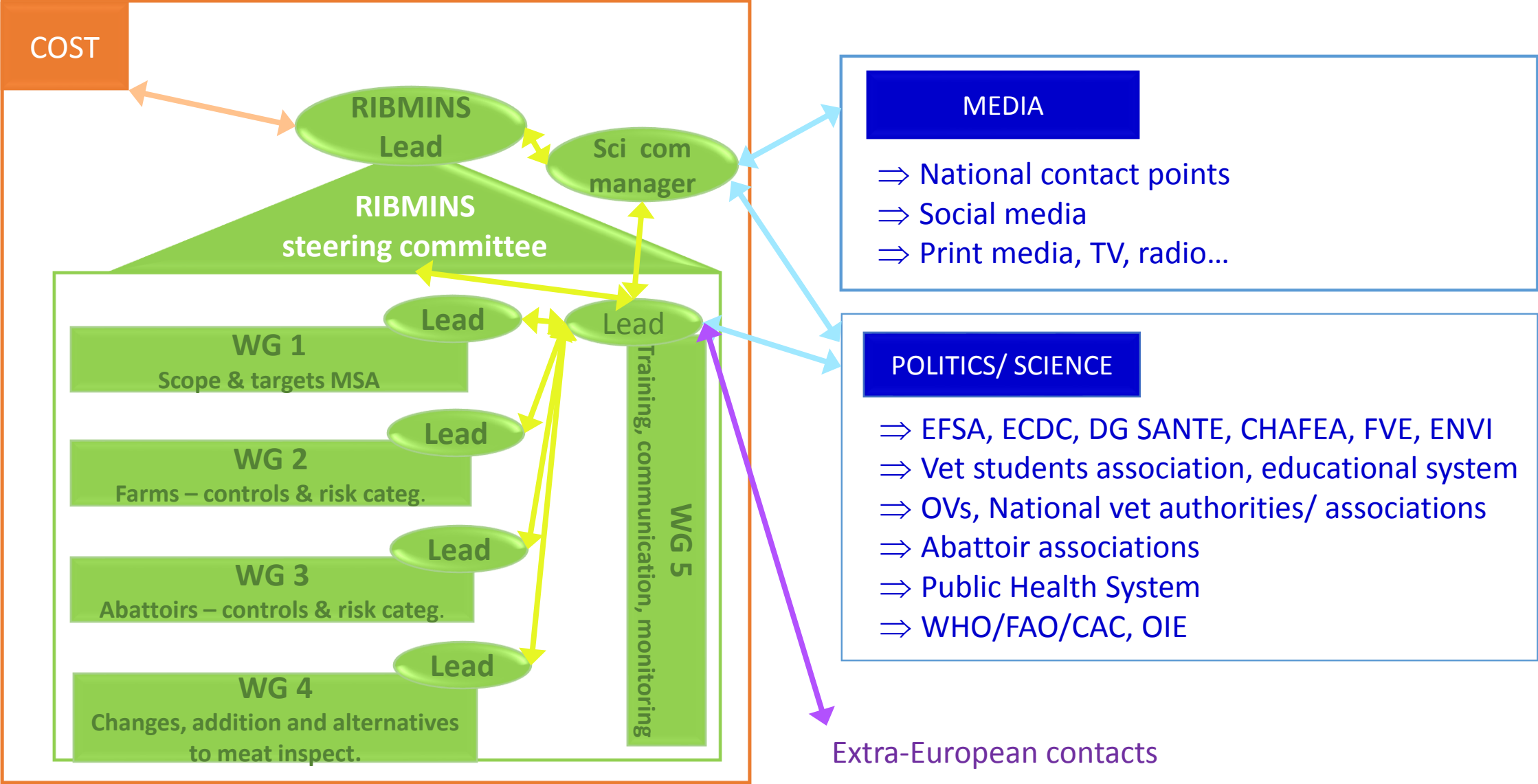
COST

RIBMINS

External stakeholders

Extra-European contacts

Goal 2: Communication Strategy



**Goal 3: Define training needs for risk managers**

## A. The current training requirements for official veterinarians and official auxiliaries

### • **A.1. OFFICIAL VETERINARIAN**

Regulation (EU) 624/2019 (Annex II, Chapter I)

#### 1) Principles, concepts and methods of **risk analysis**

- Risk ranking and prioritization of food safety issues
- Practical exercises (case studies)

#### 2) **Risk-based meat safety assurance system (MSAS) and Harmonised epidemiological indicators (HEI)**

- Performance objectives (PO)
- Performance Criteria (PC)
- Food Safety Objectives (FSO)?
- Appropriate level of protection (ALOP) concepts and use

#### 3) **Animal welfare (AW)** at the level of production, transport and slaughter

- animal based and non-animal based indicators
- AW aspects related to Public Health
- AW assessment protocols: production (farm), transport and stunning (lairage?)

#### 4) Livestock production systems

- organic production
- precision livestock farming (PLF)

#### 5) Animal behaviour related to animal production

#### 6) Food Chain Information

- interpretation
- record
- feedback

#### 7) Official controls on reptile meat

#### 8) Principles of training personnel working in the production chain and occupational health hazards





Example: Interface of PLF with MSAS

## PLF – Precision Livestock Farming

- measuring variables on the animals  
(good health, welfare, behavioural changes, good productive performance, good reproductive performance)
- modelling these data to select information
- using these models in real time for monitoring and control purposes.

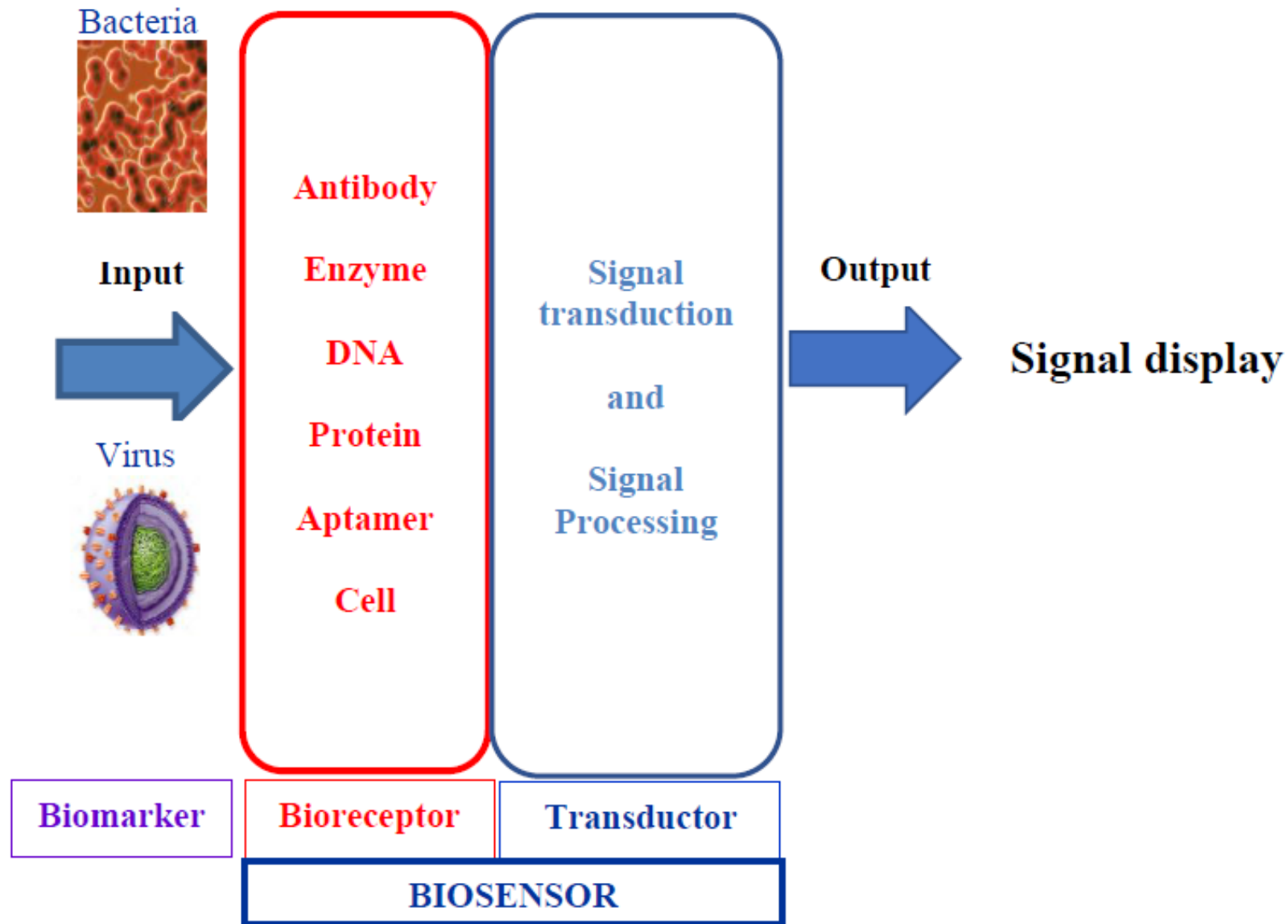
### Monitoring :

- (i) by camera / real-time image analyses
- (ii) by microphone and real-time sound analyses
- (iii) by sensors around or on the animal

### First signs of problems picked up by the PLF sensing technology

- image analysis
- sound analysis
- sensors on the body

## Principle of biosensor - biochemical interaction between the biomarker and the bioreceptor

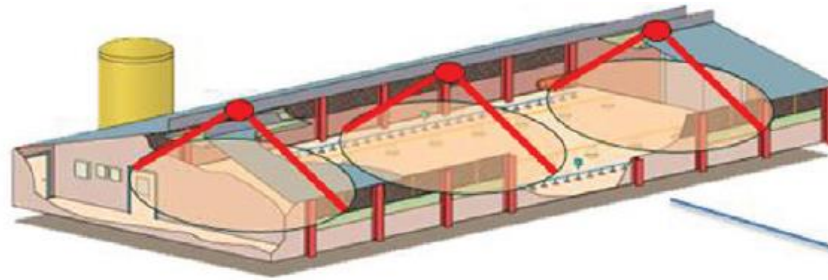


## Example: Early Warning System for Broiler Houses

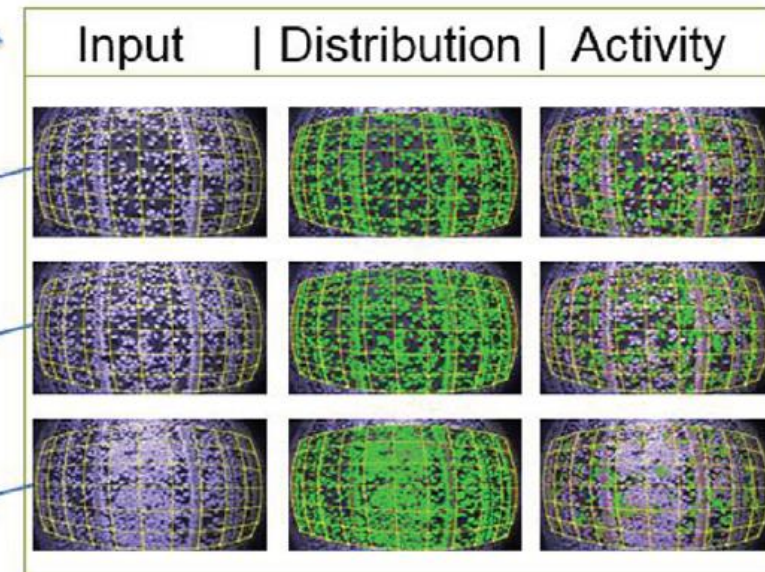
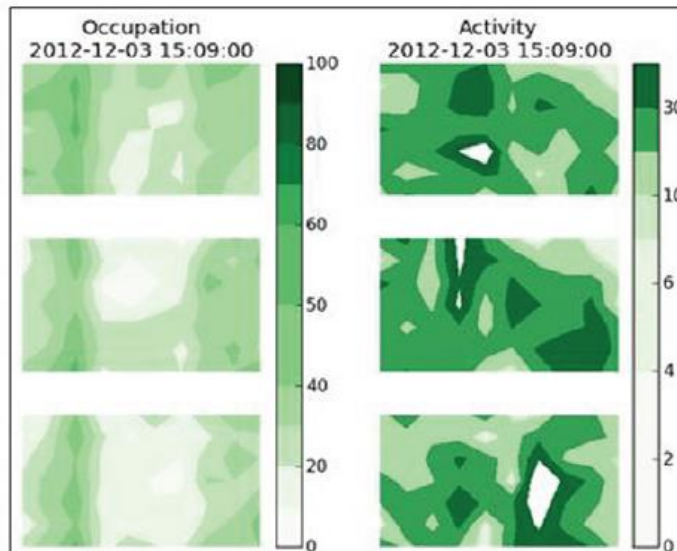
- broiler FARM (> 30,000 animals)
- very hard to observe such a high number of birds

**`eYeNamic` system** to monitor general problems in a broiler house:

- 3 or 4 cameras mounted at the ceiling - distribution of the birds
- analyzing the broilers' behavior

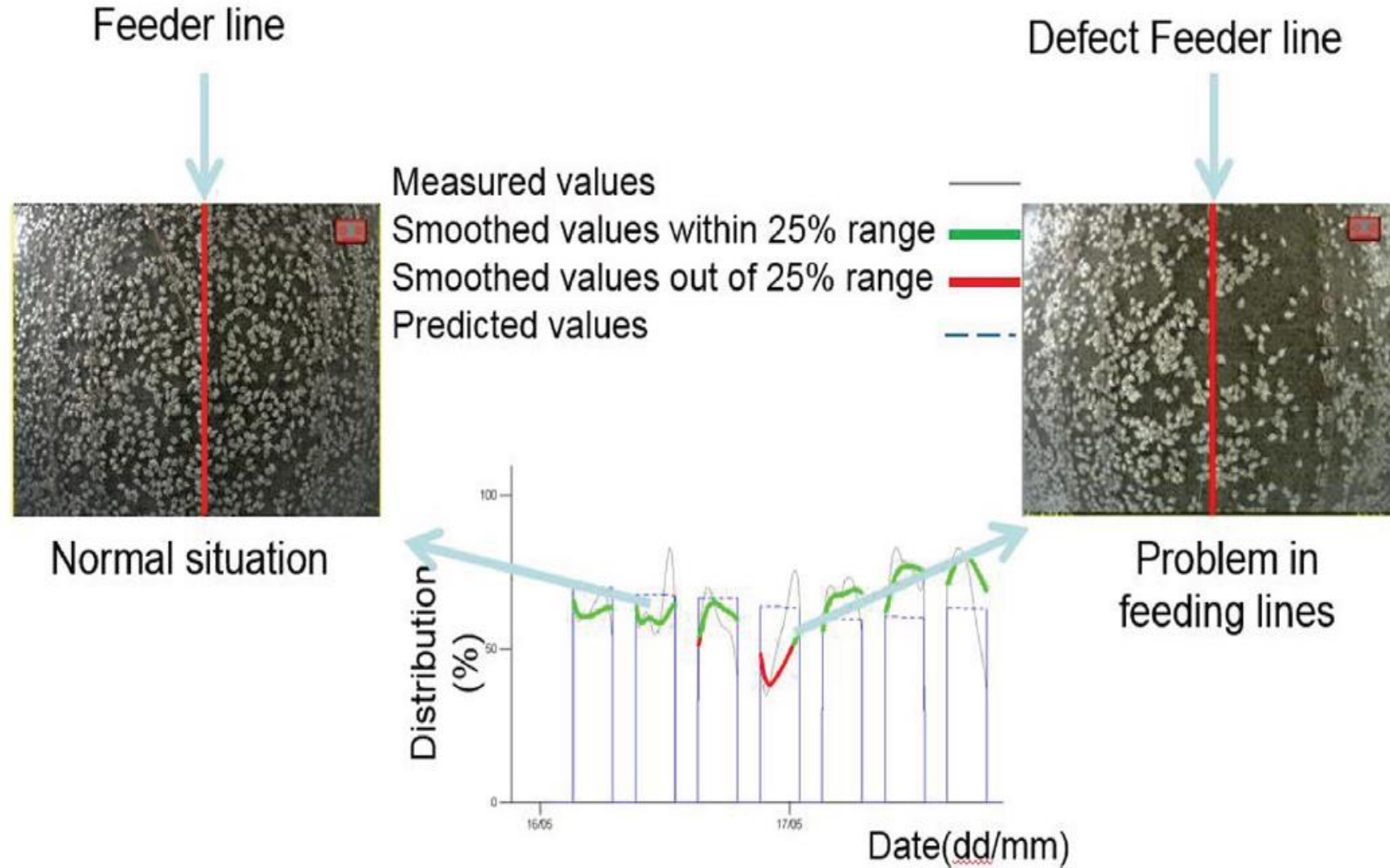


**`eYeNamic` system – poultry farm  
(3 top-view cameras)**

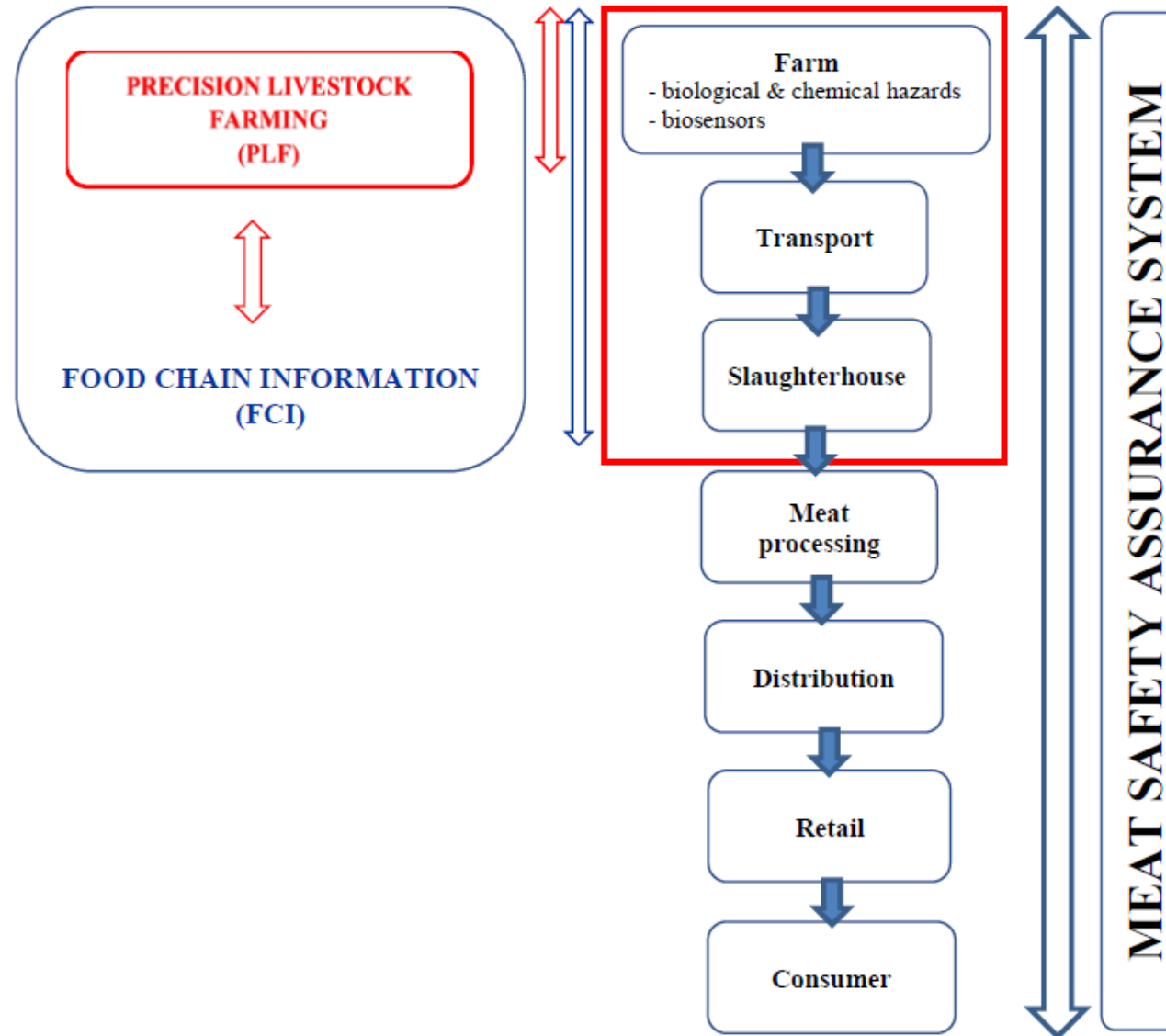


*Berckmans (2017)*

# Event detection



## Interface of Precision Livestock Farming (PLF) and Meat Safety Assurance System (MSAS)



- **A.2. OFFICIAL AUXILIARY**

Regulation (EU) 624/2019 (Annex II, Chapter II)

- **1) Ante-mortem inspection in the slaughterhouse**

- **Animal identification and traceability**
- **FCI analysis and FBO compliance**
- **Risk analysis** principles, concepts and methods
- **Prioritization** applied to the order of slaughter
- **Animal welfare (AW)**

Production

Transport

slaughter: animal based and non-animal based indicators, AW aspects

- **2) Post-mortem inspection in the slaughterhouse or game-handling establishment**

- **Risk-based meat safety assurance system (MSAS)**
- **Visual inspection - changes in post-mortem inspection**
- **Game meat inspection** particularities

- **3) Official controls on reptile meat**

- **4) GHP, GMP and Occupational health hazards**

- **A.3. STAFF DESIGNATED BY THE COMPETENT AUTHORITIES**

Regulation (EU) 624/2019, Annex II, Chapter III

1) Post-mortem inspection in a slaughterhouse or game-handling establishment

- Risk-based meat safety assurance system (MSAS)
- Visual inspection
- Game meat inspection and reptile meat inspection

2) **Auditing** - specific requirements for audits by CA

3) **GHP, GMP and Occupational health hazards**



- **A.4. SLAUGHTERHOUSE STAFF**

- 1) Ante-mortem inspection at the slaughterhouse: Poultry and Lagomorphs (assistance of the OA)**

- **Animal identification and traceability**
    - **FCI analysis and FBO compliance**
    - Introduction to the concept of **risk analysis**
    - **Prioritization** applied to the order of slaughter
    - **Animal welfare (AW)**

- Production

- Transport

- Slaughter: animal based and non-animal based indicators, AW aspects related to Public Health

- 2) Post-mortem inspection in a slaughterhouse or game-handling establishment**

- **Poultry and Lagomorphs (assistance of the OA)**
    - Introduction to the concept of **Risk-based meat safety assurance system (MSAS)**
    - Small Game meat inspection particularities<sup>1</sup>

- 3) GHP, GMP and Occupational health hazards**

## B. Requirements:

Regulation 854/2004/EC

Regulation (EU) 218/2014

Regulation (EU) 625/2017

Regulation (EU) 624/2019

and acknowledged differences

## • Regulation (EU) 624/2019, ANTE-MORTEM INSPECTION

### Article 3 - new

`ante-mortem inspections may be performed by an official auxiliary (OA) under the **supervision** of the official veterinarian (OV) **on species other than poultry and lagomorphs`**

`ante-mortem inspections may be performed on **all species** by an OA in a slaughterhouse under the **responsibility** of the OV` at the **holding of provenance**

**Ante-mortem carried out only by OV:**

**I. Emergency slaughter**

**II. Animals suspected of having a disease or condition that may adversely affect human health**

**III. Bovines from herds not officially free of tuberculosis or the officially free status of which has been suspended**

**IV. Bovines from herds and to ovines and caprines from holdings not officially free of brucellosis or the officially free status of which has been suspended**

**V. Outbreak of animal diseases (animal health restrictions are applied)**

## Article 4 – new

- Criteria and conditions establishing **when ante-mortem inspections may be performed outside the slaughterhouse in the case of emergency slaughter**
- **OV may perform ante-mortem inspections outside the slaughterhouse in the case of emergency slaughter, only in the case of domestic ungulates (derogation - Regulation (EU) 2017/625)**
- **Model health certificate with relevant observations for meat inspection shall accompany the animals to the slaughterhouse or be sent in advance**



## Article 5 – new

Criteria for **all species** and to be carried by the **OV**:



- Holding documentation check including **FCI verification**
- **Individual physical examination:**
  - **disease/condition** transmissible to animals or humans,
  - **behavioural disturbance, signs of disease or abnormalities**
  - **chemical residues**
  - **animal welfare, excessive dirtiness;**
  - **fitness for transport**
- **Health certificate**

- **Regulation (EU) 624/2019, POST-MORTEM INSPECTION**

## **Article 7 - new**

- Criteria and conditions for the performance of post-mortem inspections **by the OA under the responsibility of the OV**
  - a) the slaughter or game-handling activities are carried out in a low-capacity slaughterhouse or game-handling establishment
    - (i) less than 1 000 livestock units / per year
    - (ii) less than 150 000 poultry, lagomorphs and small wild game / per year
  - b) the competent authority may increase the thresholds in the **smallest slaughterhouses and game handling establishments**
  - c) the establishment has **facilities to store meat with abnormalities separately from other meat** until the OV can inspect in person;

- d) the OV is present in the establishment at least **once a day**, including regularly during **slaughter activities**
- e) the competent authority (CA) has put in place a procedure to **assess** on a regular basis **the performance of OA** in these establishments
- f) **risk analysis** has been carried out by the competent authority (e.g. National Veterinary Authority)



- **Regulation (EU) 624/2019, AUDITING ACTIVITIES**

**Article 9 - new**

- Criteria and conditions for the performance of auditing activities in slaughterhouses and game-handling establishments **by OA under the responsibility of the OV** (collection of information on GHP/HACCP)

**Article 10 - new**

- Criteria and conditions for the performance of official controls including auditing activities **in cutting plants**
  - may also be performed by **other staff designated by the competent authorities**
  - **OV regularly check the work of such staff**



**SPECIFIC CASE (SWEDEN & FINLAND)**

- Specific derogations in respect of *Rangifer tarandus tarandus*, *Lagopus lagopus*, *Lagopus mutus*
- Slaughterhouse staff – training (abdominal viscera examination)



- **Regulation (EU) 624/2019, TRAINING**

**Article 13 - new**

- Specific minimum requirements for the **OV**, the **OA** and the **staff designated** by the competent authorities:

a) **OVs working on a part-time basis**

(small businesses, controls in milk production holdings and ante-mortem inspections outside slaughterhouses)

b) **veterinary students** (in the presence of an OV)

c) **continuing training activities**

## Article 14 – new

- Minimum training requirements for slaughterhouse staff (relevant for their assistance tasks)

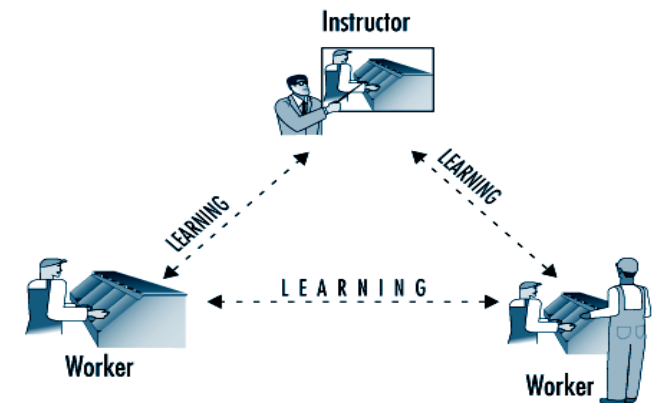
C. The major gaps and/or needs in training requirements related to the future role of risk managers:

**Level 1** - Official Veterinarian (CA)

**Level 2** - Official Auxiliary (OA)

**Level 3** - Staff designated by the competent authorities  
(e.g. animal welfare officer, technologists/engineers)

**Level 4** - Slaughterhouse staff (FBO)



## D. The structure of the Food Chain Information flow - EXAMPLE

### • D.1. Forward/bottom-up (farm-to-slaughterhouse) FCI flow

#### Pig herds risk assessment

- food borne pathogen of the highest public health importance
- levels of acute phase proteins (APP) in blood

- **Meat borne pathogens** - Serological monitoring on farm (*Salmonella* spp., *Yersinia* spp. *T. gondii*)
- **Metabolites** - Levels of acute phase proteins (APP) in blood  
(e.g. Haptoglobin, Pig Major Acute-Phase protein / Pig-MAP)
- Standardization of animal welfare audit protocols
- Standardization of biosecurity audit protocols
- Categorization of herds/farms (low risk, high risk)

- **D.2. Backward/top-down (slaughterhouse-to-farm) FCI flow**

- Standardization of post-mortem findings assessment
  - Connection with FCI from farm: process hygiene criteria (PHC) and risk-reduction capacity of slaughterhouse.
- 
- **Clear case definition for post-mortem findings (unification of coding system)**
  - **PHC thresholds, e.g. TVC, EC (risk-reduction capacity of slaughterhouse)**
  - **Risk-based carcass meat safety assurance system**  
(serological monitoring of *Salmonella* spp., *Yersinia* spp. *Trichinella* spp., *T. gondii* in meat juice)
  - **GHP/GMP for low risk animals versus high risk animals, decontamination step for high risk animals, slaughter logistics**
  - **Categorization of slaughterhouses (low and high risk-reduction capacity)**

# Advanced OV Risk Assessment Training Needs

- Risk assessment/Epidemiology
- Harmonized epidemiological indicators (HEI)
- Food Chain Information (FCI) / Communication of inspection results (CCIR)
- Food safety management system – FSMS (HACCP, TACCP, VACCP?)
- Management of meat chain safety emergency

# WG5 working plan and timeframes: Year 2, Year 3, Year 4

## Year 2:

- The final document of training needs for risk managers (**24<sup>th</sup> month**)
- Involved external stakeholders, actively supporting and contributing to the RIBMINS (e.g. FVE, EU Commission, EFSA, UECBV) (**20<sup>th</sup> month**)
- First paper published (**24<sup>th</sup> month**)

## Year 3:

- Draft deliverables of working groups (WG1-WG4) submitted to WG5 (**30<sup>th</sup> month**)
- Draft Handbook (Manual) for training of risk managers in MSAS (**36<sup>th</sup> month**)
- Defined technical feasibility proposal for establishment of EU training centres in MSAS (academic and/or scientific institutions, public-private, private?) (**36<sup>th</sup> month**)
- Second paper published (**36<sup>th</sup> month**)

## Year 4:

- Final deliverables of working groups (WG1-WG4) submitted to WG5 (**42<sup>th</sup> month**)
- Workshop / training of risk managers (**46<sup>th</sup> month**)
- Final Handbook (Manual) for training of risk managers in MSAS (**48<sup>th</sup> month**)
- Final technical report on scientific on establishment of EU training centres in (**48<sup>th</sup> month**)

# Road to success

- WG5 product – **Handbook on MSAS training of risk managers**
- Evidence-based and timely input by WG1, WG2, WG3 and WG4!



# Questions?

