

PHIRI

Population Health Information
Research Infrastructure

COVID-19 Health Information System Assessment - Manual

Objectives, process & guidelines,
and roles & tasks

August 2022

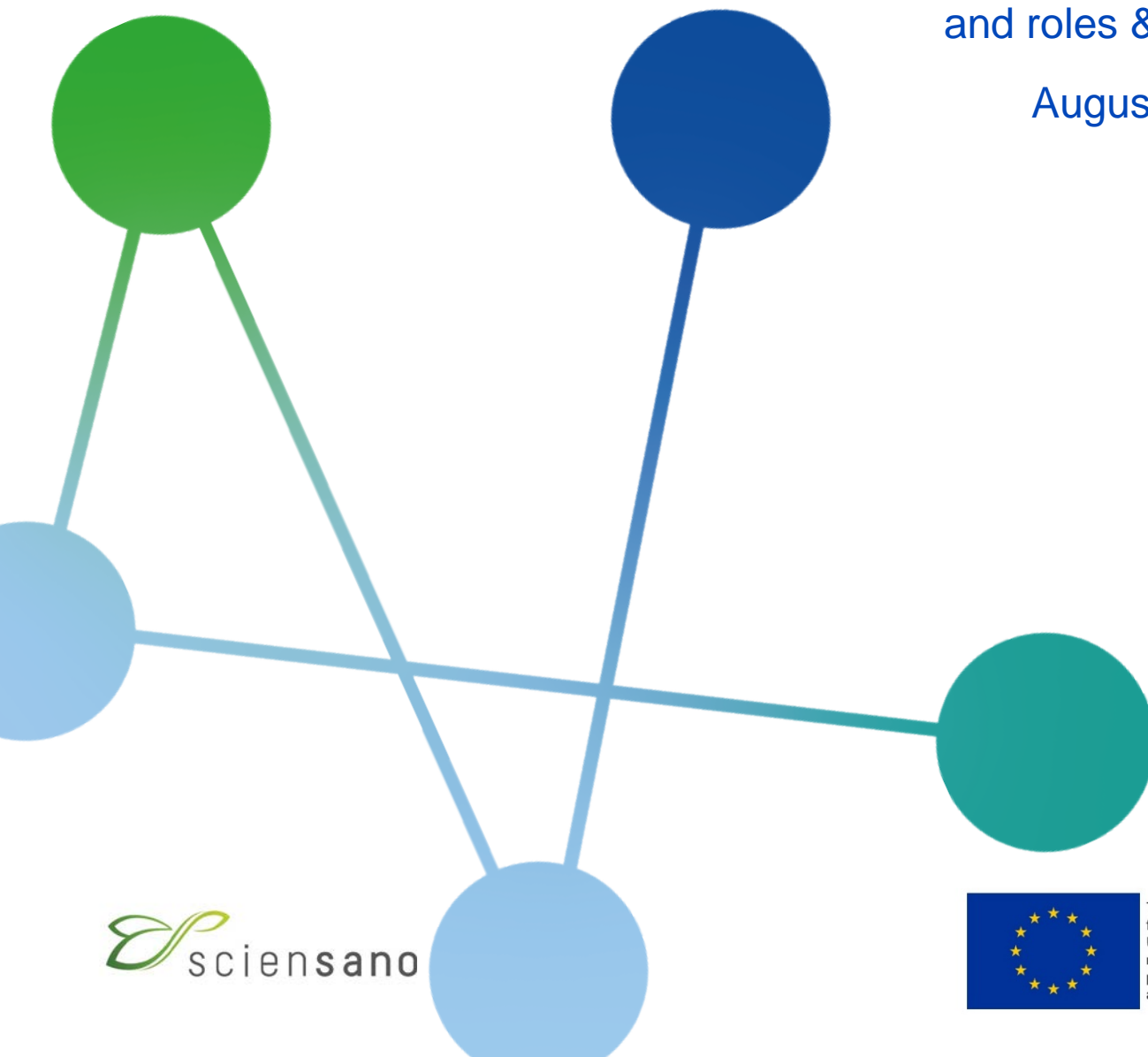


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Executive summary

This manual is part of Task 3.1 in Work Package 3 (WP) of the [Population Health Information Research Infrastructure](#) (PHIRI). In this task, (virtual) country visits are carried out to map the state of play of European countries' health information (HI) systems that monitor the wider effects of COVID-19 on population health. A HI system assessment tool has been developed by WHO Europe through the [European Health Information Initiative](#), EHII (WHO Regional Office for Europe, 2021). The tool was adapted to accommodate the COVID-19 perspective. The mapping includes an assessment of the underlying needs and how these relate to current gaps in the European HI systems. Additionally, it investigates potential future needs and gaps to which PHIRI can respond through its services. A base for exchange and engagement in PHIRI is created by mobilizing national HI system stakeholders and authorities (including policy- and decision-makers) through the mapping exercise. This, in turn, can be linked to the [national nodes](#) set-up and activities promoted in [Task 4.2](#) of PHIRI. Finally, the assessments aid in mapping and identifying key health information sources available in the countries that are assessed. Such information can be uploaded on the [Health Information Portal](#), the one-stop-shop that facilitates access to population health and health care data information and expertise across Europe.

Keywords

Health Information Systems (HIS), Assessment, COVID-19, Country visits, Population health, Mapping exercise

PHIRI: COVID-19 Health Information System Assessment manual

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Last update: 02.08.2022 (version 3.0)

I. Introduction

Within PHIRI, [the Population Health Information Research Infrastructure](#), Work Package 3 (WP) focuses on reaching out and engaging key stakeholders at national and international level to ensure the sustainability of the project's actions. The objectives of the WP are to:

- Have a comprehensive view on developments and the state of play of health information systems that monitor the wider effects of COVID-19 on population health at national level and international level;
- Create a base for interdisciplinary population health research through exchange and support at national and international level;
- Investigate routes for economic sustainability;
- Support integration of knowledge generated from PHIRI into policy.

Within this WP, task 3.1 aims to map the health information system (HIS) that monitors the effects of COVID-19 on population health. This is achieved through virtual country visits of selected European countries that are part of the PHIRI consortium. After receiving a training, the assessors perform targeted interviews with key national players that have dealt with the processing of the COVID-19 population health information in the country of interest.

The methodology applied for the country visits is derived from the methodology developed and piloted by WHO Regional Office for Europe (Verschuuren et al., 2016; World Health Organization Regional Office for Europe, 2015) in the framework of the WHO European Health Information Initiative (EHII) and the [country visits performed in the Joint Action InfAct](#), for which the methodology was adapted as the WHO works through the Ministries of Health, while in InfAct the assessments were initiated and executed at the level of health information institutions and experts.

The country visits are expected to have beneficial effects on several levels. First of all, they will result in the identification of strengths and weaknesses of the different data flows monitoring the wider effects of COVID-19 in the examined countries. This will stimulate actions to improve the assessed information flows, and will lead to the identification of good practices that can also be used in countries that are not taking part in the assessments. Consequently, this will contribute to better preparedness for future crises or other public health challenges. Other countries will be able to learn from the experiences that will be gained during the assessments, and build on these when assessing their own health information data flows. Furthermore, the country visits will potentially identify data sources that may not have been used or fully exploited yet to look at the wider effects of COVID-19 on population health. Finally, it will create opportunities to engage and exchange with national HI stakeholders and authorities on COVID-19 experiences.

Stimulating the improvement of health information data flows monitoring the wider effects of COVID-19 the exchange of good practices, could lead to the reduction of health information inequalities between countries. The series of assessments will be evaluated in order to establish to what extent these objectives have been met, and how the methodology could be improved for future application.

This document is the PHIRI COVID-19 HIS assessment manual. It defines the objectives of the HIS assessment and how the assessment process is organized. It provides guidelines for the execution of the assessments and describes the roles and tasks of the different types of experts involved.

II. Why: Objectives of the HIS assessments

A. For the assessed country

- Overview and mapping of the various COVID-19 data flows that make up the national HIS within that country and their upload on the Health Information Portal;
- Insight into strengths and weaknesses of the different national data sources collecting information on the wider effects of COVID-19 within the national HIS;
- Concrete suggestions for improvement of the COVID-19 data flows to be better prepared for future crises or other public health challenges;
- Sensitization of wide range of stakeholders, both on the national and regional level, to the existence of different COVID-19 data flows available in their country;
- Improved interaction and collaboration between key health information stakeholders within the country and between countries;
- Boost the implementation of [National Nodes](#) as defined in PHIRI.

B. For the PHIRI consortium and European countries

- Gain attention for population health and the wider effects of COVID-19 on population health;
- Potentially identify data sources that may not have been used yet e.g. siloed data collections) or that might have not been fully exploited yet to look at the wider effects of COVID-19 on population health;
- Gain insight into the organization and functioning of HISs in other countries, including good practices and possible solutions for problems in their own HIS, and common challenges, that lead to insights on potential common issues between countries that could be addressed through a European approach;
- Build capacity in European countries:
 - Experience with performing a HIS assessment for the assessors, thus becoming more objective in assessing one's own system, and facilitating the follow up of the HIS assessment in their own country;
 - Capacity building through the dissemination of the one pager describing the COVID-19 health information system for population health in the country and the dissemination of good practices identified in the assessments;
 - Building knowledge through the report on conclusions from interviews and recommendations for PHIRI and European HISs' resilience;
 - Capacity building through tailored training and through exchange among experts between countries assessing each other's system i.e. building up the knowledge and expertise gained through the exercise.

III. Who: Roles and tasks

A. Contact person(s) in the assessed country

The main role of the contact person(s) in the assessed country is to act as the national liaison during the assessment, and their main task is to organise the peer assessment. This includes:

- Preparing the preparatory desk review in close collaboration with the assessors: providing the outline of the national HIS, collecting the relevant documentation, helping with translation (if necessary), and reviewing the report;
- Organising the logistics of the assessment: planning the meetings with the stakeholders, arranging for translation if necessary;
- Be present during the interviews with HIS stakeholders;
- Providing feedback on the outcomes of the assessment process to the interviewed stakeholders, through a multi-stakeholder meeting that is organized shortly after the country visit with all the stakeholders that participated in the assessment.

This role should be assigned to a person within the PHIRI consortium.

B. Assessors

The main role of the assessors is to act as independent, professional assessors. This includes being aware that the assessment is not an investigation, but an exchange of experiences and knowledge between peers, and conducting themselves according to this principle. An important objective of an assessment is to create engagement. In addition, the assessors should be open to sensitivities that may exist in the assessed countries, and follow the lead of the contact person(s) in the assessed countries in this regard. The main task of the assessors is to carry out the assessment in the assigned country. This includes:

- Performing a desk review in preparation for the actual assessment in collaboration with the contact person;
- Interviewing the selected HIS stakeholders and taking notes;
- Summarizing the outcomes of the assessment in a SWOT format, and formulating SMART suggestions for improvement;
- Summarizing the information in a one pager;
- Presenting their findings in a multi-stakeholder meeting in the assessed country shortly after the assessment.

The team of assessors should include more experienced assessors (i.e. that took part in the country assessments conducted in [InfAct T5.1](#)) and newly trained assessors. All these tasks should be carried out by the assessors jointly. This implies that they will need to collaborate and consult with each other throughout the entire assessment process.

The task of the experienced assessor also includes:

- Providing guidance to the assessor and the contact person(s) in the country under assessment during the (preparation of the) assessment process, at their request;
- Observing whether the professional standards and procedures as elaborated in this document are adhered to, and give advice/guidance if necessary;
- Taking note of situations in which the agreed standards and procedures are not working out as anticipated, and giving advice on how to best adapt to the specific local situation;
- In case of adaptations to the approach have been made, giving advice on whether these adaptations would also be beneficial for the assessments that will be performed at a later stage.

C. Observer

Finally, the task leaders of PHIRI task 3.1 - Sciensano (Belgium), together with MFH (Malta), are fitted with the task to confirm that the objectives as predefined for the assessed country, and PHIRI consortium, have been met and to evaluate the process. This includes:

- Gathering data on the process and potential overarching outcomes across the assessments both during and after the assessment process;
- Summarising these outcomes, including recommendations for potential improvements on overacting barriers and enablers of COVID-19 HISs.

IV. How: Process and guidelines

A. Cycles of assessments: phased approach

The HIS assessments take place in two cycles of assessments. In the first phase (\pm January 2022), the HIS assessments will be performed in Italy, Portugal, Malta, Norway and Ireland. After the first set of assessments (\pm June 2022), a general meeting with all PHIRI consortium partners will be organised, to present the first findings. The invitations for this meeting could be extended to external stakeholders.

In the second phase (\pm September 2022), the HIS assessments will be performed in Hungary, Netherlands, Belgium, Greece and Austria. After the second phase (\pm February 2023), a final meeting will be organised in which the results of the COVID-19 HIS assessments of all participating countries will be presented.

B. Assessment characteristics: broad approach at a generic level

As the basis for the assessments, a broad definition of a HIS is applied (Rechel et al., 2019):

A health information system is the total of resources, stakeholders, activities and outputs enabling evidence-informed health policy-making. Health information system activities relate to all phases of population health monitoring. These are data collection, interpretation (analysis and synthesis), health reporting, and knowledge translation, i.e. stimulating and enhancing the uptake of health information into policy and practice. Health information system governance relates to the mechanisms and processes to coordinate and steer all elements of a health information system.

The methodology applied for the country visits is derived from the methodology developed and piloted by WHO Regional Office for Europe (Verschuuren et al., 2016; World Health Organization Regional Office for Europe, 2015) in the framework of the WHO European Health Information Initiative (EHII) and the [country visits performed in the Joint Action InfAct](#). For a schematic overview of the different activities, stakeholders, outputs and resources, see Annex 1. Using this definition implies that the assessment does not just include (the availability of) health data, but also the generation of health information and knowledge, the use of health information and knowledge translation, and information governance.

In July 2021, the assessment item sheet of this methodology was updated when several modules were added to the core modules (World Health Organization Regional Office for Europe, 2021). The aim of the add-on modules is to zoom in on specific parts or functions of the national HIS in greater detail. This assessment sheet includes the add-on modules on health information for WHO's Thirteenth General Programme of Work (GPW13), infectious disease surveillance, non-communicable disease (NCD) monitoring and human resources for health (HRH).

The task lead of PHIRI Task 3.1 added the add-on module on infectious disease surveillance to the core modules and adapted the item sheet to be able to map the state of play of health information systems that monitor the wider effects of COVID-19 on population health. The resulting item sheet is available on [PHIRI's internal collaboration platform SharePoint](#).

As the available resources are limited, the HIS assessment are carried out at a generic level. This will result in the identification of areas and elements in the system that are currently functioning in a suboptimal way and hence require strengthening. The health information stakeholders in the assessed country can use this information to set priorities for the improvement of the national HIS that is dedicated to monitor the wider effects of COVID-19 on population health, and pinpoint specific technical areas that require further developmental work and capacity building. Hence, the assessments should be seen as a first step in a longer-term HIS improvement process. Following up on the outcomes of the assessment is not within the scope of the PHIRI assessments however, it is up to the assessed country if and how to develop follow up activities.

C. Starting point: preparatory desk review

The assessment process begins with a preparatory desk review by the assessors. It is recommended that the assessors start with the preparatory desk review no later than six weeks prior to the assessment. The main aims of the review are to:

- Get a basic overview of the organisation of the national health system and the national health information system and their mutual relations;
- Get a basic overview of available data, indicators, health information products and various COVID-19 data flows that make up the national HIS within that country;
- Get insight into the specific functions, roles and responsibilities of identified stakeholders in the national HIS related to COVID-19 data flows and management, and the collection of information and reporting on the wider effects of COVID-19;
- Identify possibly already existing assessments results/reports and digital tools such as dashboards that can be used as the basis for this assessment exercise;
- Identify existing strategies and HIS activities that can form a basis for future improvements and crises preparedness;
- Identify gaps on which further information can be gathered during the interviews.

It is emphasized that the preparatory desk review aims to create a general overview of existing COVID-19 data flows and management, and the collection of information and reporting on the wider effects of COVID-19 and its potential issues. This review should be used as the starting point for the assessment exercise, and not as a comprehensive, detailed HIS description. The interviews during the actual assessment should be used for exploring the state of play of the national HIS monitoring the wider effects of COVID-19 on population health and its strengths and weaknesses in more depth. It is estimated that 2 full days of work for each assessor on average would be required for performing the desk review (provided that the assessors have received the necessary information from the contact person(s) in the country under assessment).

To support the preparation of the preparatory desk review, the contact person(s) in the country under assessment need(s) to provide the assessors with relevant documents. These documents could include general information on a country's HIS, e.g. previously conducted assessments or documents on national health information policies and strategies (see Box 1) but also documents specifically produced to address the COVID-19 pandemic, such as general reports on infections, dashboards, policy briefs and relevant legislation (see Box 2). The documents provided should contain relevant information. The contact person(s) in the assessed country provides the necessary documentation to the assessors through the PHIRI SharePoint platform (collaboration.sciensano.be – access limited to PHIRI partners) and supports with translation, if necessary. Please note that a pragmatic approach using tools such as Google Translate will often provide the assessors with enough information for assessing which parts of a document are relevant for the preparatory desk review. The contact person(s) in the assessed country can assist in subsequently fine-tuning the translation of the relevant passages.

Based on the provided information, the assessors draft a short report (see Annex 2 for the preparatory desk review). This report should be short and to the point; the use of bullet points is advised. If possible, the assessors will deliver the preparatory report no later than four weeks prior to the assessment. In this way, the outcomes of the preparatory desk review can be used for fine-tuning the assessment programme.

Box 1: Typical information sources that can be used for the preparatory desk review

- Previous [HIS assessments carried out by the former Health Metrics Network](#) of WHO, or by WHO Regional Office for Europe* based on the [Support tool to assess health information systems and develop and strengthen health information strategies](#), or similar assessment exercises, such as by IANPHI and OECD e.g. [Strengthening Health Information Infrastructure for Health Care Quality Governance](#);
- [Health Systems in Transition \(HiT\) series](#) of the European Observatory on Health Systems and Policies;
- National health information policies and strategies and/or (health information paragraphs in) national health policies and strategies;
- Relevant legislation;
- Strategy documents, mission statements, activity reports etc. of key health information stakeholders (e.g. national statistical office, national public health institute, national insurance company);
- Reports on health (information) system development projects from donors (e.g. World Bank);
- Databases containing general public health indicators, e.g. WHO's Health Information Gateway, Eurostat database, OECD Health Statistics (particularly useful to assess the degree of reporting currently in place in that country);
- State of health by [European Commission](#)
- Country profiles such as provided by [WHO](#), [WHO-Euro's Health Information Gateway](#), and the [World Bank](#);
- [WHO ICD Implementation Database \(WHOFIC\)](#).

* NB: Reports of WHO Regional Office for Europe HIS assessments are not publically available, they need to be requested from the Ministry of Health of the specific country.

Box 2: Information sources that can be used for the preparatory desk review related to COVID-19

- Statistical reports (daily, weekly monthly)
- National health information policies and strategies to address the COVID-19 pandemic and/or (health information paragraphs in) national health policies and strategies related to the COVID-19 pandemic;
- COVID-19 dashboards
- (ad hoc) legislation targeting the COVID-19 pandemic
- The catalogue made based on the [PHIRI Rapid Exchange Forum in PHIRI WP8](#)
- Mapping of data sources produced in [PHIRI WP6](#)

D. Selection of stakeholders

While the assessors are drafting the preparatory desk review, the contact person(s) in the assessed country starts to identify the key stakeholders that were actively involved in the management of the COVID-19 pandemic. The assessors can also propose to the contact person(s) specific stakeholders

based on the results yielded by the preparatory desk review. Depending on the country, the stakeholders and institutes could include (but are not limited to):

- National Public Health Institute
- Ministry of Health or Research
- National Statistical office
- Regional health bodies
- Universities
- Policy makers
- Health information specialists
- Data protection specialists
- ...

E. Actual assessment strategy: semi-structured interviews

When the relevant HIS stakeholders to be included in the assessment have been identified¹, the contact person(s) in the assessed country develops a programme, i.e. an overview of which stakeholders will be interviewed (including which specific expert(s) within each institution and organisation), and proposed duration and timeslots for the interviews.

Based on previous experiences, when well structured, stakeholder meetings should not take more than 1-1.5 hours. It is possible to interview several experts at the same time, especially around the same topic as this could be an efficient way of obtaining a lot of information in a short span of time, especially when it concerns multiple experts from the same institution or related institutions performing similar tasks. Be aware, however, that in a group certain people are less likely to speak up (because of personal characteristics or because their boss may also be in the same room). One understands that, within a limited field of expertise, there may be some strained personal relationships. The contact person(s) should make sure to manage these to the best of his/her abilities and inform the assessor(s) if these could affect the conduct of the meetings. Preferably, the programme is finalized no later than four weeks prior to the assessment, allowing adequate time for making the actual interviews' arrangements.

An invitation letter template to be sent to the selected stakeholders is available in Annex 3. The invitation letter emphasizes that the expertise of the addressee is necessary for obtaining an accurate overview of the functioning of the state of play of the national HIS monitoring the wider effects of COVID-19 on population health (i.e. we need everyone's expertise to get a complete picture). The invitation letter points out the benefits for the addressee (e.g. making new contacts, possibilities for initiating solutions for problems he/she encounters in his/her daily work). If desirable, the contact person(s) could translate the letter in the national language and adjust the letter according to what they see fit. Most importantly, please note that this invitation letter should already include information on the multi-stakeholder meeting that is organized after the assessment.

The assessment period within the country is about 3 half days, but this could vary between 2 and 4, depending on the number of stakeholders that are consulted. During this period, the assessors will conduct semi-structured interviews with the health information stakeholders, using the HIS assessment item list. It is emphasized that the assessment is explorative and qualitative in nature, i.e. the aim of the exercise is *not* to put a score on the HIS or to quantitatively compare it to predefined standards.

¹ The selection of stakeholders to include may be altered/improved based on the outcomes of the preparatory desk review, see paragraph *Starting point: preparatory desk review*.

During the interview, the assessors will take notes (interviews are not recorded), which they will summarize afterwards:

1. in the HIS assessment item list and subsequently,
2. in the form of a SWOT analysis (see below).

It is recommended that prior to the assessment, the assessors discuss the division of work (e.g. for each interview, who will lead the interview and who will focus on taking notes, etc). During the interviews, the assessors will be introduced by the contact person from the country being assessed. The following order to open the meeting is suggested:

| Item | Responsible |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Welcome word | Contact person |
| Brief introduction of the PHIRI project and aim of the meeting | Observer or contact person |
| Introduction of assessors | Assessors |
| Introduction of stakeholders: stakeholders introduce themselves and explain their role within their institute/ organisation and the role of their institute/ organisation in the management of the COVID-19 pandemic | Stakeholders |
| Interview | Lead by assessors |
| Closing; including more information on the multi-stakeholder meeting, its aim, date and time (more in section F) and the next steps (reports that will be developed). | Contact person |

The contact person(s) might be asked to step out of the meeting after the introduction of the assessors, in order to encourage the stakeholders to speak freely. The assessors should be aware that the interview should be shaped as a discussion, yet always keep the discussion on track in order to obtain as much information as possible within the limited timeframe. A short informal debriefing meeting between the assessors, observers and contact person(s) is advised after every day of interviewing to discuss the proceedings of the day, seek consensus on any issues that were brought up and assess whether any further issues need to be explored during the following day's assessment.

F. Multi-stakeholder meeting

After all the interviews within the assessment have taken place, the assessors summarize the main finding in a PowerPoint presentation containing the following headings:

- Title
- Scope of the assessment
- HIS stakeholders interviewed
- Data collection
- Analysis
- Reporting
- Knowledge Translation
- Governance & Resources
- Best practices
- Recommendations
- Next steps
- Thank you

The assessors present the content of the presentation at the Multi-stakeholder meeting to which all the interviewed stakeholders are invited. Before this meeting it is advised to organise a bilateral informal meeting between assessors, observers and the contact person(s) to address potential sensitivities. This Multi-stakeholder meeting should take place no later than 2 weeks after the interviews. The date of the meeting should be fixed before the interviews start and should be communicated during all the interviews.

The multi-stakeholder meeting serves the purpose of presenting the initial results and receiving a first round of feedback from the interviewed stakeholders. The slides are also sent by email so that the interviewees can provide written feedback, additional sources and clarifications on the content in the presentation.

G. Reporting: one pager, SWOT analysis and SMART suggestions

After the multi-stakeholder meeting has taken place, the assessors start drafting the final report. The heading of the report are as follow:

- Executive summary
- Background (based on the preparatory desk report)
- Process and Methodology (Based on this manual)
- SWOT analysis
- SMART suggestions
- Annex A: Stakeholders interviewed
- Annex B: One pager (see below): COVID-19 HIS overview
- Annex C: Filled in HIS assessment item list

Before finalizing the report, the stakeholders that were interviewed, as well as the contact person should have the opportunity to review the report, to check whether the findings and suggestions for improvement are clear and correct. First, the contact person will be asked to address potential sensitivities. Then, the contact person(s) in the assessed country forward the final report to all the stakeholders included in the assessment and allow a window of two to three weeks for feedback. The exchange between assessors and stakeholders is repeated until there are no more unresolved comments in the final report.

Based on the decision of the different stakeholders involved, the full report may or may not be published for the public. Unless, requested by an interviewee, no quotations are made in the report.

The outcomes of the assessment are also summarized as a one pager (see Annex 4), showing the state of play of the HISs that monitor the wider effects of COVID-19 on population health at a glance. Preferably, the one pager is finalized within two months after the country visit. After approval of the assessed country, the one pager is made available in the public domain and uploaded on the Health Information Portal.

The outcomes of the assessment are also shaped in the form of a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis, and a set of concrete suggestions for improvement are provided. The concrete suggestions for improvement should be formulated according to the SMART criteria (see Box 3), preferably divided according to whether they can be achieved in the short, medium or long term, together with the owner and stakeholders that should be involved. When relevant and feasible, the suggestions for improvement will be complemented with good practices either from the countries of the assessors, or from other countries. Contact details of experts from other countries that might be able to advise on specific problems can be provided as well.

Box 3: SMART criteria

Specific – target a specific area for improvement
Measurable – quantify or at least suggest an indicator of progress
Assignable – specify who will do it
Realistic – state what results can realistically be achieved, given available resources
Time-related – specify when the result(s) can be achieved

H. After the assessments: presentation of the results

The PHIRI COVID-19 HIS assessment takes place in two rounds of assessments. After each round (around 4-5 countries assessed), a public webinar is organized by the PHIRI Coordination Team where the results from all the published one pagers are presented.

I. Summary of the entire assessment process

| When* | What | Who |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Week -6 or before | Provide necessary documentations for desk review | Contact person(s) assessed country |
| Week -6 or before | Start preparatory desk review | Assessors |
| Week -5 | Clarify any issues with existing documentation and demand any additional documentation, as required. | Assessors |
| Week -4 | Start with planning and making arrangements for the interviews & multi-stakeholder meeting, send out official invitation letters (could also be send earlier) | Contact person(s) assessed country |
| Week -3 | Finalise preparatory desk review | Assessors |
| Week -2 | Fine-tune assessment programme based on outcomes desk review (if necessary); | Contact person(s) assessed country |
| Week -1 | Agree on working arrangements during the interviews | Assessors |
| Week 0 | Assessment | Assessors and contact person(s) assessed country |
| Week 1 or 2 | Debriefing meeting | Assessors and contact person(s) assessed country |
| Week 1 | Start writing assessment report | Assessors |
| Week 2 | Feedback round draft assessment report (version 1): feedback from contact person(s) in assessed country Start preparing for multi-stakeholder meeting | Assessors and contact person(s) assessed country |
| Week 3 | Feedback round draft assessment report (version 2): feedback from the interviewed stakeholders Finalize meeting preparations | Contact person(s) in assessed country distributes report on behalf of assessors; stakeholders provide feedback** |
| Week 5 | Finalize assessment report and distribute | Assessors and contact person(s) assessed country |

* Recommended timing

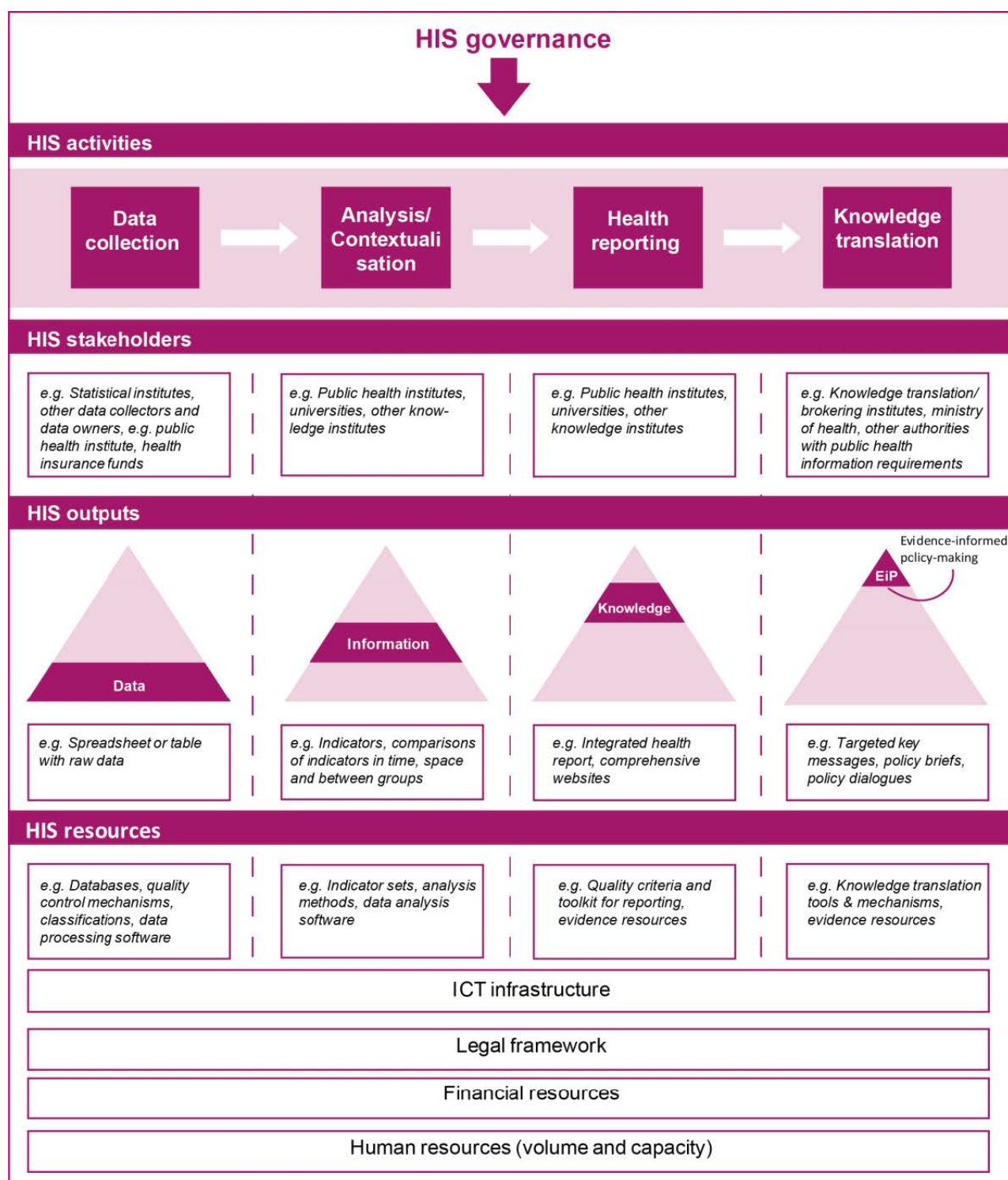
** Only mistakes/grave omissions or possible clarifications - this should be made clear when distributing the draft report

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Appendices

1. Schematic overview of the (coherence between the) various elements of a HIS



2. Template for preparatory report

1. Executive summary
1 page general, overarching summary.
2. Background
Basic geographical and epidemiological information (e.g. population size, % of population living in rural areas, GDP, life expectancy at birth, main causes of death, member of EU and OECD?)

Creating a basis for the assessment: HIS state of the art and state of play of information flows in (wider effects) of COVID-19

3. Main health information stakeholders
Main health information stakeholders and their roles and (legal) mandates in the HIS.
4. HIS regulatory framework
Overview of main policies, strategies and legislation in force that are relevant for operating the HIS.
5. Overview of main data sources and data flows for COVID-19
 - a. *Administrative sources, registries, health interview survey/health examination survey.*
 - b. *Health information flows between the various elements of the health (information) system (e.g. from local health authorities to the Ministry of Health, from hospitals to the health insurance company, from the statistical agency to the public health institute).*
 - c. *If relevant, this section should also include subnational levels.*
6. Overview of main indicator sets
Overview of main indicator sets in use at the national level, and, if relevant, also at subnational levels.
7. The international dimension
To what extent can international data delivery requirements (Eurostat, WHO, OECD) be met? To what extent is the country participating in international health information projects on COVID-19 and/or crisis preparedness?

Identifying strengths and weaknesses: Existing assessments

8. Existing HIS assessments
Overview of the main findings of existing health information assessments or comparable exercises (if applicable).

Identifying possibilities for synergies: Planned and ongoing reforms

9. Planned and ongoing reforms
Overview of planned and ongoing health information and relevant health system developments/improvement activities, including investments (if available), and including the responsible stakeholder(s).
10. Annex: list of documents reviewed

3. General invitation letter

Dear sir/madam,

We would like to invite you to participate in an effort to map the Health Information System (HIS) behind the COVID-19 data and information flows in >>insert country<<. This mapping will be conducted within the framework of the Population Health Information Research Infrastructure for COVID-19 (PHIRI, www.phiri.eu).

PHIRI is a roll-out of the research infrastructure on population health information to facilitate and generate the best available evidence for research on health and well-being of populations as impacted by COVID-19. PHIRI aims to map the national health information system (HIS) that monitors the effects of COVID-19 on population health. This will be achieved through virtual country visits of selected European countries that are part of the PHIRI consortium. In these country visits, the main actors in the national health information system will be interviewed. You play an important role in this system and your expertise is very relevant to obtain an accurate overview. The interviews will take place online.

The interviews are expected to:

- Result in the identification of strengths and weaknesses of the different data flows monitoring the wider effects of COVID-19
- Provide opportunities for other countries to learn from the experiences, and build on these when assessing your own health information data flows
- Gain attention for population health. Potentially identify data sources that may not have been used or fully exploited yet
- Create opportunities to engage and exchange with national HI stakeholders and authorities
- Contribute to capacity building in European countries, which in turn may lead to the reduction of health information inequalities between countries
- Identify key recommendations for resilient health information systems (better preparedness for future crises)

The interviews will be carried out by experts from another partner from the PHIRI consortium, together with experts from the coordinator of the country visits, Belgium and Malta. The methodology applied for the country visits is derived from the tool for health information systems assessments developed by WHO Regional Office for Europe (Verschuuren et al., 2016; World Health Organization Regional Office for Europe, 2021).

The results of this exercise will be put into a report and discussed in a multi-stakeholder meeting after the interviews. Based on this report, the outcomes of the interviews will be summarized in the shape of a one pager, showing the state of play of health information systems that monitor the wider effects of COVID-19 on population health at a glance and its best practices.

COVID-19 Health Information System (HIS) interviews in >>insert country<< are planned >>insert week number and date <<. You are kindly invited for an interview on >>insert date and time<<.

Please confirm your participation in the interview and meeting by >>insert date<< by emailing >>insert emailaddress<<

We hope to hear from you soon.

Kind regards,

4. Template for the HIS one pager

State-of-play of the COVID-19 Health Information System

{COUNTRY}

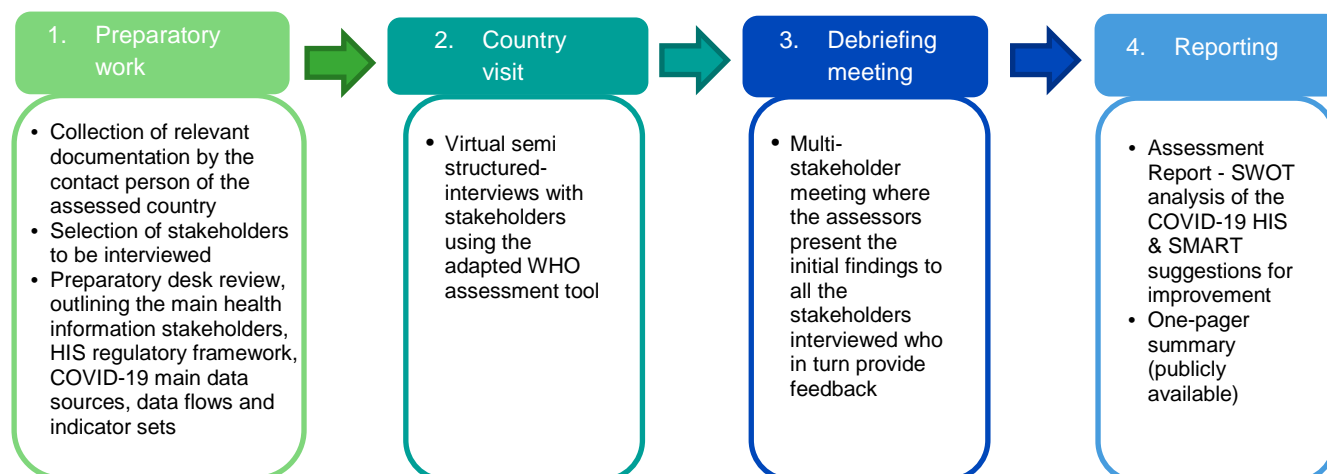
The [Population Health Information Research Infrastructure](#) (PHIRI) carries out COVID-19 Health Information System (HIS) assessments in selected countries that are part of the PHIRI consortium, mapping the Health Information System behind the data and information flows that monitor the effects of COVID-19 on population health.

AIMS OF THE COVID-19 HIS ASSESSMENTS

1. **Identify strengths and weaknesses** of the different data flows across Health Information Systems, whilst monitoring the (broader) effects of COVID-19 in the examined countries.
2. Provide opportunities for other countries to **learn from the experiences** gained during the assessments, and build on these when assessing their own Health Information systems and/or data flows.
3. Potentially **identify data sources** that may not have been used or fully exploited yet and feed them to the [Health Information Portal](#).
4. **Create opportunities** for **engagement** and **knowledge exchange** with national stakeholders and authorities.
5. Contribute to **capacity building** across Europe, which in turn can contribute towards reducing health information inequalities within and between countries.
6. Identify key recommendations for **resilient Health Information Systems** and towards **increased preparedness** for future crisis.

METHODOLOGY OF THE COVID-19 HIS ASSESSMENTS

Each country is assessed by experts from another country within the PHIRI consortium. A detailed manual explains the procedure followed in the assessments, with the steps summarised below.



An adapted version of the [Health Information System assessment tool](#) developed by the WHO Regional Office for Europe (2015), including the add-on module on Infectious Diseases (2021), is used to guide the interviews. The assessment covers data collections and data sources, data analysis, reporting, knowledge translation, governance and resources, best practices and identified gaps.

COUNTRIES INVOLVED IN THE PHIRI COVID-19 HIS ASSESSMENTS

The assessments are performed in Austria, Belgium, Italy, Greece, Hungary, Ireland, Malta, the Netherlands, Norway and Portugal by the end of the project (November 2023). [Italy](#), Portugal, Ireland, Malta and Norway were assessed in the first semester of 2022.

5. Glossary

Comparative population health research: Comparisons of health status, determinants and service use across countries, and/or over time.

Data: Discrete observations of attributes or events that carry little meaning when considered alone.

Data model: In a distributed research infrastructure, data models are a formal description of data sources (entities, their attributes and their relationships) and metadata specific to a scientific study, that are the basis for semantic interoperability, thus allowing reliable comparative research.

Data reuse: The most simple form of data reuse is using the same data in the same way more than once (i.e. starting with an original dataset, and drawing different research inferences). The data can also be repurposed and used for another intent (i.e. using data from health insurance registries for health monitoring, or for research).

Distributed research infrastructure: A decentralized and organised network of resources.

FAIR Data principles: The FAIR Data Principles are a set of guiding principles in order to make data findable, accessible, interoperable and reusable.

Federated database: A federated database system is a type of [meta-database management system](#) (DBMS), which transparently maps multiple autonomous [database systems](#) into a single federated database. The constituent [databases](#) are interconnected via a [computer network](#) and may be geographically decentralized.

Health information: All organised and contextualised data on population health and health service activities and performance, individual or aggregated, that improves health promotion, prevention, care and policy-making.

Health information systems: “All activities and resources related to public health monitoring, reporting and knowledge translation, importantly including structured data collection systems and analysis of knowledge gaps to feed research. Operating a health information system requires governance mechanisms and legal frameworks, interinstitutional relationships, principles and values.”

Information: Data which is contextualised, i.e. reduced, summarized and adjusted for variations such as the age and sex of population so that comparison over time and place are possible.

Intelligence: The product of information being transformed through integration and processing with experience and perceptions based on social and political values.

Interoperability: Following the European Interoperability Framework, interoperability refers to a) a full compliance with the legal and ethical provisions in each constituent node; b) an organisation that supports knowledge exchange and software transference across nodes; c) a compatible technological environment that supports the communication between nodes and allows the deployment of the computational tasks; and d) the existence of common data

models that enables semantic standardisation across data sources. In a distributed research infrastructure, interoperability is a key feature for its governance and achievements.

Knowledge translation: The appropriate exchange, synthesis and ethically sound application of knowledge to interventions that strengthen the healthcare system and improve health.

National Node: A National Node (NN) is an organisational entity, often linked to a national institution or governmental unit that functions as a national liaison and brings together relevant national stakeholders in the country in a systematic way. The relevant stakeholders may include, for example, the national statistical office, the national public health institutes, representatives from ministries of health, research and/or science, and others. In addition, the NN may function as a discussion and advisory forum in matters of health data and information both for national or international matters. Examples include aspects of the governance of data, indicators and health reporting at the international level and health information stakeholders at national level.

Population Health Data/Health information: All organised and contextualised data on health and health service activities and performance, at individual or population level, that is fit-for-use and contributes to health promotion, prevention, care and policy-making.

Public health monitoring and reporting: The activities necessary to obtain health data and information and bring this information into health policy and practice.

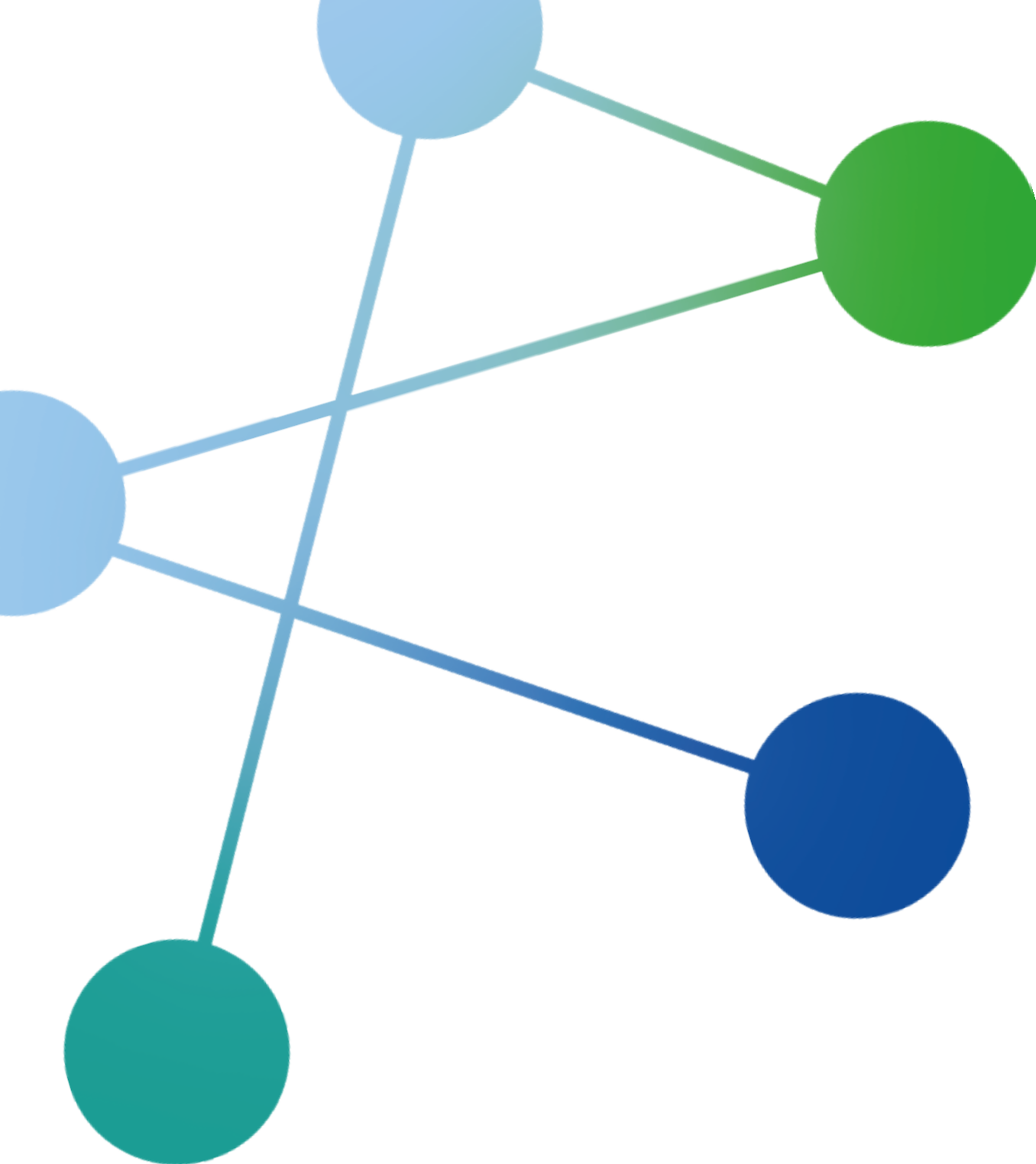
Research Network: A Research Network (RN) is an active network of national and/or regional experts from several countries that perform comparative research in a specific health area (information domain).

Use case: A software and system engineering term that describes how a user interacts within a system to accomplish a particular goal. A use case acts as a software modeling technique that defines the features to be implemented and the resolution of any errors that may be encountered.

Disclaimer

Disclaimer excluding Agency and Commission responsibility

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