



## Evaluation of **C**ollaboration in a multisectoral **SUR**veillance system

# ECoSur

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### WHY THE ECoSur TOOL?

Most health hazards are complex and need to be addressed in a holistic manner. When it comes to surveillance, many multisectoral systems are being developed under the One Health paradigm, with the strong support of governments and the scientific community. To create relevant multisectoral surveillance systems, collaboration needs to be established or strengthened across sectors, professions, disciplines, and decision-making scales. However, there is no single organizational model for multisectoral surveillance systems and collaboration must be properly designed, in coherence with the collaborative context and objective, to produce expected and reliable outputs and to ensure stakeholders' commitment.

In this context, ECoSur allows for an in-depth analysis of the organization and functioning of collaboration taking place in a multisectoral surveillance system to evaluate the overall quality of such collaboration to meet the collaborative objective desired by stakeholders.

### WHAT IS ECoSur?

ECoSur is a semi-quantitative tool that aims to evaluate the organization and functioning of current collaboration in a multisectoral surveillance system and to analyse its strengths and weaknesses. Ultimately, the evaluation results may support the formulation of recommendations to improve collaboration in the multisectoral surveillance system, if needed.

By collaboration we mean interactions between actors operating in different surveillance components and that have been established to improve the surveillance value, mainly in terms of performance and cost-effectiveness, in such a way that the outputs of the surveillance would not be possible without collaboration.

ECoSur can be used independently if there is a need to focus on collaboration only, or combined with existing evaluation tools for an overall assessment of the multisectoral surveillance system.



*What ECoSur is not doing:*

- *This tool does not consider collaboration between actors operating in the same surveillance component.*
- *This tool does not evaluate the overall performance of the multisectoral surveillance system itself; however, the evaluation of certain collaborative attributes uses data on sectoral surveillance components.*
- *At this stage of development, this tool does not evaluate the impacts and cost of collaboration.*
- *The tool is not intended to measure the extent of integration achieved in the multisectoral surveillance system. The aim is to characterize the integration that the multisectoral surveillance system seeks to achieve, to assess if this integration level is coherent with the collaborative context and objective(s), and whether the collaborative activities implemented to achieve the intended integration generate the expected outputs.*

## WHAT IS THE CONCEPTUAL APPROACH of ECoSur?

The basic principle behind the development of this tool is that, for multisectoral surveillance systems to be functional and sustainable, collaboration must be planned and organised at three levels:

- *The **policy level**, where the **collaborative strategy** is stated.*

The strategy describes the desired goals of developing collaboration for surveillance and the course of actions to achieve those goals. It also covers the desired multisectoral organizational model and the areas of action of the main stakeholders within this organization. The strategy may be described in various documents depending on the legal tradition of the country, and on who developed it (government, academia, professional organizations, etc.). These can be policies, strategies, memorandums, laws, etc. Such documents are developed at a high political level when it comes to official surveillance. The collaborative strategy for surveillance can be described in a stand-alone document or in an overarching document (control programme for a specific health issue, national One Health strategy, etc).

- *The **institutional level**, where relevant **collaborative modalities** for the governance and implementation of surveillance activities are defined to achieve the desired goal of the strategy.*

The collaborative modalities for the governance are described in terms of steering and coordinating mechanisms as well as of scientific and technical support. The collaborative modalities for the operation are usually expressed in terms of area of collaboration (i.e. the steps of the surveillance process where collaboration is implemented) and degree of integration (i.e. the strength of collaboration for each area of collaboration). (See Table 1 for the possible collaborative modalities in a multisectoral surveillance system.) The modalities are usually described in implementing texts, such as regulations, agreements, or charters.

- *The **operational level** where **surveillance activities** are implemented to ensure the routine operation of the collaborative modalities.*

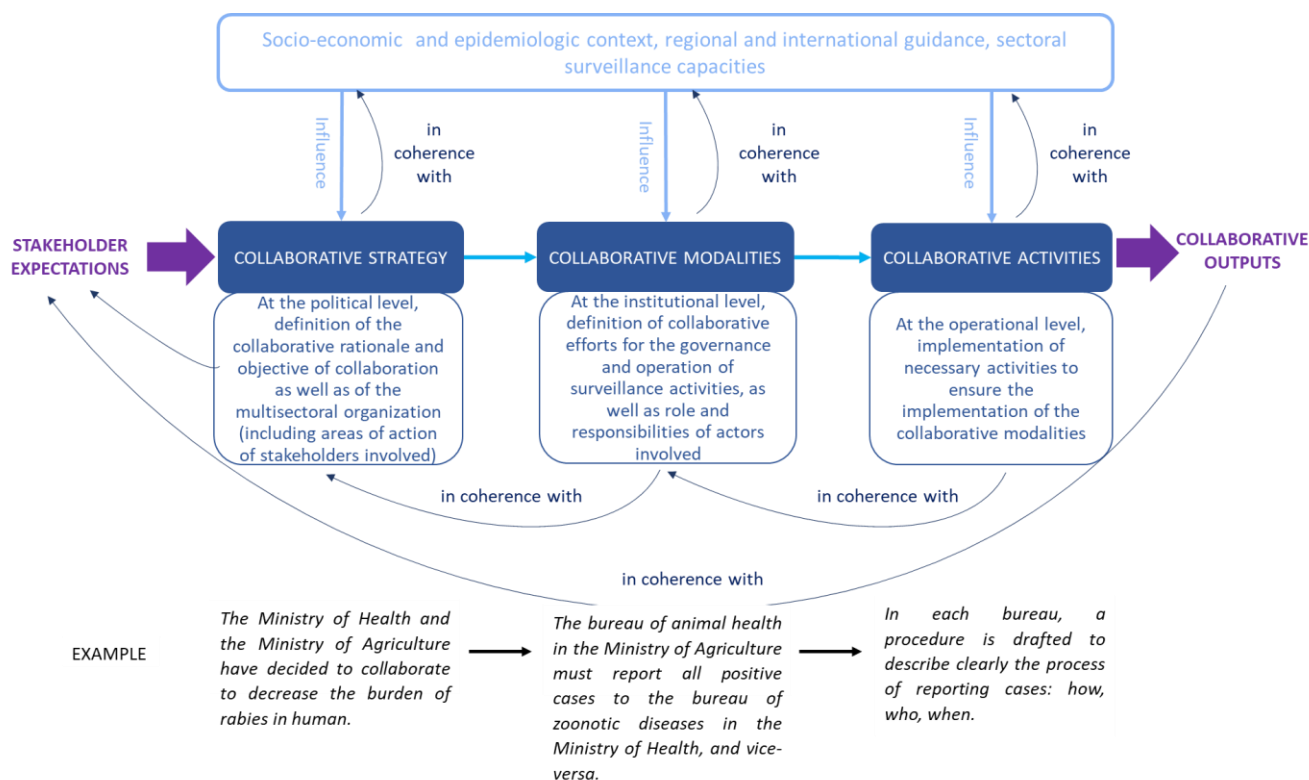
These activities are conducted at the ground level by surveillance actors to make the collaboration happen. They are usually supported by operational procedures.

Figure 1 describes the three levels of collaboration.

The three levels of collaboration must be clearly formalized and endorsed by stakeholders and be relevant to each other. Collaboration for surveillance is generated by stakeholders' expectations regarding the multisectoral surveillance system and is under the influence of a broad range of



contextual elements, such as socio-economic and epidemiological factors, international guidance and sectoral surveillance capacities. Collaborative activities throughout the surveillance process lead to the production of outputs (harmonization of methods, comparison of data, on-time results sharing etc.) that must meet the collaboration's objective and purpose.



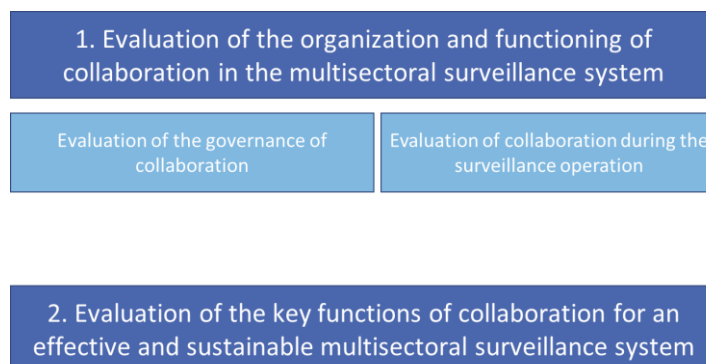
**Figure 1.** Conceptual framework for the organization and functioning of collaboration in a multisectoral surveillance system.

## WHAT IS THE EVALUATION PROCESS USED IN ECoSur?

To evaluate collaboration in a multisectoral surveillance system, we defined attributes and indexes as below:

- A list of 22 organizational attributes that aims at evaluating core characteristics for the organization of collaboration for the governance and implementation of surveillance activities.
- A list of nine functional attributes that aims at evaluating core functions of collaboration for an effective and sustainable multisectoral surveillance system.
- A list of three organizational indexes that aims at evaluating organization of collaboration at a macro level.

The structure of the evaluation process is summarized in Figure 2.



**Figure 2.** Structure of the evaluation process.

The level of satisfaction of these attributes and indexes is then measured using 74 evaluation criteria, which are scored following a four-tiered scoring grid. The same criterion can be used to evaluate several functional attributes. On the contrary, each organizational attribute and index is evaluated with a set of specific criteria without any overlap.

The list and definitions of attributes and indexes, as well as criteria that support their evaluation, is available in the second sheet of the evaluation matrix (see below).

## HOW IS ECoSur TOOL COMPOSED?

ECoSur is composed of four elements.

- A spreadsheet file, referred as “Data collection file”, allows for the collection of preliminary information on all the different surveillance actors and components of the multisectoral surveillance system being evaluated. It includes two sheets, one specific to the surveillance components and one to actors.
- A text file, referred as “Data collection form”, allows a synthesis of all data describing precisely collaboration for governance and operation of surveillance activities in the multisectoral surveillance system that will be used to score the evaluation attributes. This form is divided into three sections: contextualization, governance and operation of collaboration.
- A spreadsheet, referred as “Evaluation matrix” consisting of four distinct sheets:
  - The first sheet (“Criteria Scoring”) contains the scoring grid for the 74 evaluation criteria. Four grades are defined: Grade 3 indicates that the situation complies fully with the criterion while Grade 0 indicates a total absence of compliance. Grades 2 and 1 are intermediate grades depending on the level of compliance. In some cases, the value “Non-relevant” can be used if the criterion is not relevant to the multisectoral surveillance system under evaluation. A scoring guide was developed to describe the situation in which grades should be awarded.
  - The second sheet (“Attributes Indexes”) displays the list of attributes and indexes as well as the criteria contributing to their evaluation.
  - Once the scoring is completed in the first sheet, the third sheet (“Evaluation Results”) automatically produces three graphical representations of the evaluation results.

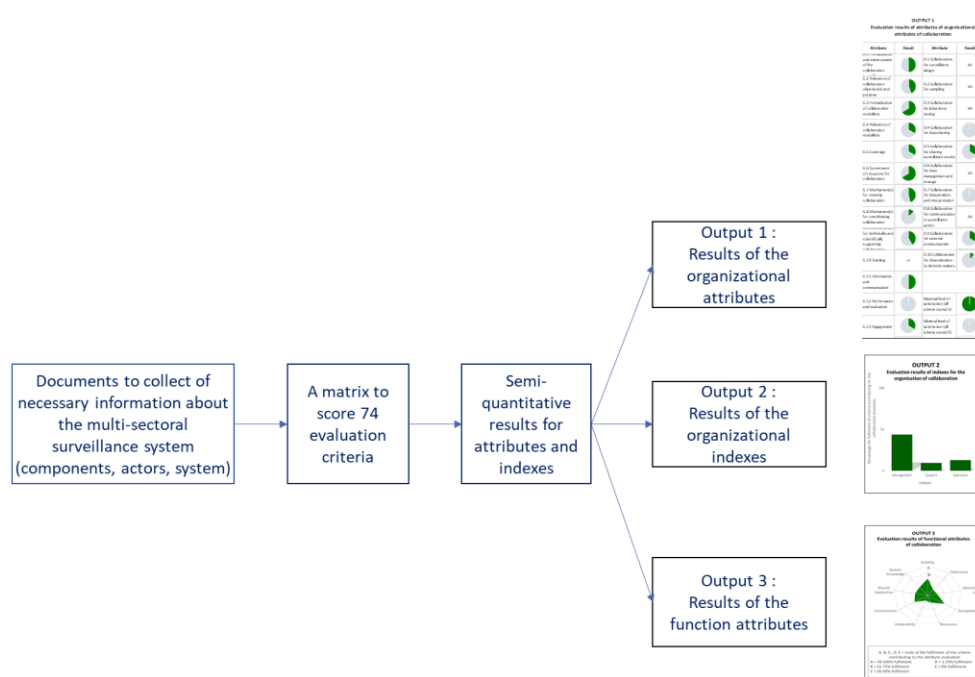


Different chart types help to differentiate easily the three levels of evaluation obtained: organization at a microlevel, organization at a macrolevel, and functions.

- The first display represents the evaluation results for the 22 organizational attributes (12 governance and 10 operational attributes). The result for each attribute can be visualized in a pie chart. Each coloured area within a pie chart represents the attribute’s level of compliance regarding a nominal situation where all evaluation criteria score 3.
  - The second display represents the evaluation results of the indexes. Results of the three indexes are expressed as percentages of compliance of the situation as compared to a nominal situation where all criteria score 3.
  - The last display represents the evaluation results of the nine functional attributes on a spider chart. Results are expressed on a five-tiered scale, from A to E corresponding to the level of satisfaction for each core collaborative function. Grade A corresponds to a level ranging from 76 to 100%, meaning that almost all criteria supporting the evaluation of the attribute scored 3, while grade E corresponds to 0%, meaning that they all scored 0. Grades B, C, and D are intermediate levels of satisfaction, representing ranges of 51–75, 26–50, and 1–25%, respectively.
- The fourth sheet (“Calculation”) contains all the formula to obtain the scoring of attributes and indexes and displays the numerical results of evaluation for each of them. The same formula is used for all calculation: the sum of the grade awarded to the criteria contributing to their definition, divided by the sum of the highest score obtained by these criteria when the ideal situation is met (i.e. all criteria scored 3).

A glossary of terms used in the different documents of ECoSur is available in Annex 1.

A summary of the structure of the tool is presented in Figure 3.



**Figure 3.** Summary of the structure of ECoSur.



## HOW TO USE ECoSur?

ECoSur is meant to be applied by an evaluation team. It is recommended that the team members are not involved in the governance of the multisectoral surveillance system, meaning that they are not in charge of steering or coordinating sectoral or collaborative surveillance activities. Team members should be epidemiologists with at least one experienced in surveillance. One team member should be familiar with ECoSur while all others should follow a quick training prior the evaluation exercise.

Along with the evaluation team, one or two stakeholders of the multisectoral surveillance system should be identified and involved in the whole evaluation process. This will favour the acceptability of the evaluation process.

### **FIRST STEP: defining the evaluation question and the evaluation boundaries**

The aim of ECoSur is to answer the overall question: Is collaboration appropriate to produce the expected results in the given context?

However, the rationale and objective for conducting the evaluation might differ from a situation to another and should be clearly defined with stakeholders requiring the evaluation to adjust the evaluation process as well as the report's format and contents.

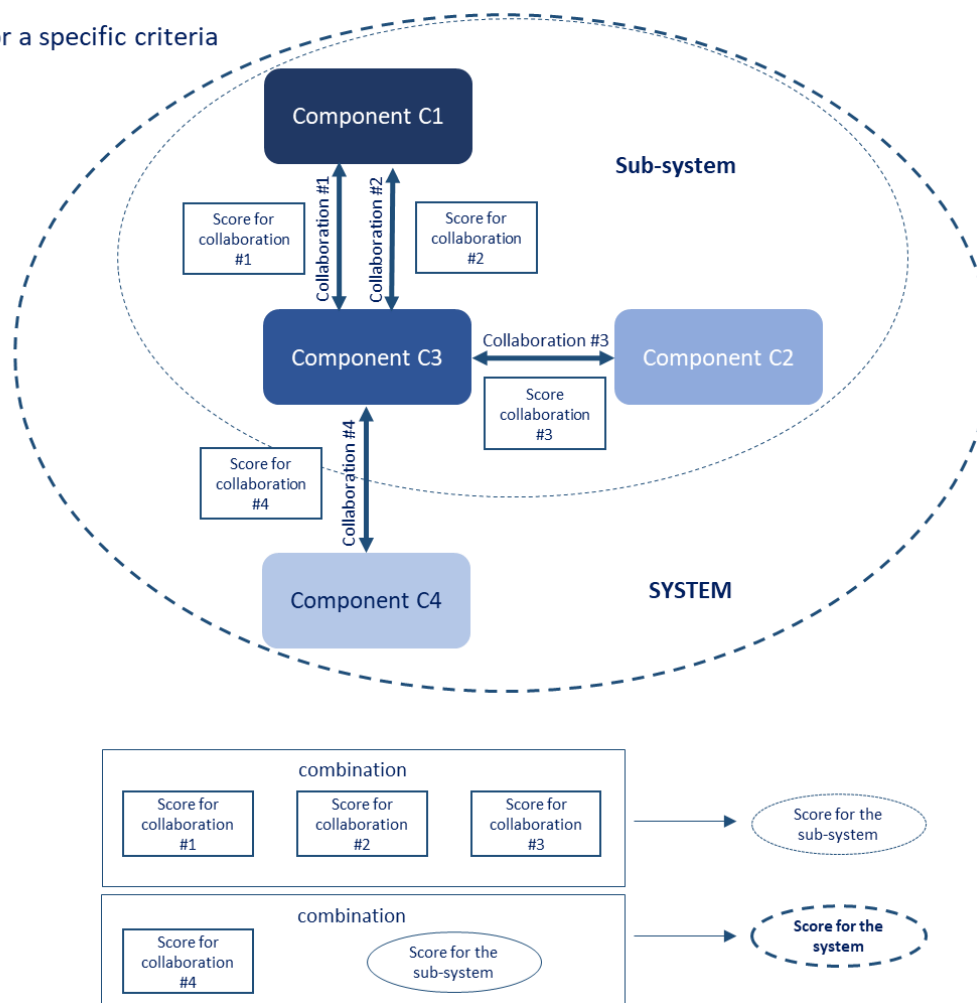
Depending on the context, the boundaries of the surveillance system may be blurred, and the surveillance efforts might be spread across several components, operating independently or with very few connections. Additionally, some programmes continuously collecting data about the hazard under surveillance may exist without being considered a surveillance component (e.g. monitoring programmes). Consequently, it is highly important that the evaluation team defines the boundaries of the system under evaluation and the type of collection programmes that will be included, and then adheres to this definition throughout the evaluation process.

In very complex systems with more than 20 components, some components may be more connected than others, creating sub-systems within the whole system. For certain criteria, it may be necessary to evaluate each sub-system independently and the entire system. If this methodological approach is adopted, the evaluation team will have to set a clear scoring protocol to ensure consistency (see Figure 4).

Before launching the evaluation process, it is recommended to organize a meeting with the evaluation team and selected stakeholders to present the evaluation exercise and to agree on the evaluation objective and expected outputs. Stakeholders here consist of people initiating the evaluation and people involved in the sectoral and multisectoral governance mechanisms.



For a specific criteria



**Figure 4.** Scoring criteria for the system and its sub-systems

## SECOND STEP: collecting data

A preliminary desktop study should be done to collect all necessary data to complete the data collection file as much as possible, both the actors and components sheets, and the data collection form. This study can be completed with interviews of informants identified as having an extensive knowledge about the surveillance system.

In the data collection file, notes at the top of each column provide guidance about the type of information expected. In the actors' sheet, only information related to activities of the actor within the surveillance system under evaluation must be captured. Be aware that some of the major actors of a multisectoral surveillance system may have no role in any given component within that system. For instance, some governance bodies may have been specifically established for steering or coordinating collaboration and may include actors who are not otherwise involved in any specific surveillance component. Some information may appear redundant between the actors and the components sheet, especially when it comes to the characterization of collaboration. However, filling information in those two sheets is helpful for the further scoring of the criteria.

Some sections of the collection form do not collect additional information compared with the one in the data collection file (e.g. section II.A.7), but they provide the opportunity to summarize specific information necessary for the scoring of certain criteria, which will ease the scoring process.



It is recommended to start filling out the data collection file before the data collection form. However, the data collection step is not linear and a back-and-forth process between the tables and the form will most realistically occur.

Once all the information available is captured in both the form and the file, a list of missing or unreliable information should be drawn up. Interviews with informants must be conducted to clarify and collect necessary information. All the surveillance component coordinators should be interviewed. Additional informants to be interviewed depend on the multisectoral surveillance system under evaluation (including the rationale behind its establishment), the evaluation context (time and resources allocated, evaluation objective) and the sought information. For instance, if the surveillance component relies on effective intermediate units, a representative sample of those should be interviewed (with regards to activity volume, local context, etc.). For passive surveillance components, actors in charge of reporting positive cases (laboratories, medical practitioners, farmers, etc.) should be also interviewed and their representativeness ensured.

The time required to complete this step is dependent on the evaluation team's knowledge about the system, the availability and reliability of data in the literature, the number of surveillance components comprising the system and the number of required interviews. It may take one or two weeks (full time) on average.

*Tips:*

- *It is highly recommended to harmonize information captured in the different columns of the data collection file, so filters can be applied and information easily extracted for filling the data collection form.*
- *It can be useful to map the system simultaneously as the information is retrieved to get a graphical representation of the interactions among actors and collaboration across components.*

### **THIRD STEP: scoring the criteria of the organizational and function attributes**

To score the criteria, the evaluation team uses the first sheet of the evaluation matrix. For each criterion, evaluators analyse the information available in the data collection file and form and choose the most appropriate grade. To help evaluators in this process, the column "scoring guidance" indicates which information is useful to score the criterion. The grade is chosen in a concerted manner among the evaluation team and then entered in the cell of the spreadsheet named "grade". The justification for selecting this grade is detailed in the adjacent cell. This justification is ultimately much more important than the grade itself and should be filled in carefully. It will then support the drafting of the report.

If the data collection form and file have been appropriately filled, the scoring process can be completed within the relatively short time of two days. However, if the surveillance is complex with many components involved, it can take more time as evaluation might be conducted both at the system and at the sub-systems levels.

For surveillance systems with numerous collaborative modalities, it might be helpful to score collaboration one by one for some of the criteria and then to combine these individual scores in an overall score the multisectoral surveillance system (see Figure 4.)





*Tips:*

- *It is advised that, where not all required elements for a grade are met, the grade below should be given, in order that improvements be clearly noticeable in the future.*
- *There are 74 criteria to be scored in total. Each criterion is very specific in addressing a characteristic of collaboration at one of the different collaborative levels, namely collaborative strategy, modalities and activities. Evaluators should go through all the criteria once before starting the scoring to get an overview of the full process. This may help prevent them from evaluating at the wrong stage a characteristic that is addressed in a later criterion.*
- *Some criteria address the collaboration only while others evaluate the multisectoral surveillance system as a whole (sectoral surveillance and collaborative efforts). Evaluators should clearly identify the evaluation level each criterion is considering when scoring.*

#### **FOURTH STEP: interpreting evaluation results**

Once the scoring is done, the spreadsheet will automatically produce three graphical outputs on the third sheet, which correspond to the evaluation results of the organizational attributes and indexes, and functional attributes.

- Output 1 provides the individual results of the 12 organizational attributes in independent pie charts. It allows the easy identification of the weak parts of the collaborative organization. Evaluators can refer to the second sheet of the matrix to track back the criteria that contribute to the scoring of each attribute. It helps to better understand the reasoning behind the scoring and to determine how the different criteria impact the attribute's grade.
- Output 2 displays the results of the organizational indexes in a single histogram. This graphical representation illustrates the level of satisfaction regarding the collaborative effort's organization at a macro level, from the management, support, and operational points of view. The use of the histogram allows for the visualization of these three highly aggregated evaluation results at a glance and enables an easy comparison.
- Output 3 shows the efficacy of the collaborative effort within the multisectoral surveillance system. It facilitates the analysis of the balance between the different collaborative functions. It can help to identify the specific collaborative functions that need to be strengthened to make the system more effective.

These outputs need to be analysed and interpreted according to the justification of the scoring. They should support the identification of the strengths and weaknesses of collaboration and provide the foundation for drafting of recommendations for its improvement, if deemed necessary.

#### **FIFTH STEP: organizing a workshop to validate the evaluation results**

Once the scoring has been completed and evaluation results interpreted by the evaluation team, a workshop must be organized with key actors of the multisectoral surveillance system under evaluation. Key actors might be coordinators of the surveillance components or informants who were interviewed during the data collection step. The number of participants should not exceed 10 people, to ease facilitation of discussion. The aim of this workshop is to discuss, revise if necessary, and validate the scores, as well as the justification provided. On this basis, recommendations can be

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refined. To review all the criteria, the workshop will need to take one day, or one-and-a-half days if the system is large.

### **SIXTH STEP: drafting the report**

All evaluation results and recommendations should be released in a report drafted by the evaluation team. Evaluation results should always be communicated with relevant explanation and contextualisation.



**Table 1.** Possible collaborative modalities for the implementation of surveillance activities

Area of collaboration		Different degrees of integration			
Surveillance protocol design	Undertaken by a single sector for all surveillance components	Undertaken separately in each sector and then cross-sectoral consultation to seek for synergies	Cross-sectoral consultation and then undertaken in each sector	Undertaken jointly by the different sectors	Undertaken by a multisectoral body for all components
Data collection (sampling, laboratory testing)	Undertaken by a single sector for all components	Harmonization across sectors but undertaken separately	Joint activities across sectors	Undertaken by a multisectoral body for all components	
Data storage and management	Undertaken by a single sector for all components	Harmonization across sectors but undertaken separately	Joint activities across sectors	Undertaken by a multisectoral body for all components	
Data sharing	Exchange* of raw data (partial or complete) for unusual events only	Exchange* of all raw data (partial or complete) at a low frequency	Ongoing exchange* of all data (partial or complete)		
Data analysis and interpretation	Undertaken separately (with or without cross-sectoral harmonization) and then compared by a single sector	Jointly undertaken by a single sector for all components	Undertaken separately (with or without cross-sectoral harmonization) and then compared by the different sectors	Undertaken jointly by the different sectors	Undertaken by a multisectoral body for all components
Results sharing	Exchange* of results (partial or complete) for unusual events only	Exchange* of all results (partial or complete) at a low frequency	Ongoing exchange* of all results (partial or complete)		
Dissemination to decision-makers	Joint dissemination in separate sectoral activities	Undertaken by a single sector for all components	Undertaken jointly by the different sectors	Undertaken by a multisectoral body for all components	
Communication to surveillance actors and end-users	Joint communication in separate sectoral activities	Undertaken by a single sector for all components	Undertaken jointly by the different sectors	Undertaken by a multisectoral body for all components	

\*one-way or two-way exchange

Note: (i) Areas of collaboration do not always occur in this order depending on the collaborative modalities. For instance, if information is shared among sectors on an annual basis, it is more likely that data analysis and interpretation have been undertaken earlier within each sector, before sharing. (ii) We are only referring to the collaborative dimension related to sector; nevertheless, other dimensions can be present in these modalities.



## Annex 1. GLOSSARY

### A

#### **Area of collaboration**

Step(s) of the surveillance process (planning, sampling, laboratory testing, data storage and management, data analysis and interpretation, dissemination and communication) at which collaboration occurs within any given dimension.

#### **Area of action**

The array of missions assigned to an actor in the governance of the multisectoral surveillance system, i.e. steering, coordination or scientific and technical support of a sectoral surveillance component or of collaboration across components.

#### **Appropriate voice:**

The fact that all the actors involved in collaborative mechanism(s) for the governance of the multisectoral surveillance system (steering, coordination, scientific and technical support) have the possibility to talk freely, be heard in a trusted environment (the power of their voice is appropriate according to the context and collaborative objective(s) and purpose(s)).

### C

#### **Collaboration for surveillance**

All interactions developed between actors involved in surveillance components to improve the surveillance value.

Usually defined at 3 levels: the collaborative strategy, the collaborative modalities, the collaborative activities (see definitions).

#### **Collaborative activities for surveillance**

Activities implemented by surveillance actors to operationalize collaborative modalities (see definition).

#### **Collaborative context**

All external elements to the system that may influence the implementation of collaboration, the collaborative modalities, as well as the quality of collaboration.

#### **Collaborative mechanism for coordinating the MSSS**

Mecanism (organisational structure or activity) in charge of coordinating the implementation of the collaborative modalities, based on decisions taken by the collaborative mechanism for steering the MSS. In charge of informing back the steering mechanisms about the implementation of collaborative modalities (see definition) and results produced. Specific to collaboration or with a wider range of missions, including coordinating the MSSS.

Ex : groupe de travail dédié à la coordination de différents dispositifs



### **Collaborative mechanism for steering the MSSS**

Mecanism (organisational structure or activity) in charge of guiding decisions for the governance of the MSSS. Specific to collaboration or with a wider range of missions, including the steering of the MSSS.

Ex: national steering committee for zoonotic diseases, board of directors of institutions engaged in collaboration.

### **Collaborative mechanism for scientifically and technically support the MSSS**

Mechanism (organisational structure or activity) in charge of scientifically and technically support actors involved in the implementation of collaborative modalities (see definition).

Ex : Technical institute in charge of harmonizing and combining data from different surveillance components.

### **Collaborative modality for the implementation of surveillance activities**

Collaborative action implemented in a given area of collaboration.

In a given area of collaboration, several collaborative modalities are possible, with various level of integration.

Example 1: ongoing data sharing (area of collaboration = data collection) through the establishment of a common data base (degree of integration= inter-sectoral combination of data) for the animal and human sector (dimension = sectors)

Example 2: annual reporting (area of collaboration = data collection) of aggregated results of antibiotic sales (degree of integration= information reporting) by pharmaceutical companies to the competent authority (dimension = professions).

### **Collaborative objective**

Goal for implementing the collaborative modalities.

Ex: improvement of the epidemiological performance, functioning cost reduction, etc.

### **Collaborative strategy**

The course of action by which it is intended to attain the goal(s) of the collaborative effort. Collaborative strategy encompasses the rationale behind collaboration, the objective and purpose of the collaboration, the coverage of the surveillance in terms of data sources and dimensions, the areas of responsibilities of the stakeholders involved, and the mechanisms of resources allocation.

### **Communication**

Flow of the information produced by the collaborative surveillance system (surveillance results, decisions, report from operational actors, etc.), internally (among the surveillance actors operating in the different dimensions) and externally (to end-users, including decision-makers).

## **D**

### **Degree of integration**



The level of collaboration in the operation of the collaborative activities taking place at the different steps of the surveillance process (area of collaboration); for instance, at the data collection step, sampling can be done separately by each sector following a cross-sectoral harmonization of the method or, at a higher level of collaboration, jointly, by a multisectoral unit.

Combining the degree of collaboration with the step of the surveillance process where collaborative activities are implemented leads to the definition of collaborative modalities.

### **Dimension of collaboration**

A possible domain where collaboration occurs in the MSSS: between sectoral institutions belonging to different jurisdiction (human health, animal health, environment, food safety, etc...), between different scales of the decision-making process (supra-national, national, local, community levels), between actors working in different disciplines (medicine, ecology, epidemiology, public health, etc.), between professional groups or institutions assigned with different mandates (healthcare, risk management, risk assessment, diagnostic, etc.), or between the public and the private sector.

### **Dissemination**

The specific step of the surveillance process where surveillance results are communicated to decision makers who are intended to act upon them.

### **Domain**

Any population (human, livestock, wildlife, etc.), production (food, feed, water, etc.) or ecosystems (rivers, soils, ocean, etc.) where surveillance activities are or could be conducted.

## **E**

### **End-users**

Persons who might use the surveillance results, mainly policy makers but depending on the results it can also be members of the community or professional groups such as veterinarians, agribusiness professionals, etc.

## **F**

### **Feedback loop**

The outputs of the surveillance system and lessons learned (evaluation results, feedback from the operational actors, etc.) are routed back to the governance mechanisms in place (steering, coordinating and technically and scientifically supporting collaboration) and are used as inputs by these mechanisms to take decisions and to adapt to changes.

### **Formal document**

Any written documents whose content is supported officially by an organization (governmental organization, academia, professional organization, etc.).



## I

### **Institutional memory**

The repository of all the information about and produced by a surveillance system: surveillance results, information about the organization and functioning of the surveillance system, meeting minutes, etc.

## M

### **Multisectoral surveillance system**

A system in which collaborative efforts exist across at least two sectors (among human health, animal health, food safety, plant health, environmental health, etc.) for the governance and implementation of surveillance activities to produce and disseminate information which leads to actions that aim at attaining optimal health of humans and/or animals and/or ecosystems.

## R

### **Risk mitigation measures or intervention**

The process of applying specific measures targeted at the mitigation of diseases or hazards to reduce the intensity of the situation and its consequences.

## S

### **Sector**

A sphere of activity under one jurisdiction: food safety, animal health, human health, environmental health, wildlife, plant health, etc.

### **Surveillance component**

The surveillance of one or more hazards in a specific domain with a defined sampling strategy. The addition of surveillance components defines the surveillance system.

### **Step of surveillance process**

One set of activities of the surveillance process: planning, data collection (including sampling, laboratory testing, data sharing, results sharing), data management, data analysis and interpretation, dissemination and communication.

### **Stakeholders**

All organizations, institutions or individuals with a stake in the multisectoral surveillance system. They can be actors involved in the governance or the implementation of surveillance activities, or end-users of the surveillance results (including decision and policymakers).