Towards a harmonized and transparent way to describe surveillance activities to enable output-based standards for surveillance: lessons learned in terms of information availability, transparency, standardised surveillance description, and terminology.

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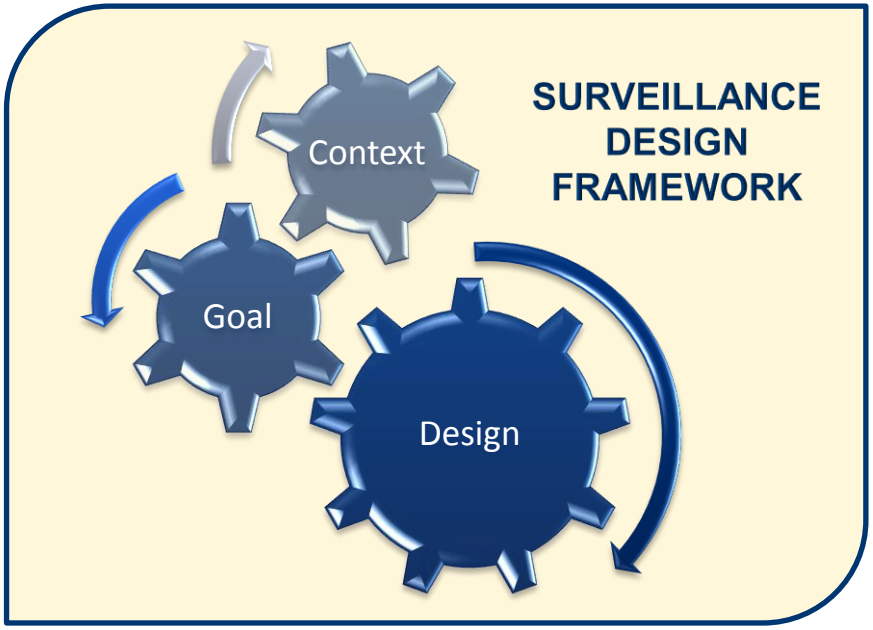
Literarture review

Review of surveillance systems

Mapping survellance and livestock systems



Project task: Review of surveillance systems in EU

Goal: to inform the development of frameworks and tools within the RISKSUR project (complementing mapping task)

Specific aims:

- to describe **how** animal health surveillance is currently carried out in some EU countries
- to describe basic **epidemiological characteristics** of current surveillance systems (e.g. population coverage, design prevalence, confidence level)
- to detect variation in **legislation**

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Methods

What?	Public and private surveillance for **26 hazards** (25 specific diseases and 1 potential emerging disease)
Who?	Surveillance experts from seven RISKSUR-partner countries. Partner institutes ► **AHPA, RVC – CIRAD – FLI** **GD – Safoso – SVA – UCM**
When?	2011 (reference year)
Where?	Government sources, laboratory reports, grey literature (internet search), in-country contacts
How much?	**26** variables already collected for Task 1.1. (Mapping surveillance) + **23** additional ones

Results

Lesson 1: Information on surveillance activities is not easily accessible / available

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Lesson 1: Information on surveillance activities is not easily accessible / available

Task workload: 29 people from the 7 partner institutes

Number of people involved in data collection per partner institute

Task	Median	IQR	Range
Find sources	2.5	2.0 – 5.3	1 – 7
Extract data	2.0	1.0 – 3.5	1 – 7
Data entry	1.0	1.0 – 1.0	1 – 4
Review database	1.0	1.0 – 2.0	1 – 4

Number of people contacted to get additional information on surveillance systems

Sector	Median	IQR	Range
Public	5	4 – 21	2 – 58
Private	0	0 – 4	0 – 15
Academia	0	0 – 1	0 – 26

Lesson 1: Information on surveillance activities is not easily accessible / available

Level of detail differed between countries

- **3 validation countries** (DE, ES, SE)

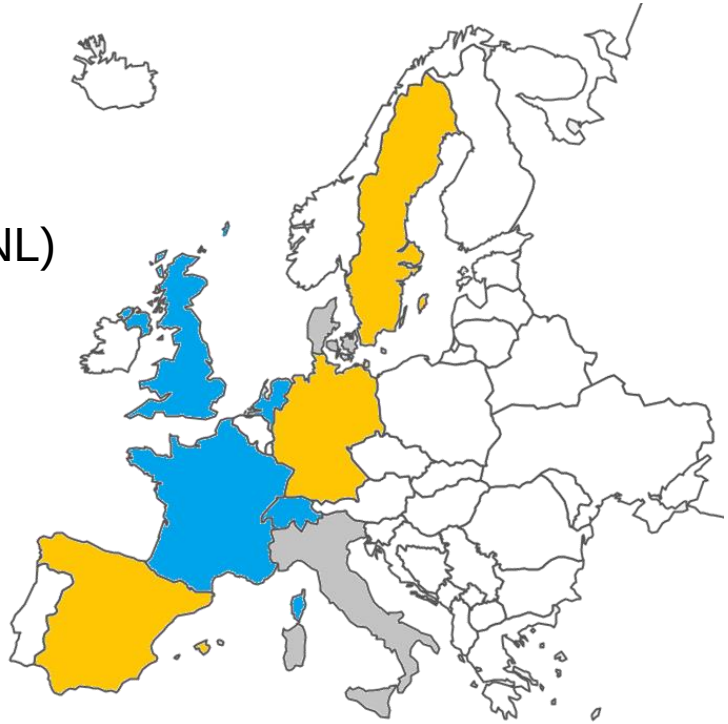
  What information is available in your country if you look in depth

- **4 collection countries** (CH, GB, FR, FR, NL)

  What information is (quite) easily available in your country

- **2 non-partner countries** (DK, IT)

  What information is (mainly) publicly available in another country



Lesson 1: Information on surveillance activities is not easily accessible / available

Rank on a scale from 1 (fully disagree) to 5 (fully agree) to what extent the following statements are applicable regarding the documentation of surveillance systems in the **investigated countries (n = 9)**.

Group	Statement	Median	Range
Public sector	The **existence of surveillance systems** is sufficiently documented	**4**	3 - 5
	Design details are sufficiently documented	**3**	2 - 5
	Results are sufficiently documented	**4**	1 - 5
	Expenditures are well documented	**2**	1 - 3
Private sector	The **existence of surveillance systems** is sufficiently documented	**2**	1 - 4
	Design details are sufficiently documented	**2**	1 - 2
	Results are sufficiently documented	**1**	1 - 4
	Expenditures are well documented	**1**	1 - 4

Lesson 2: Data are *influenced* by the interpretation given by the data collector

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Lesson 2: Data are *influenced* by the interpretation given by the data collector

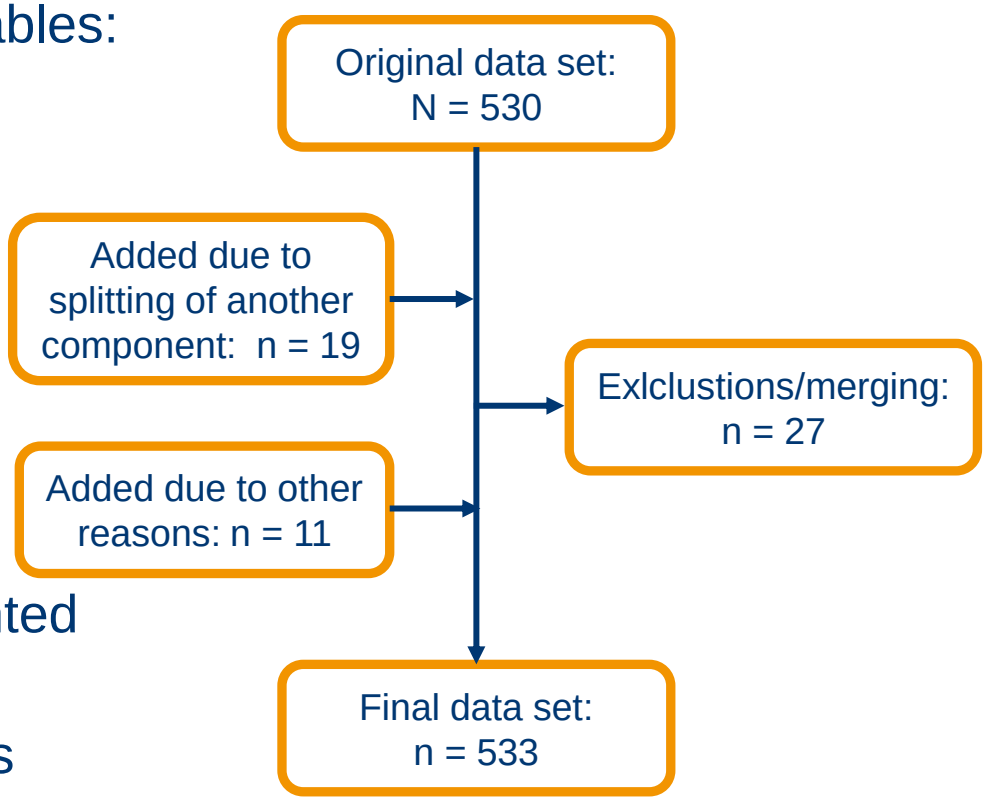
- Often hard to guarantee consistent data when several people are involved
- Consistency cheks and data validation were needed
- **Vertical validation**: data splitted by variables to check consistency between related variables
- **Horizontal validation**: data splitted by hazard to check consistency within hazards in the different countries

Component	Hazard	Country	Primary goal	Species	Data acquisition	Sampling point	Legal requirement	Management	…	Observational unit	Sampling method	Samples required	…
1	Aujesky disease	A	Substantiate freedom	Pig	Active	Farm	EU + Nat	Public	…	Herd	Random	8400	…
2	Aujesky disease	A	Substantiate freedom	Wildlife	Enh Pass	Nature	EU + Nat	Private	…	Animal	Convenient	NA	…
3	Aujesky disease	B	Substantiate freedom	Pig	Active	Farm	EU + Nat	Public	…	Herd	Random	5670	…
4	Aujesky disease	B	Substantiate freedom	Pig	Active	Abattoir	EU + Nat	Public	…	Herd	Purposeful	3450	…
5	Aujesky disease	B	Early detection	Wildlife	Enh Pass	Nature	Nat	Public	…	Animal	NR	NR	…
6	Aujesky disease	C	…	…	…	…	…	…	…	…	…	…	…
…	…	…	…	…	…	…	…	…	…	…	…	…	…
34	Bluetongue	A	Substantiate freedom	Cattle	Active	Farm	Nat	Public	…	Herd	Census	NA	…
35	Bluetongue	A	Substantiate freedom	Goats	Active	Farm	Nat	Public	…	Herd	Convenient	NR	…
36	Bluetongue	A	Substantiate freedom	Sheep	Active	Farm	Nat	Public	…	Herd	Convenient	NR	…
…	…	…	…	…		…	…	…	…				…

Lesson 2: Data are *influenced* by the interpretation given by the data collector

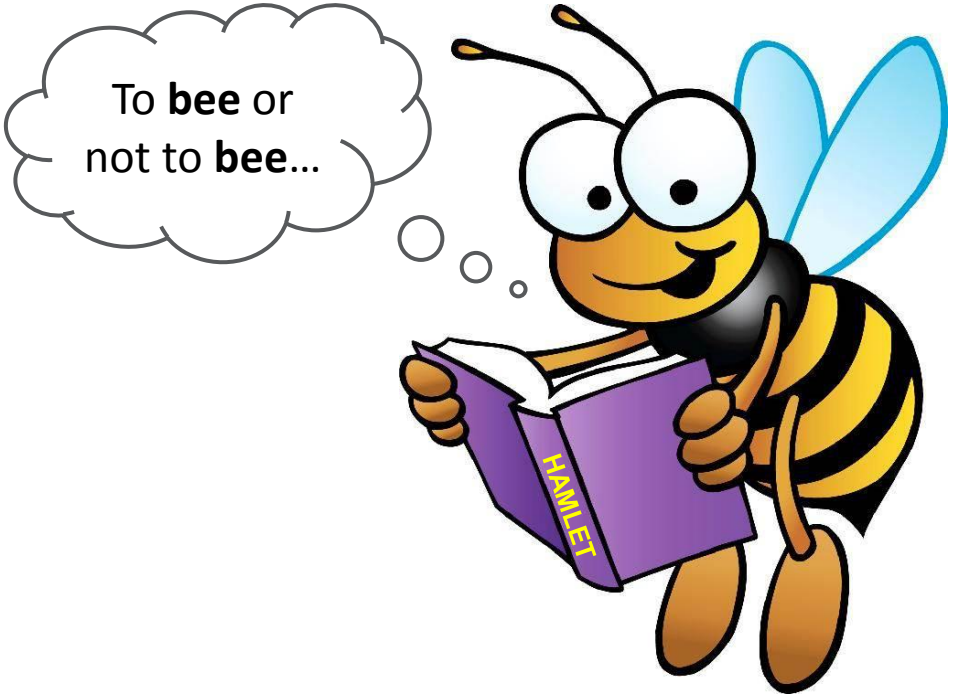
Highest adjustment rates for variables:

- RB surveillance (30%)
- RB sampling (25%)
- Sector (21%)
- RF categories (15%)
- Primary goal (14%)



- Highest rate of rules implemented during consistency checks
- Different interpretation of terms

Lesson 3: Known terms may anyway leave room for different interpretations



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Lesson 3: Known terms may anyway leave room for different interpretations

ACTIVE SURVEILLANCE

Investigator-initiated ***collection*** *of animal health related data using a* ***defined protocol*** *to perform actions that are scheduled in advance.*
Decisions *about whether information is collected, and what information should be collected from which animals is made by the* ***investigator****.*

PASSIVE SURVEILLANCE

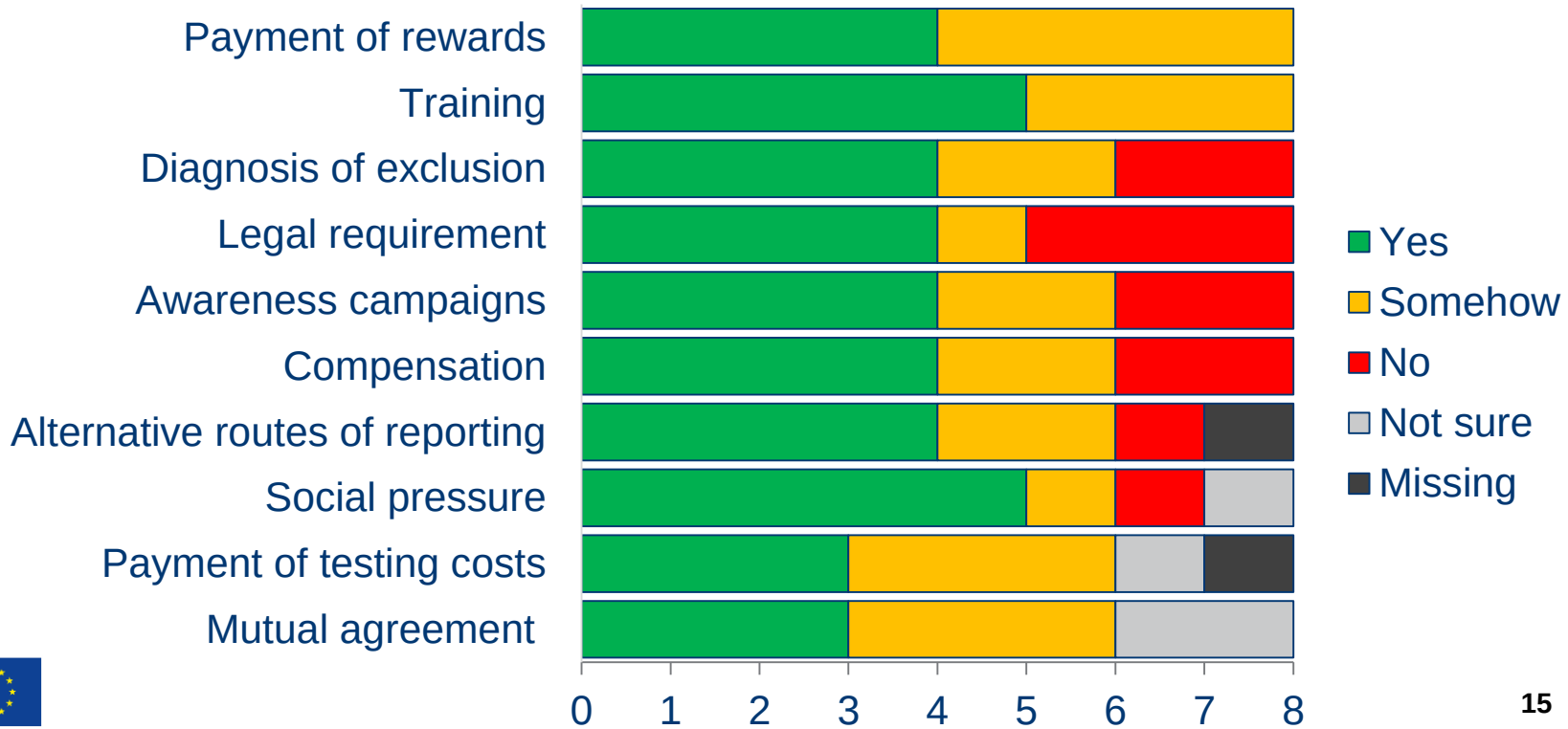
Observer-initiated ***provision*** *of animal health related data (e.g. voluntary notification of suspect disease) or the use of existing data for surveillance.*
Decisions *about whether information is provided, and what information is provided from which animals is made by the* ***data provider****.*

ENHANCED PASSIVE SURVEILLANCE

Observer-initiated ***provision*** *of animal health related data with* ***active investigator involvement*** *e.g. by actively encouraging producers to report certain types of disease.*

Lesson 3: Known terms may anyway leave room for different interpretations

Q: What can turn a **passive surveillance** component into an **enhanced passive** one?



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Lesson 3: Known terms may anyway leave room for different interpretations

Q: Can **passive surveillance** be **risk-based**?

Background: Risk-based sampling requires preferential sampling of those at higher risk

YES, since

It focuses on sick and dead animals, therefore:

→ selection targets units which are more likely to be infected (e.g. passive surveillance for fox rabies)

→ resources are used more efficiently

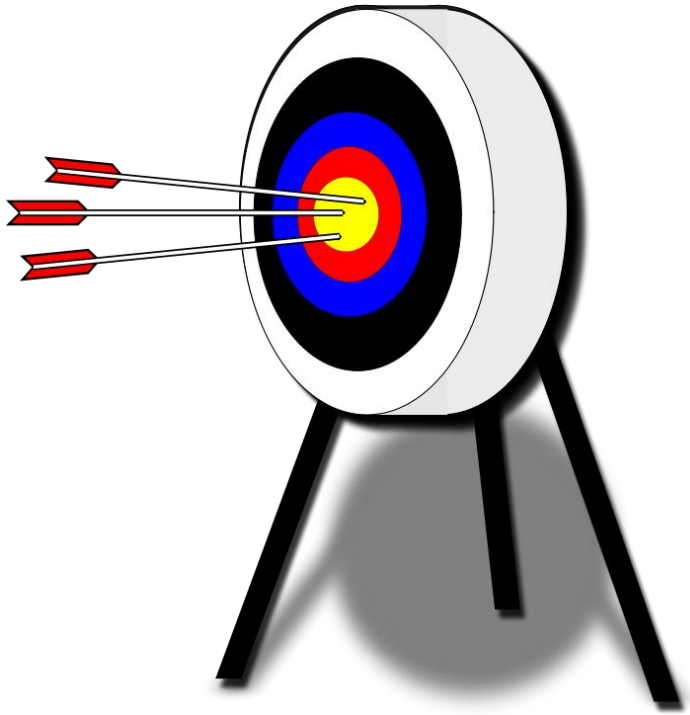
NO, since

✓ the entire population is covered with no "active assessment of risk involved"

✓ the investigator has no control over which animals are selected for testing (depends on reporting by observer) & no sampling takes place

✓ No decision is made on "efficient resource use"

Lesson 4: Output-based standards are seldom applied in current EU surveillance



Lesson 4: Output-based standards are seldom applied in current EU surveillance

INPUT-BASED standards prescribes which surveillance actions are required

- Sampling strategy and frequency
- Sample size
- Laboratory tests

OUTPUT-BASED standards prescribes what the surveillance must achieve

- Surveillance sensitivity (design prevalence)
- Survey sensitivity (confidence level)

Lesson 4: Output-based standards are seldom applied in current EU surveillance

533 surveillance components included in the review

└> requirements:
- ► 41% input-based
- ► 15% output-based
- ► 34% not applicable
- ► 10% not reported

Surveillance for **BSE**

27 components in the review:

- **70%** input-based requirements
- 30% no requirements
  - └> enhanced passive components
  - └> components beyond EU regul.

Surveillance for **Avian Influenza**

46 components in the review:

- **22**% input-based requirements
- **37**% output-based requirements
- 30% no requirements (enhanced passive components)
- 11% requirements not reported

Summary

- Surveillance is meant to be a global public good → but its design and achievements are generally **not well** (publicly) **documented** in Europe
- There are **no standards for documentation** of surveillance activities → room for individual interpretations which may lead to unfair comparisons between countries
- **Details** on the extent <u>and</u> design of surveillance are needed to:
  - ✓ Assess the quality of a given surveillance system
  - ✓ Provide an overview of public & private surveillance efforts
  - ✓ Estimate the disease risk and thus risk of introduction from other countries / regions
  - ✓ Learn from experience

Summary

- **Output-based standards** allows for flexibility in surveillance design
  → but legalization has **not widely promoted** them yet, possibly due to:
  - Lack of expertise
  - Lack of evaluation tools capable to compare different surveillance designs
  - Fear that trading partners may not accept “unusual” approaches

Transparent and **consistent** information sharing of **design details** and annual aggregated **numbers** would benefit both parties (donor and receiver) and set the scene for future output-based surveillance designs

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Potential ways forwards

Transparency: Details needed to adequately interpret surveillance results are:

- ✓ Surveillance design
- ✓ Size of the target population (herds and animals)
- ✓ No. of herds / animals tested
- ✓ No. of positive herds / animals

Ease of access: EU website could provide external links to national reports

Consistency: Reporting standards / templates

from **RISKSUR** development of a **surveillance design framework** to design and document surveillance systems

Thank you for your attention!

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