



**Deliverable: D-WP1.3 –
Report on the evaluation of
the common framework
using examples from within
the consortium**

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REPORT ON THE EVALUATION OF THE COMMON FRAMEWORK USING EXAMPLES WITHIN THE CONSORTIUM

1. Introduction

MATRIX is a project of the One Health European Joint Programme (OHEJP), a partnership of 44 food, veterinary and medical laboratories and institutes across Europe and the Med-Vet-Net Association. The purpose of MATRIX is to create practical solutions for European countries to support and to advance the implementation of One Health Surveillance. Within the MATRIX project, work package 1 (WP1) *Existing frameworks and OH capacity*, specifically seeks to develop solutions that build upon existing surveillance frameworks and OH capacity.

The core output of WP1 was the creation of a step-by-step guide to develop One health surveillance systems (OHSS) from existing sector specific surveillance programmes (hereafter referred to as the Integrate-OHSS guide). The purpose of the guide was to facilitate the process for anyone interested in setting up an OHSS by integrating data or information from existing surveillance systems or data sources in the sectors of interest. To inform the guide we drew upon: the results of an earlier analysis exploring the commonalities and differences across the sectors in their surveillance approaches and structures (available at: <https://zenodo.org/record/5062548#.Yrw1RnZByUk>); the results of interviews exploring the question of ‘what works, and what does not when setting up OHSSs’; the results of expert solicitation; and review of other relevant OHEJP project outcomes. We arranged the information into seven steps, that the user could follow in a step-wise sequential manner to arrive at an OHSS, or alternatively use individually as stand-alone exercises. The seven steps were:

1. Establish the core working group
2. Stakeholder analysis
3. Define the purpose and objectives of the system
4. Map the available data
5. Determine where data sharing should occur
6. Design and implement the system
7. Evaluate

For each step, a description was provided along with comments, suggestions and lessons learned to facilitate the process. The guide was completed and made publicly available, in beta version, as an interactive webtool at: <https://ejp-matrix.eu/>

As the guide was built upon a base of theoretical knowledge, it was necessary to evaluate its applicability and suitability in the practical setting prior to release. To that end, we chose to evaluate the guide using simulated case studies. Although real-life case studies were preferred, they were not feasible given the limited time-frame available. We reasoned that using simulated case studies to systematically work through the guide with the appropriate constellation of participants would allow us to assess the applicability and suitability of the



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guide sufficiently for release. Additionally, any problems identified could be immediately evaluated and a solution discussed with the case study participants.

Here, we report the findings of those case studies. Please note, that the following report is designed to be read alongside the Integrate-OHSS guide at: <https://ejp-matrix.eu/>



2. Methods

Three separate simulation case studies were conducted as described in detail below.

2.1. Simulation workshop 1 - *Integrated Campylobacter surveillance in Lower Saxony, Germany*

The first simulation case-study used the Integrate-OHSS guide to explore the possibility of creating an OHSS for *Campylobacter* infections or contaminations across humans, animals and food products in the German state of Niedersachsen (Lower Saxony). *Campylobacter* is a bacterial infection of animals and humans that causes a gastro-intestinal disease characterised by diarrhea, fever and stomach cramps. Transmission occurs following exposure to infected humans or animals, or contaminated food products and water¹. As such, *Campylobacter* is under surveillance in all three human health, animal health and food safety sectors, as part of their disease management programs. Taken together, the transmission dynamics of *Campylobacter* across the human/animal interface, and the existence of surveillance structures in each of the relevant sectors made *Campylobacter* a suitable and benefitting subject of One health surveillance.

Case-study participants were members of the Connect One Health Data research project (Connect OHD). Connect OHD is a cooperation between the Lower Saxony State Health Office (NLGA – human health sector), the State Office for Consumer Protection and Food safety (LAVES – animal health and food safety sector) and the Institute for Biometry, Epidemiology and Information Processing (IBEI) of the University of Veterinary Medicine Hannover (TiHo)². In this way, all three sectors, human health, animal health and food safety were represented at the workshop. A member of MATRIX WP1 was present at the case study as a moderator (and recorder).

On September 27, 2022, we conducted a preparatory meeting with the NLGA representative within Connect OHD. As this representative was previously employed with LAVES, we reasoned that they would provide a well rounded foundation of information upon which to build the subsequent simulation workshop. To better understand the situation in Lower Saxony, we discussed the structure of the different sectors and worked through the first three steps (Establish the core working group, Stakeholder analysis and Define the purpose and objectives of the system) of the Integrate-OHSS guide. Data and discussions generated during the meeting were recorded as written notes. We also provided the relevant representatives with the Excel Data Mapping Tool from 'Step 4' (Map the available data) to fill out in their own time and provide feedback.

The whole-day simulation workshop occurred on October 10, 2022, at the TiHo offices in Hannover. Two representatives from LAVES attended, one representative from NLG and one representative from the TiHo. We systematically worked through the Integrate-OHSS guide using a powerpoint prepared prior to the meeting. The powerpoint presented each step in sequence, provided a description of the individual step, additional information, and data (if available) collected earlier at the meeting on September 27. Hand-outs were also prepared to assist activities associated with Step 2, (Stakeholder Analysis). Each step was completed as fully as possible given the restrictions of the simulation format and all data and discussions were recorded as written notes.



2.2. Simulation workshop 2 - *Integrated psittacosis surveillance in Denmark*

Case study two simulated the process of designing and implementing a national OHSS for psittacosis in Denmark, using the Integrate-OHSS guide. Psittacosis, caused by the bacterium *Chlamydia psittaci*, is a zoonotic disease of birds that occasionally infects humans following inhalation of dust contaminated with infected bird faeces, or the handling affected animals. Human infections may resemble a flu-like illness, which, if left untreated, can be severe and potentially fatal³. In Denmark, surveillance of psittacosis cases in animals is carried out by the Danish Veterinary and Food Administration, DVFA, and surveillance of human cases of psittacosis is undertaken by the national Serums Statens Institute (SSI). Similar to *Campylobacter*, the zoonotic nature of psittacosis and the presence of existing surveillance programs in each of the relevant sectors make it a suitable subject of a One health surveillance system.

The simulation case-study was run as a one-on-one workshop, with a representative from the national Serums Statens Institute (SSI) in Copenhagen. This representative works specifically with psittacosis surveillance systems and had experience in both the human (as an employee of SSI) and veterinary sectors (as a previous employee of the Danish Veterinary and Food Administration, DVFA). As such, the representative had a deep understanding not only of the surveillance systems themselves, but also the sectoral culture and the legislative frameworks within which they operate. A member of MATRIX WP1 took up the moderator role in the case study.

The simulation case study was conducted in two phases. The first workshop occurred on September 23, 2022, in person at the SSI headquarters in Copenhagen, Denmark. We accessed the Integrate-OHSS guide in its online (intended) format, and sequentially worked through steps 1-4 (Establish the core working group, Stakeholder analysis, Define the purpose and objectives of the system, and Map the available data). All data and discussions were recorded as written notes. We discussed 'Step 4' (Map the available data) and reviewed the Excel Mapping Tool, after which the workshop ended, to allow the representative time to complete the mapping tool before resuming the workshop at a later date.

Following e-mail clarifications on various aspects of the mapping tool (noted for evaluation and improvement purposes), the mapping was completed and the second simulation workshop to complete the remaining steps took place October 25, 2022. We conducted the workshop via the video-communication tool Zoom, again referring to the online Integrate-OHSS guide to discuss the outputs of 'Step 4' (Map the available data) and to complete the remaining steps 5-7. Again, all data and discussions were recorded by means of written notes.

We compiled and summarised all notes into a single logical document.

2.3. Simulation workshop 3 - *Integrated Salmonella surveillance in Germany*

Case study three explored the possibility of creating a federal level OHSS for *Salmonella* surveillance in Germany. *Salmonella* (non-typhoidal) is a bacterial infection of animals and humans with somewhat similar disease and transmission dynamics to *Campylobacter*⁴. As such, *Salmonella*, similar to *Campylobacter*, is under surveillance in all three human health,



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animal health and food safety sectors, which, when coupled with the zoonotic nature of the disease make it another suitable and benefitting subject of One health surveillance.

Case-study participants included a representative of the Friedrich Loeffler Institut (Animal health sector) and a representative of the Bundesinstitut für Risikobewertung (BfR) (Food safety sector). Although, the FLI representative was also a MATRIX WP1 member, in this instance they acted as an active participant in the process, rather than a moderator. Both representatives were familiar with *Salmonella* surveillance in Germany, and the sectoral culture and legislative structure within which it operates. Furthermore, where necessary they were able to easily reference experts for supplemental information.

The simulation case study was conducted as previously described for case study two. The first workshop took place in person on September 22, 2022, and the second workshop via the video-communication tool Zoom on October 5, 2022.



3. Results

The data and discussions generated throughout the case studies were of two types. The first related directly to fulfilling the instructions of the 'Step', and could be considered 'actual data'. The second related to feedback about the 'Step' such as, how it could be improved, what information was missing, what else should be considered and so on. These data were considered the 'evaluation data'. As the 'actual data' belong to case-study participants, only the 'evaluation data' are reported here.

For more details on each of the 'Steps' discussed in the following results section, please refer to the online version of the Integrate-OHSS guide at: <https://ejp-matrix.eu/>

3.1. Step 1 Establish the core-working group

Overall, the first step of the guide, establishing the core-working group, was seen as useful and necessary by the case study participants. The core working group drives the process of developing an OHSS, and members of this working group are the change agents for the project. The OHRAS defines change agents as people with the skills, characteristics, drive and motivation necessary to promote, operationalise and support change of policy and practice aiming to establish and strengthen intersectoral and multidisciplinary collaboration between medical, veterinarian and food (and environmental) professionals. Each case study identified a core-working group of between 5-10 change agents. Discussions identified three important inclusions or modifications to Step 1.

1. *Identification of different functions for change agents within the core-working group*

The first step of the guide outlines the establishment of the core-working group for the project. In line with the OHEJP COHESIVE Guidelines for risk analysis of zoonoses (OHRAS), it recommends that the working group be composed of change agents with the following characteristics:

- High degree of trust and credibility
- Need to stay engaged and informed throughout every step of the change process and be able to articulate information to the change targets
- Need to be empowered to ask critical questions at every stage of the change process
- By asking critical questions and keeping change targets engaged, change agents are able to build a strategic framework that can help to produce the desired outcomes
- Can ensure that key stakeholders remain informed and involved

Additionally, the guide outlines that the working group should include: one change agent from each sector with a working knowledge of that sector's relevant surveillance system and the legislation underpinning it; one change agent with a relevant background in IT/programming; and one change agent with a background in social sciences or participatory epidemiology.

When identifying the change agents to meet these requirements it became apparent that the identified change agents would, in reality, occupy two different functions with respect to driving the project. In broad terms, we understood, that there would be those



change agents that comprised a core function within the working group and actively drove the project forward. These 'core' change agents would be necessary throughout each step of the project and at every meeting. Then there would be those change agents that would support the core working group as needed. These 'support' change agents were not necessarily needed at every meeting or referred to along every step of the process, but had knowledge, networks or characteristics necessary to the project.

Table 1. Example of working group membership and function within group

Change agent	Function	
	Core	Support
Change agent representing human health surveillance	✓	
Change agent representing animal health surveillance	✓	
Change agent representing food safety surveillance	✓	
Information technologist/programmer		✓
Social scientist/ participatory epidemiologist		✓
Manager of human health surveillance with extensive networks and highly trusted within sector		✓

To recognise this difference we decided to modify the title of Step 1 to 'Establish the working group', and within the description clarify the presence of change agents with a core function and change agents with a supporting function.

2. *Need for a change agent with legal training*

The case studies highlighted the importance of including a person(s) in the working group with appropriate legal training to identify and interpret legislation relevant to the project. Project progression can be accelerated and unnecessary activities/discussions avoided through a practical understanding of what is and what is not supported in the legislation. Accurate interpretation and implementation of legislation also supports the development of trust between sectors as expectations from members of different sectors are realistic.

According to point 1 above, this person(s) could provide a core or supporting function within the working group.

3. *Nominate one person to a secretarial position*

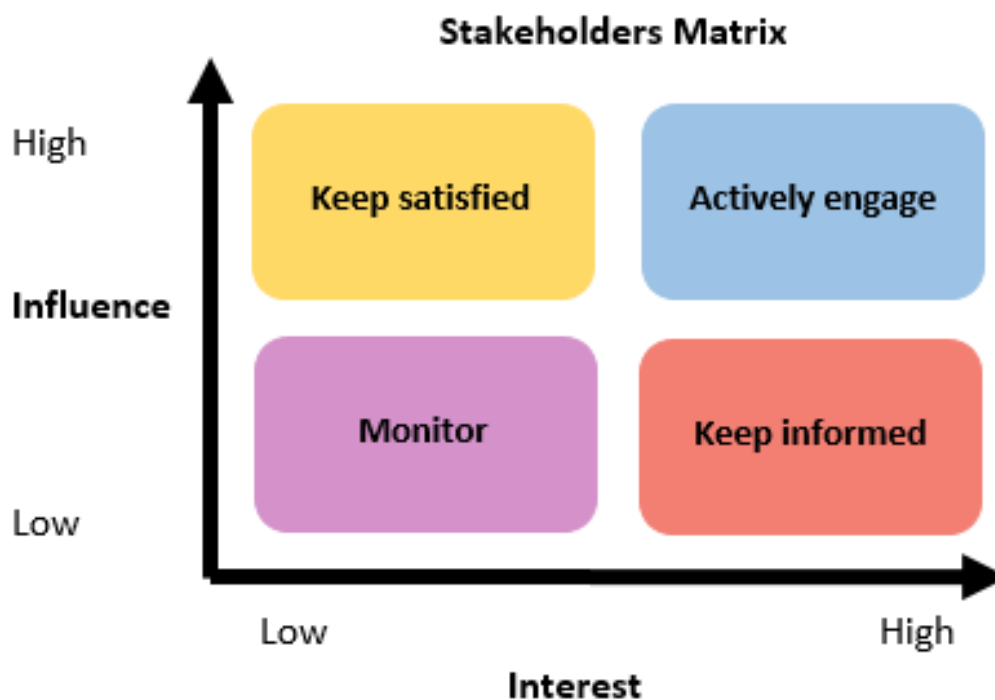
We identified that nomination of a secretary within the working group would facilitate organisation within the project and clarification of roles. This required inclusion has been added into the guide.

3.2. Step 2 Stakeholder analysis

Step 2, '*Stakeholder analysis*', is built upon the approach already presented in the [OHRAS](#). Using the information and tools presented in the Step-by-step guide, each case study rapidly identified between nine and twenty-one stakeholders. The last step in the stakeholder identification requests that a subset of identified stakeholders be asked to review the list and identify any additional stakeholders they believe missing. This step was not performed but would naturally lengthen the list.

The guidance point for identifying stakeholders ‘who are esteemed persons, or persons perceived as champions within a relevant field’, was not immediately understandable to case study participants and required clarification by the moderator in each case study. This observation highlighted the need to include a clear definition of this point in the guide.

Performing the stakeholder characterisations generated considerable discussion, of which one outcome was identifying more stakeholders. Where characterising the ‘interest’ of stakeholders appeared straightforward, understanding their influence was not. In one case study, we found clarity for the meaning of ‘influence’ by referring to the ‘Mendelow’s stakeholders map’ (Figure 1) and working back from the quadrant each stakeholder would logically be placed in, to the interest and influence structure determined by that quadrant. In the other two case studies the definition for ‘influence’ in the OHRAS, modified for our purposes, namely, ‘*how strongly can the stakeholder influence the strategy and resources of a one health surveillance system*’, provided suitable clarity to complete the activity. The latter solution was simpler and will be incorporated into the guide.



Source: Modified from Mendelow’s stakeholders map

Figure 1. Mendelow’s stakeholders map – sourced from the OHEJP Cohesive project’s *Guidelines for risk analysis of zoonosis* (OHRAS) <https://www.ohras.eu/>

3.3. Step 3 Define the purpose and objectives of the system

Given the need to include stakeholders in Step 3, complete realisation was not possible in these simulated case studies. However, the planning and design of the participatory approach to determine a common purpose and objectives could be completed. In this activity, the case study participants agreed with the need for a social scientist, or participatory epidemiologist to



help design the approach, for instance, a focus group or plenary discussion, however, they suggested that a list of contacts should be provided in the guide, as one explained: *'I don't know any social scientists or participatory epidemiologists, I wouldn't know who to contact'*. Two of the case studies suggested that the described role of social scientist or participatory epidemiologist, in their opinion, could also be fulfilled by an epidemiologist with knowledge of participatory tools or systems thinking approaches, or an experienced moderator/communication specialist.

All three case studies emphasised the need for a good moderator if a focus group or plenary discussion approach, as suggested in the guide, was used. There was discussion as to whether the moderator should be from 'within' one of the participating sectors or 'outside' (but with a general knowledge of the different health system structures and their surveillance processes). The argument being, that an 'outsider' may be less influenced by perceived hierarchies and dominant personalities than someone from 'within', but, someone from 'within' would have a better understanding of the system and thereby be better equipped to appropriately guide discussion. No consensus was reached.

3.4. Step 4 Map the available data

All three case studies completed the mapping exercise using the 'Excel Mapping Tool' and provided feedback in terms of usefulness and suggestions for improvement.

Two case studies found the mapping exercise and the associated tool useful. They found that the exercise highlighted differences in the surveillances systems that they were not aware of (or had not considered before), such as the different legislation underpinning the data.

Practical improvements suggested for the mapping tool were:

1. Where not already provided, provide definitions for all variables in layman's terms
2. Ensure the target pathogen is clearly stated
3. Include example entries
4. Clarify in Sheet 2, column G that 'What laws apply to this data' is referring to access and distribution laws associated with the data, rather than the laws underpinning the surveillance system itself
5. Clarify what is meant by 'Data format'
6. Include an option to attach catalogues to coded variables

3.5. Step 5 Where should data sharing occur

In the process of completing Step 5, it became apparent that the order of activities should be reversed. The guide suggests to first determine where data can be shared, and then assess where it needs to be shared based on the common purpose and objectives of the OHSS. In theory, this approach makes sense as it highlights the capacity for sharing in the system. However, in practice, this approach confused the case study participants, who, for the purposes of setting up an integrated surveillance system felt it logical to first determine where data needed to be shared and then determine if that was possible – can data be shared at that point in the surveillance pathway? The issue could be easily rectified by swapping the order of activities.



We also identified the need to define and describe the three major sites where data sharing could occur along the surveillance pathway, currently labelled: Sharing at data transfer and collection stage; Sharing at data analysis stage; and Sharing at data interpretation stage. These are provided in Step 6, but case studies demonstrated their need at the earlier Step 5.

3.6. Step 6 Design and implement the system

All three case studies completed Step 6 in detail and with considerable discussion. However, no deficits were identified in the process, or improvements suggested.

3.7. Step 7 Evaluate

The purpose of Step 7 is to ensure that a schedule and commitment to evaluate the system is in place from the outset. In our case studies this purpose was achieved. However, discussion around the topic highlighted that although the actual evaluation design should only be determined at the time of evaluation (not at outset), there was still value in pre-determining a set of performance indicators that could be used for longitudinal monitoring.

3.8. The website

Case study participants found the website hosting the Integrate-OHSS guide slow to navigate, and the layout illogical. To achieve a more user friendly layout, they suggested moving the 'ladder' of steps to the home page, and including it in a sidebar menu.



4. Modifications to the system

According to the results presented above, a series of action points were identified (Table 2) and have been, or are in the process of being, addressed.

Table 2 – Action points to address in the Step-by-step guide

Action point	Step	Action
1	1	Change 'core working group' to 'working group' throughout text
2	1	Modify wording to acknowledge working group membership with core functions and those with supporting functions
3	1	Include text supporting the inclusion of a legal expert in the working group
4	1	Include text suggesting the nomination of a secretary within the working group membership
5	2	Provide a description of 'esteemed persons, or persons perceived as champions within a relevant field'
6	2	Include definition for 'influence' = <i>indicates how strongly the stakeholder can influence the strategy and resources available to develop a one health surveillance system</i>
7	3	Include a list of participatory epidemiologists, social scientists, moderators or communications experts that could support the activities of step 3
8	4	Where not already provided, provide definitions for all variables in layman's terms
9	4	Ensure the target pathogen is clearly stated
10	4	Include example entries
11	4	Clarify in sheet 2, column G that 'What laws apply to this data' is referring to access and distribution laws associated with the data, rather than the laws underpinning the surveillance system itself
12	4	Clarify what is meant by 'Data format'
13	4	Include an option to attach catalogues if variables are coded
14	5	Provide descriptions of data sharing at: data transfer and collection stage; data analysis stage; and data interpretation stage
15	5	Reorder activities so that 'Where does data need to be shared' occurs before 'Where can data be shared'
16	7	Include text to consider determining a set of performance indicators for longitudinal monitoring of the system
17	Website	Investigate and address underlying reasons for slow navigation
18	Website	Move steps 'ladder' to home page and create a side bar menu



5. Discussion

The simulated case studies confirmed that the Integrate-OHSS guide is useful and facilitates the process of developing OHSSs. We were able to evaluate the applicability and suitability of the guide through simulated case studies, a format that also allowed us to identify and seek solutions to problems with the guide in real-time. In all, we arrived at 18 action points to rectify shortcomings or problems identified in the project, all of which have been, or are in the process of being addressed.

There were limitations to using a simulation approach to the case studies. Although this was the only feasible approach to realise a timely evaluation using the case study format, it meant that some activities outlined in the guide could not be completed with all prescribed participants (e.g. all necessary stakeholders) or were reduced to hypothetical descriptive discussions of how the activities would run (for instance, Step 3 (Define the purpose and objectives of the system)). In this way, those activities may not have been performed with the exact cultural, political or financial representations in which they would ordinarily occur. These limitations could be addressed in real-life case studies which we expect to perform in the near future. Nonetheless, the valuable insights provided by this work demonstrated the necessity for these simulated case studies to occur prior to performing any real life case studies, given the number of problems identified.

The change agents participating in each case study represented the applicable sectors or their role in the process in distinctly different ways. These different representations held both pros and cons. In the first study, each sector pertinent to the OHSS to be created was comprehensibly represented, and a WP1 member moderated the workshop. In reality, it is expected that groups will navigate the guide independently, and in this case the presence of a moderator may have meant some of the limitations with independent navigation through the guide were not identified. In the second case study, one change agent represented both sectors pertinent to the OHSS to be created. This was appropriate, as that change agent had in-depth knowledge of relevant surveillance in both sectors through current employment in one, and previous employment in the other. This background in both sectors provided deep cross-sectoral understanding and a naturally unified approach to working through the guide. A concern may be the lack of alternative viewpoints in this approach. Again, a moderator worked with the change agent limiting insights on potential problems associated with independent navigation of the guide. In the last case study, one person each represented the sectors pertinent to the OHSS to be created. Although, one participant was a WP1 member, they did not perform a moderating role, rather worked independently through the guide with the other participant. This approach provided insights from both sectors, as well as the ability to identify any issues with navigating the guide independent of a moderator. Taken together, the different representations of the case study participants balanced out any limitations to provide a well rounded picture of the suitability and practicality of the guide.

We note that two of three case studies occurred in the German context, and the third in the Danish context. Naturally, our findings may therefore have reduced external validity to other European countries considering the limited representation. We believe that, regardless of this limitation, our current approach will have unearthed most of the major problems, and country specific problems can be addressed as they are encountered. Nonetheless, we will send the



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guide for detailed review to a broad selection of representatives of different countries within the MATRIX consortium, to try to capture any additional country specific issues.

The Step-by-step guide was developed as an interactive webtool for two reasons. The first, was to ensure easy and public accesibility. The second, was to allow for easy update of content. As the guide is designed to be a *living tool*, we needed it presented in a format that easily accommodated updates as more data or information became available. Current work to address the problems identified through the case studies has shown that the web-tool was a suitable choice, given the ease with which we have been able to modify it. In the near future we expect further refinements based on experimental data generated from real-life case studies and country specific reviews of the guide. In short, the interactive web-based presentation supports constant updates and refinement to the guide, ensuring its relevancy into the future.



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