PANDEM-2
PANDEMIC PREPAREDNESS AND RESPONSE

# Training Resources & Repository on Simulation Exercise

## Deliverable D6.2

*31 Jan 2022*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 883285

# PANDEM-2

# Training Resources and Repository on Simulation Exercise

Document date: 31 January 2022
Document version: 1.0
Deliverable No: 6.2

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## Abbreviations

COVID-19 = Coronavirus Disease 2019.

D2.2 = Deliverable 2.2.

DG SANTE = Directorate-General for Health and Food Safety.

DOA = Description of action (Annex 1, part of the grant agreement).

ECDC = European Centre for Disease Prevention and Control.

EOC = Emergency operational centre.

EU = European Union.

IHR = International health regulations.

PHA = Public Health Agency.

PHEOC = Public health Emergency operational centre.

PPE = Personal Protective Equipment

SARS-CoV = Severe Acute Respiratory Syndrome Coronavirus.

VOC = Variant of concern.

VOI = Variant of interest.

WHO = World Health Organisation.

WHO CC = World Health Organisation Coordination Centre.

WP = Work package.

WP3 = Work package 3.

# 1 Executive Summary

This deliverable is one of the outputs of Task 6.2 (Training). The aim is to provide training material, and a repository for the demonstrations and for the simulation exercises (in Task 6.3). From a broader perspective, the objective is to provide the essential material for using the PANDEM-2 Dashboard and functionalities for pandemic management.

The main products of this deliverable are:
1) a repository where partners can upload training material:
    i) mostly focus on demonstrations, which includes simulations exercises (developed within the PANDEM-2 project or by other organisations),
    ii) but also, include broader useful pandemic management related material such as documents about Emergency Operation Centres (EOC) structure, roles, and responsibilities,
2) practical material on how to use the Dashboard (which is also uploaded in the repository)
3) the results from two surveys where PANDEM-2 partners described, first, training needs identified by them during the current COVID-19 pandemic, and second, a prioritised list of key indicators for pandemic management to be displayed in the Dashboard as well as in a Situational Report. Both of these items are essential for the simulation exercises.

# 2 Introduction & Background

This deliverable is a result of work done within Task 6.2 (Training) where, in preparation for the demonstrations (Task 6.3), theoretical and practical training for pandemic managers will be developed. In the demonstrations the PANDEM-2 IT solution and relevant materials (e.g., Dashboard, communication templates, tools and data) will be used to plan for, and respond to, pandemic scenarios. As part of deliverable 6.3 (D6.3) three scenario scripts will be developed based on real pandemic events: an influenza pandemic due to a novel pathogen, a SARS-CoV event possibly due to deliberate release, and an Ebola virus disease outbreak.

The training content in Task 6.2 includes information on roles, responsibilities, and functions of Public Health EOCs and international reporting requirements (e.g., as of international health regulations (IHR) and EU decision 1083/2013). The practical part addresses how to use the Dashboard and tools developed in PANDEM-2 (visualisations, planning tools, etc.). The training material is closely related to the concept of WHO EOC-Handbook for Public Health EOCs (PHEOC).

Within Task 6.2 a repository of simulation exercises and related training material is being developed to be used by the PHEOCs and other potential end users. Different repositories of simulation exercises for public health emergencies are currently under development in Europe: by ECDC, RIVM (in its role as WHO coordination centre (CC) for IHR Evaluation), and DG SANTE, but more detailed information is needed about structures, roles, and

responsibilities within Public Health EOCs. These are aspects that the PANDEM-2 repository aims to tackle.

This deliverable is a key element in training end users in how to use the Dashboard in real pandemic situations as well as for providing material for preparedness and response including simulation exercises and other related documentation uploaded/or planned to be uploaded in the repository.

## 3 Approach

Initially, Epiconcept (EPIC) and Work package (WP6) leader, the Robert Koch Institute (RKI) agreed on the specific training material that would be of most interest in PANDEM-2 within the context of the PANDEM-2 Description of Action (DOA). As the Dashboard and simulation exercises were still in the early phase of development, we agreed that the focus of our first meeting with PANDEM-2 end-users should be on collecting feedback about training needs in the EOCs. To this end, we held a meeting on September 20th, 2021, with all Public Health Agencies (PHAs) in the PANDEM-2 consortium in which a survey (Appendix 6.1) on EOCs training material needs -identified during the COVID-19 pandemic and through activities such as simulation exercises- was completed. A summary of the results of this survey can be found in Appendix 6.1, and tables 3 to 8. Briefly, a list of key indicators for a Situational Report and information for its interpretation in the different pandemic phases was ranked as the highest priority EOC training material to be developed. Subsequently, a first list of indicators was developed based on end user requirements, data sources, and variables mentioned in deliverables D2.2 and D3.1 (already submitted to the European Commission) and complemented with initial feedback and lists provided by partners NUIG and RKI.

In a second meeting on November 8th, 2021, which included all PHA and first responder end-users, the list of indicators was presented and discussed. A second survey was developed for PANDEM-2 end-users to identify priority indicators (from the first list developed) for the Dashboard and the Situational Report, both of which feed directly into WP6 scenarios and demonstrations. In both meetings, the RKI team presented their EOC structure, roles, and responsibilities and shared related material. A summary of the outputs of both meetings can be found in Figure 1 and in Appendix 6.1 and 6.2. Based on the PANDEM-2 partners' priorities, a list of indicators was created in excel format. This list was used subsequently to facilitate data collection (real data) from end users which was used to inform D3.2 Dashboard Design and D3.3 Initial Dashboard Prototype. Moreover, this template of indicators was used to facilitate the collection of PANDEM-2 partner data for use in the initial Dashboard prototype development as well as development of scenarios. In this second meeting, it was agreed that all the partners would facilitate material for the repository which would be mostly training material to be used in the demonstrations, material on how to use the Dashboard, building a Situational Report but also any relevant material of interest for pandemic management (Appendix 6.4). Within the PANDEM-2

technical team it was agreed that NUIG and CLAR would develop training material on how to use the Dashboard (Appendix 6.3) and in each of the specific WP6 scenarios. This material is also stored in the repository. The final location, structure, format, and material of the repository will be completed by the end of the project when the demonstrations, including the simulation exercise, have run and any potential useful training material has been identified, elaborated, and stored in the repository.

In Figure 1, a flow diagram is provided as a summary of our approach for task 6.2 and the outputs for the deliverable 6.2.

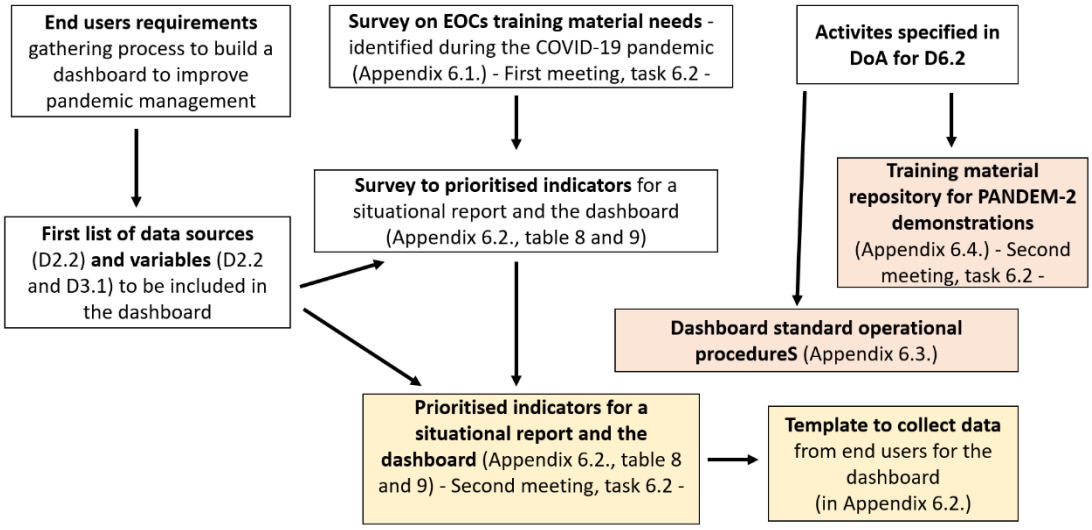



**Figure 1. Flow diagram of the approach for task 6.2 and outputs for the deliverable 6.2**

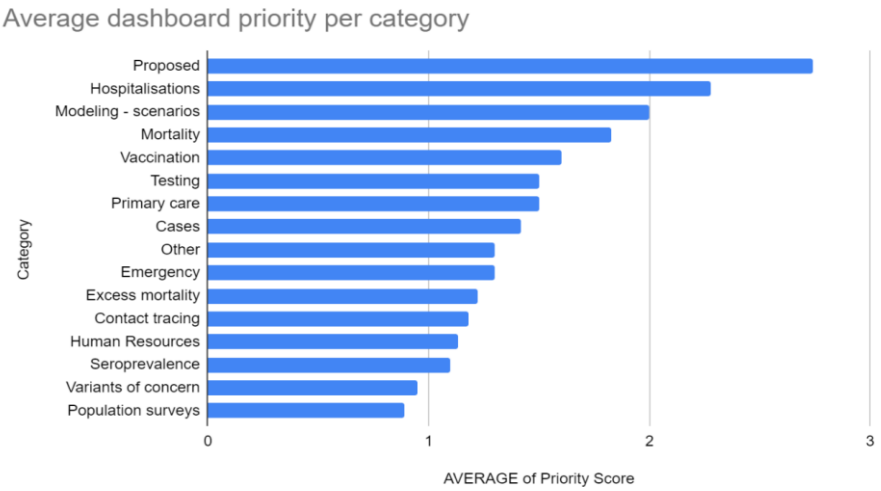
*Orange squares: outputs specified in the DOA, yellow squares: additional outputs from task 6.2.

# 4 Results

The results from the EOCs training material needs survey (Appendix 6.1, table 3 to 8) demonstrate that templates for Situational Reports were voted as the highest priority to be developed as training material, followed by training in how to use Geographical Information Systems and guidelines to rapidly train new staff at the EOCs. In addition, during the current pandemic the majority of PHAs experienced the need for additional staff for contact tracing, data analysis and visualisation including development of bulletins or Situational Reports, and communicating public health measures including recommendations to different audiences. They also described the need to provide training to achieve an effective organisation, cooperation, and communication in a large network of partners. PHAs also mentioned that not all countries have EOCs. In some countries EOC tasks are carried out by different agencies, and how the EOC is defined varies across countries. They pointed out that with these differences in national EOCs the provision of uniform training material is difficult.

In a second meeting with the PHAs, it was decided to agree on a list of key indicators for a Situational Report that is planned to be automatically generated within a more advanced prototype of the PANDEM-2 Dashboard. A specific survey with this proposal was completed by our partners in the consortium. We also took the opportunity to ask in the survey for the indicators to be prioritised in the Dashboard in this first prototype, to support the technical team in providing an integrated product.

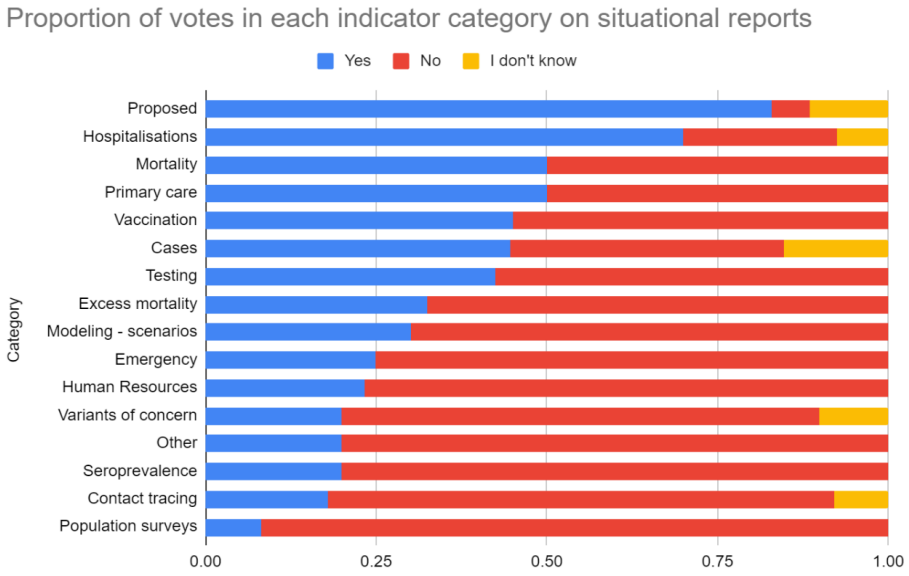
**Figure 2.**




In figure 2, it is represented as the average priority by the indicator category group for the Dashboard. The only two category groups ranked as high priority (priority score higher than 2) were the end-user proposed indicators (see table 9) and hospitalisations. The end-user proposed indicators were a group of end user specific indicators already included in the parent categories within the list, but for which partners thought that further detail or more granularity was required. Those end user specific proposed indicators that did not appear in

the parent list, (e.g., some indicators related with emergency resources or specific needs) were included in the excel template to collect or generate this specific data. With average priority score for being in the Dashboard between 1.5 and 2, we find, the most popular indicators were in descending order: modelling - scenarios, mortality, vaccination, testing, and primary care (figure 2).

**Figure 3.**




Similarly, the most popular indicators for the Situational Report, by category group, were also the end-user proposed indicators, hospitalisations, mortality, and primary care. The next most popular indicators were vaccination, cases, testing, excess mortality, and modelling – scenarios (figure 3).

In summary, similar categories of indicators were chosen as being of high priority to be displayed in both the Dashboard and the Situational Report: hospitalisations, mortality, vaccination, testing, primary care, and modelling scenarios (Figures 2 and 3). Regarding the Situational Report it was also deemed relevant to include indicators within the categories of cases and contract tracing. For both the Dashboard and Situational Report, many partners proposed new indicators mostly related with emergency resources and other heterogenous needs and capacities relevant in a pandemic response context.

In table 1 and 2 (also see Appendix 6.2) the top 25 most relevant indicators voted by our partners to be displayed in the Dashboard and Situational Report are provided. Table 1 indicates the most relevant indicators for the Dashboard, and Table 2 the Situational Report. The indicators in table 2 will be included in the first Situational Report template that will be developed within a more advanced PANDEM-2 prototype. This prototype will allow the creation of automatic Situational Reports. Most of the 25 top indicators are the same in both lists, only slightly different in the order of prioritisation. Despite this fact, some

indicators differed between both lists. For instance, we found indicators that provide more detailed information about resources and capacities for the Dashboard such are: "Test capacities (tests, material, and staff)", "Hospital planning: human and material resources (beds, ventilators…)", and "Other planning: staff resources for primary care, public health and CT". On the other hand, we found indicators more related with the situational awareness for the Situational Report: "Tests performed by type (molecular, antigen, antibody)", "Number and proportion of imported confirmed cases", and "Clusters of cases (space temporal) identification and characterization".

**Table 1. Most popular Indicators for the Dashboard (Top 25)**

| *Indicator* | *Category* | AVERAGE of Priority Score |
|---|---|---|
| COVID-19 hospitalisation total number and rates by sex and age group and vaccine status | Hospitalisations | 3 |
| COVID-19 hospitalisation total number and rates by sex and age group | Hospitalisations | 3 |
| Number of confirmed cases by sex, age group and type comorbidities | Cases | 2.7 |
| Incidence rate (confirmed cases/100,000 pop), top 10 districts with highest incidences | Cases | 2.7 |
| COVID-19 associated admissions to ICU, total number and rates | Hospitalisations | 2.5 |
| Percentage ICU bed occupancy | Hospitalisations | 2.4 |
| Percentage bed occupancy | Hospitalisations | 2.4 |
| Reported COVID-19-deaths, mortality rate | Mortality | 2.3 |
| Percentage occupancy with COVID-19-patients (ICU/ non-ICU beds) | Hospitalisations | 2.2 |
| Cases - Hospitalisation – Deaths | Modelling - scenarios | 2.2 |
| Total number of operable ICU beds (operable include materials and staff) | Hospitalisations | 2.1 |
| Total number of operable beds (operable include materials and staff) | Hospitalisations | 2.1 |
| Outbreak identification: settings (e.g., schools, hotels…), possible country of exposure, detection: app, …contact tracing | Cases | 2.1 |
| Hospital planning: human and material resources (beds, ventilators…) | Modelling - scenarios | 2.1 |
| Effective reproduction (Rt) number evolution | Cases | 2 |
| Total number of people and proportion of population who have received 1/2/3 doses by brand name | Vaccination | 1.9 |
| Positivity rate by test type (molecular, antigen, antibody) | Testing | 1.9 |
| Test capacities (tests, material, and staff) | Testing | 1.8 |
| Reported COVID-19, mortality rate, Age-sex-standardised | Mortality | 1.8 |
| Case definition (ECDC, WHO) | Cases | 1.8 |

| | | |
|---|---|---|
| Other planning: staff resources for primary care, public health and CT | Modelling - scenarios | 1.7 |
| Vaccine effectiveness by age group | Vaccination | 1.6 |
| Vaccination uptake displayed with incidence, hospitalisation, ICU admission, and mortality rate | Vaccination | 1.6 |
| Reported COVID-19, mortality rate among ICU admissions | Mortality | 1.6 |
| Reported COVID-19, mortality rate among hospitalised cases | Mortality | 1.6 |

**Table 2. Most popular Indicators for the Situational Report (Top 25)**

| *Indicator* | *Category* | COUNT of Indicator |
|---|---|---|
| Number of confirmed cases by sex, age group and type comorbidities | Cases | 9 |
| Incidence rate (confirmed cases/100,000 pop), top 10 districts with highest incidences | Cases | 9 |
| COVID-19 hospitalisation total number and rates by sex and age group | Hospitalisations | 9 |
| Reported COVID-19-deaths, mortality rate | Mortality | 8 |
| Percentage occupancy with COVID-19-patients (ICU/ non-ICU beds) | Hospitalisations | 8 |
| COVID-19 associated admissions to ICU, total number and rates | Hospitalisations | 8 |
| Total number of people and proportion of population who have received 1/2/3 doses by brand name | Vaccination | 7 |
| Percentage ICU bed occupancy | Hospitalisations | 7 |
| Percentage bed occupancy | Hospitalisations | 7 |
| Outbreak identification: settings (e.g., schools, hotels…), possible country of exposure, detection: app, …contact tracing | Cases | 7 |
| Effective reproduction (Rt) number evolution | Cases | 7 |
| Vaccination uptake displayed with incidence, hospitalisation, ICU admission, and mortality rate | Vaccination | 6 |
| Total number of operable ICU beds (operable include materials and staff) | Hospitalisations | 6 |
| Total number of operable beds (operable include materials and staff) | Hospitalisations | 6 |
| Tests performed by type (molecular, antigen, antibody) | Testing | 6 |
| Reported COVID-19-deaths, mortality rate, Age-sex-standardised | Mortality | 6 |
| Positivity rate by test type (molecular, antigen, antibody) | Testing | 6 |
| Number and proportion of active confirmed cases | Cases | 6 |
| Effective Growth Potential (Rt x Cumulative) | Cases | 6 |
| Cases - Hospitalisation – Deaths | Modeling - scenarios | 6 |
| Proportion of COVID-19 hospitalisations with comorbidities | Hospitalisations | 5 |

| | | |
|---|---|---|
| Number and proportion of imported confirmed cases | Cases | 5 |
| Excess mortality rate | Excess mortality | 5 |
| COVID-19 primary care consultation (N, % from total) | Primary care | 5 |
| Clusters of cases (space temporal) identification and characterization. | Cases | 5 |

In the second meeting with PANDEM-2 partners the material types to be included in the repository were discussed. It was decided that the training material to be used in the development of demonstrations will be a relevant part of the repository. It was identified also that the WP6 team should work closely with the technical team and Dashboard developers to find synergies across different tasks and deliverables within PANDEM-2. In technical meetings with CLAR and NUIG, it was decided to include some material they are developing for the first prototype that teaches end users how to interact with the future Dashboard and how indicators and functionalities are organised so far (Dashboard standard operational procedures, Appendix 6.3). Appendix 6.3 provides a user guide for the landing page and the link of videos that explain to end users how to use the Dashboard for some pages (those more advanced): Landing page, Testing, Vaccination uptake, Deaths, Hospitalisations, Cases, and Modelling page.

Furthermore, PANDEM-2 partners started uploading national guidelines or any training material they thought useful to support the demonstrations and in clarifying the roles and functions of EOCs, the IHR and interactions between countries in a pandemic response context. All partners elaborated a list with links of open-source training material, mostly ECDC and WHO material, covering material useful for EOC, IHR, and simulations exercises. All the above-described material has been gathered in “Training material repository for PANDEM-2 demonstrations (Appendix 6.4)”.

# 5 Impact & Conclusion

The meetings held between EPIC, RKI and with other PANDEM-2 partners (in particular the PHAs and first responders) were very useful to identify the training needs they experienced during the current COVID-19 pandemic, as well as during other outbreaks or within simulation exercises. The results from the two surveys are helping software and Dashboard developers (EPIC, NUIG, and CLAR) in activities and tasks under development mostly in WP3, such as in prioritised the indicators more useful according PANDEM-2 partners for pandemic management as well as identifying Dashboard training needs and queries.

The main goal of this deliverable, to develop training material for the demonstrations in task 6.3, was accomplished providing different national and international guidelines and open-source material and initiating a repository. This material will be further developed in parallel with the progress that will take place over the coming months on the Dashboard and demonstrations with the support mostly of RKI, CLAR, NUIG and EPIC.

Furthermore, all the processes and structures to deliver the present D6.2 deliverable is crucial for WP2 surveillance, led by EPIC, because under the work performed during this task, an excel template was created in discussion with most of the partners in order to be populated with their own data/or country data. This is aligned with D2.2 where the main data sources in PANDEM-2 were listed. End users own data was identified as the main data source in PANDEM-2 to add granularity and allow data sharing among end users mainly to respond to cross borders threats. In addition, other heterogeneous data sources were identified also relevant for pandemic management such are NGS-lab data, social media data, participatory surveillance data, and many other open-source data specified in D2.2.

Therefore, all the material and the structure of the repository need to be considered as a first version of a “Training Resources and Repository on Simulation Exercise” which will be updated as the PANDEM-2 project, and Dashboard are further developed. The overall objective is to compile all the necessary material for an optimal use of the Dashboard in the demonstrations and simulations planned as part of Task 6.3.

# 6 Appendices. Training resources and repository on simulation exercises

## 6.1 EOCs training material needs survey

Five public health agencies participated in the survey: THL, NIPH, RIVM, FOHM, and RKI.

Read below in italics the questions contained in the questionnaire, following each question the public health agencies answers were summarised - ***INSTEAD OF PROVIDING SPECIFIC ANSWERS FROM EACH PARTICIPANT FIND BELOW SUMMARY TABLES WITH THEIR ANSWERS -***

***The aim of this questionnaire is to propose and prioritise a list of EOC training materials. These will be part of our deliverable in task 6.2.***

***For the questions below, think of your work in or with your national public health EOC during the COVID-19 pandemic.***

1. ***If you could choose 3 things to train, what would they be?***

**Table 3. Training material needs by topic**

| TRAINING TOPIC identified | Additional Comments |
|---|---|
| **EOC logistic trainings** | |
| EOC management systems | |
| EOC functions/emphases in different phases of a pandemic | |
| | |
| **Data management and analysis related trainings** | |
| How to collect, validate and analyse the data | |
| How to make a report or Situational Report | Using the very flexible functionalities that should be created in PANDEM-2 |
| How to interpret the information resulted from analysis | To inform the public health recommendations/interventions |
| | |
| **Training new staff** | |
| Training the additional hired staff | Now a lot of time had to be spent on it, while the capacity was already limited |
| Training personnel for contact tracing when scaling up. | |
| | |
| **Training to improve response, coordination and collaboration** | |
| Effective organization of the cooperation in the large network of partners involved in response situations | How to recognize ineffective parts |
| Effective guiding inter-sectoral cooperation | |
| Preparing for prioritizing work during crisis | |

| | |
|---|---|
| ***Generic comments** | |
| EOC concept is difficult since some countries have not worked like that at all. In addition, it also varies considerably between different countries what exactly is included in this concept, and therefore we think this training needs to be done at national level and joint training would be more confusing than helpful. However, there may be some modules in the EOC concept that can be of value for training within PANDEM-2. | |

***2. What do you need to do to make your job better?***

**Table 4. List of needs to improve work performance**

| |
|---|
| A better information |
| A better coordination at county level |
| More staff at national and county level |
| An up-to-date national surveillance system that is planned for (also) pandemic situations |
| A protocol for internal situation reporting and a management system for day-to-day EOC work |
| Leadership training |
| Cross-border communication |
| contact tracing and its infrastructure |
| |

***3. Please list things that went well during COVID-19 pandemic.***

**Table 5. List of things that went well during COVID-19 pandemic.**

| **List identified across EOCs** | **Additional Comments** |
|---|---|
| In a small country, networks were well-established before the pandemic, enabling good preparedness. | |
| Communication between epidemiologists at national and county level | |
| Organizing vaccination campaign | Except communication when restrictive measures were lifted |
| Quick effective training of new staff, regular information exchange with other authorities | |

***4. Please list tasks that should be trained before working in an EOC.***

**Table 6. List of proposed previous training as required before working in an EOC.**

| **List identified across EOCs** | **Additional Comments** |
|---|---|
| Legal basis of decision-making | |
| Roles of different authorities | These are very country-specific things, and difficult to include in an EU-wide training material. |
| How to validate, analyse and interpret data | |
| How to offer support for county level | |

| | |
|---|---|
| Leadership training | |
| Risk communication | |
| Roles and responsibilities of its national EOC | |

5. ***For the next time: what should be different?***

**Table 7. List of suggested changes**

| **List identified across EOCs** | **Additional Comments** |
|---|---|
| Better coordination between authorities (for example, regarding airports). | In some countries there is no specific EOC led by the national public health agency or ministry of health, although we have our internal "COVID-19 situation group" that provides information, statements and recommendations for other authorities. |
| Optimal information flow | |
| Detailed high quality databases | |
| More well-trained staff | |
| A much better communication (coordinated by the national public health agency) | |
| Improved cross-border communication | |

6. ***Rank suggestions – priority and feasibility- (*Guidelines to rapidly train on EOCs, Templates for situation report - pandemic response, and Geographical information system)**
   ***6b. Rank (from higher to lower priority) your new suggestions***

**Table 8. Priority and feasibility score for training needs (participants votes)**

| | **PRIORITY AND FEASABILITY SCORE** | | | | **COMMENTS** |
|---|---|---|---|---|---|
| | **HIGH** | **MEDIUM** | **LOW** | **NOT VOTED** | |
| **Guidelines to rapidly train on EOCs (priority).** | 3 | 0 | 2 | 0 | |
| **Guidelines to rapidly train on EOCs (feasibility)** | 1 | 2 | 0 | 3 | |

| | | | | | |
|---|---|---|---|---|---|
| **Templates for situation report - pandemic response (priority).** | 3 | 2 | 0 | 0 | "May be useful for establishing common terms and concepts etc. "<br>"Interesting but is not easy (identify 10-15 epidemiological indicators)"<br>"Include various societal effects etc"<br>"This work is beyond the scope of the PANDEM-2 project" |
| **Templates for situation report - pandemic response (feasibility)** | 1 | 2 | 0 | 2 | |
| **Geographical information system (priority)** | 2 | 3 | 0 | 0 | "It may be of value to share experiences about the usefulness of GIS." |
| **Geographical information system (feasibility)** | 0 | 1 | 2 | 2 | |
| NEW PROPOSALS (made by each single participant) | | | | | |
| **EOC management systems** | 1 | | | | "No expertise, but we can share best practices and experiences" |
| **Different phases of pandemics: the emphasis of different critical variables changes over a pandemic** | 1 | | | | "No specific expertise, but we can share experiences (and best practices)." |
| **Statistical methods for early detection and surveillance of infectious disease outbreaks (pandemics).** | 1 | | | | "We may be able to contribute to the elaboration of this training" |

## 6.2 Indicators prioritised for the Dashboard and Situational Report by PANDEM-2 partners

Ten end-user partners answered the data survey: five public health agencies (FOHM, THL, NIPH, RIVM, RKI), three emergency responders (INEM, ITRC, and ORK), one hospital responder (RUNMC), and one research institute (UCL).

Through a survey, and as explained in section 3 and with results in section 4, based on an initial indicators list elaborated with the support of PANDEM-2 partners, we asked them to

prioritise the indicators to be displayed in the Dashboard and in the Situational Report separately. Indicator priority score options were: "High" => >3, "Medium" => 2, "Low" =>1. The answers to the survey helped us to build the excel template that will allow us to collect relevant data (or generate synthetic data) from our end users, a copy of the template we are currently using can be found in the repository (COPY OF "M.12 Upload templates_end_users.xlsx"):

https://docs.google.com/spreadsheets/d/1EhgdDexSu-zF1z7ELGzKIOScANfhsBIQ/edit?usp=sharing&ouid=117485693241770645906&rtpof=true&sd=true

In summary, similar categories of indicators have been chosen as of high priority to be displayed in both the Dashboard and in the Situational Report: hospitalisations, mortality, vaccination, testing, primary care, and modelling - scenarios. For the Situational Report it seems cases and contract tracing are also relevant. For both the Dashboard and Situational Report, many partners have proposed new indicators mostly related to emergency resources and heterogeneous needs and capacities.

**Table 9. Proposed indicators by partners that were not in the partners survey list.** In red those indicators included in the final excel template to collect end users own data.

| Partner | Category | Indicator | Priority | Priority Score | Situational Report |
|---|---|---|---|---|---|
| INEM | **Proposed** | Number of emergency ambulances dispatched disease related/non disease related | High priority | 3 | Yes |
| INEM | **Proposed** | Hospital Emergency room capacities (by region) | High priority | 3 | Yes |
| INEM | **Proposed** | Hospital Emergency room occupancy (by region) | High priority | 3 | Yes |
| INEM | **Proposed** | Hospital Emergency room attendance (disease related / non disease related) | High priority | 3 | Yes |
| INEM | **Proposed** | Hospital Emergency room attendance by triage priority or severity | High priority | 3 | Yes |
| IRC | **Proposed** | Info about quarantine needs i.e., food, drugs, etc | High priority | 3 | Yes |
| IRC | **Proposed** | Need for and capacity to provide additional resources (what and where) | High priority | 3 | Yes |
| IRC | **Proposed** | Map of support resources | High priority | 3 | Yes |
| IRC | **Proposed** | Info on "migration" flows and travel policies across countries | High priority | 3 | I don't know |

| | | | | | |
|---|---|---|---|---|---|
| IRC | **Proposed** | Applied Restriction measure per country/region/locally | High priority | 3 | Yes |
| OERK | **Proposed** | Expandible Capacity (beds, staff, resources) | High priority | 3 | Yes |
| OERK | **Proposed** | Vaccination resources (Staff, centres, supplies) | High priority | 3 | Yes |
| OERK | **Proposed** | Test resources (staff, supplies) | High priority | 3 | Yes |
| NIPH | **Proposed** | Number and proportion of reinfections | High priority | 3 | Yes |
| NIPH | **Proposed** | Reported COVID-19, mortality rate by comorbidities | High priority | 3 | Yes |
| NIPH | **Proposed** | Reported COVID-19, mortality at home | High priority | 3 | Yes |
| NIPH | **Proposed** | Reported COVID-19, mortality rate by vaccination status | High priority | 3 | Yes |
| RIVM | **Proposed** | Number of cases in care homes (long term care) | High priority | 3 | Yes |
| RIVM | **Proposed** | COVID-19 hospitalisations per region | High priority | 3 | Yes |
| RIVM | **Proposed** | Reported COVID-19, mortality rate per region | High priority | 3 | Yes |
| RIVM | **Proposed** | Proportion of COVID-19 deaths with comorbidities/pregnancy | High priority | 3 | Yes |
| RIVM | **Proposed** | Number of cases among health care workers | High priority | 3 | Yes |
| RIVM | **Proposed** | N° of clusters found (and cluster type - definition) | High priority | 3 | Yes |
| RIVM | **Proposed** | Confirmed cases that had travelled during infectious period | High priority | 3 | Yes |
| RIVM | **Proposed** | Cluster identification and characterisation | High priority | 3 | Yes |
| RUMC | **Proposed** | PPE (Personal Protective equipment) (stock, type & need) | High priority | 3 | No |
| RUMC | **Proposed** | Decline trends in hospital consultation and hospitalization for non-pathogen related diseases, for example in the COVID-19 pandemic oncology and cardiovascular diseases causing high morbidity and mortality. | High priority | 3 | No |
| UCL | **Proposed** | Number of confirmed cases by vaccine status and age group | High priority | 3 | I don't know |
| UCL | **Proposed** | Proportion of VOI/VOC/pangolin lineage | High | 3 | I don't |

| | | | | | |
|---|---|---|---|---|---|
| | | by vaccine status, age group and diseases outcome (hospitalisation, death) | priority | | know |
| THL | **Proposed** | Number and proportion of confirmed cases from contacts to imported cases | High priority | 3 | Yes |
| THL | **Proposed** | Proportion of all newly diagnosed cases where source of infection is unknown | High priority | 3 | Yes |
| UCL | **Proposed** | Prevalence of specific mutations (e.g., a mutation shared by several VOI) | Low priority | 0 | I don't know |
| OERK | **Proposed** | Cases per variant | Medium priority | 1 | Yes |
| OERK | **Proposed** | Measure details: type (e.g., lockdown), start - end, place | Medium priority | 1 | Yes |
| OERK | **Proposed** | Border rules/laws | Medium priority | 1 | Yes |

### 6.3 Dashboard standard operational procedure

# PANDEM-2 Dashboard

**User Guide**

User Guide

The PANDEM2 Dashboard

Log in window

Landing Page - Current Situation Page

Landing Page - Menu

Landing Page - Overview

Landing Page - Indicator Cards

Videos which explain end users how to use the Dashboard

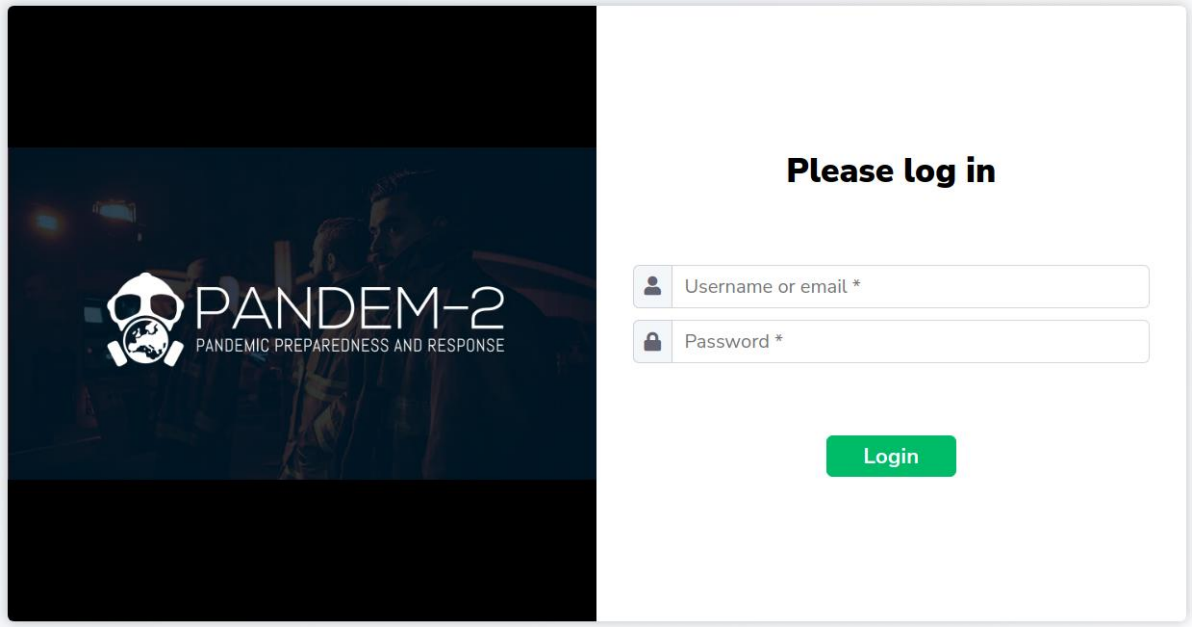
PANDEM-2 is a H2020 EU-funded project that aims to develop new solutions for efficient, EU-wide pandemic management. The goal of PANDEM-2 is to prepare Europe for future pandemics through innovations in training and to build capacity between EU member states responding to pandemics on a cross-border basis.

**The PANDEM2 Dashboard**

The section provides a brief overview of the main elements in the PANDEM-2 Dashboard and introduces some of the terminology in use. For more detailed information visit the individual sections further on.

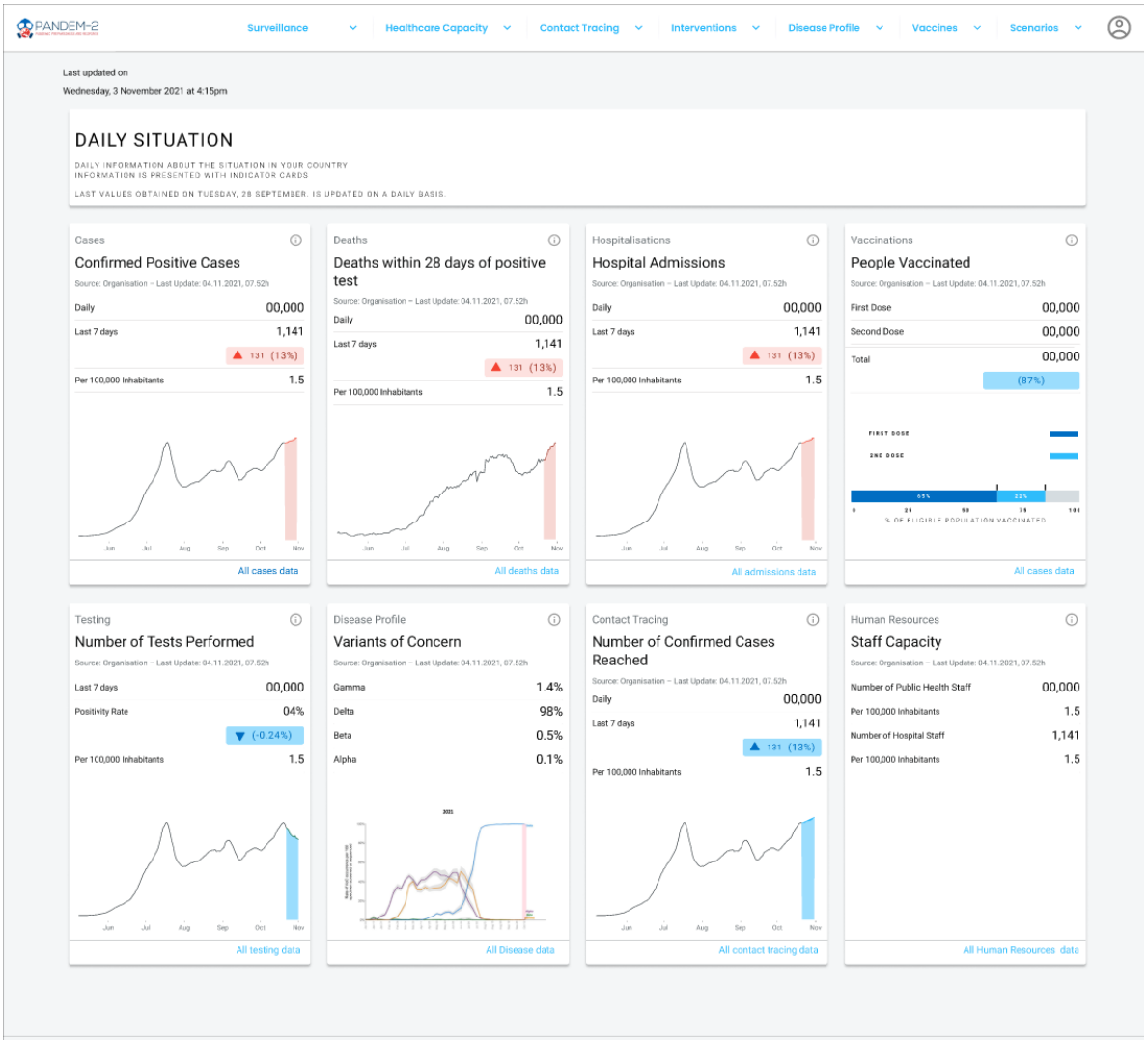
**Log in window**

When PANDEM-2 is first visited the login screen is presented as shown in the image below. The login screen allows you to login to your organisation's instance of PANDEM-2 and provides security for that instance, only allowing verified users to login.




The user must enter their credentials to login. The user will be logged in according to their role: Each of these roles will have a different set of functions or a different set of views that they have access to in the application with admin users having access to all functions. All of the screen shots in the following sections show the application as an admin user and hence not all elements may be visible if logged in as a different user.

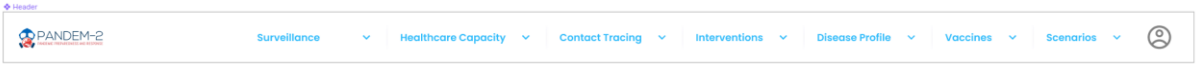
**Landing Page - Current Situation Page**




Once you are logged in you will see the Dashboard landing page. This comprises a certain number of indicator cards which are part of a summary of the current context with regards to pathogen-x within a given time frame. Currently the indicator cards include Cases, Deaths, Hospitalisations, Vaccinations, Testing, Disease Profile, Contact Tracing, and Human Resources. Other windows are shown as and when they are required or visited by the user. This page will stay up to date with the current data so long as that data is available.

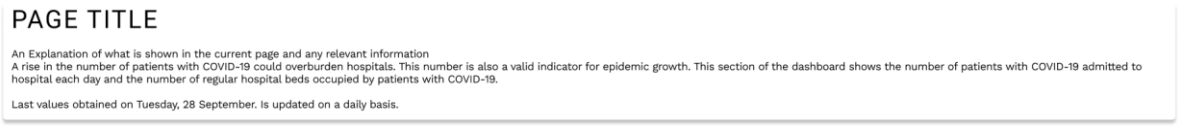
The landing page is a combination of relevant data for the end-user. The user will choose in the user settings page which indicator cards are important to them and these will be the cards that will show on the landing page. The goal of this view is to give the user situational awareness of the current situation with regards to pathogen-x within a defined period of time. The user will then be able to prioritise which indicators they wish to explore further.

**Landing Page - Menu**

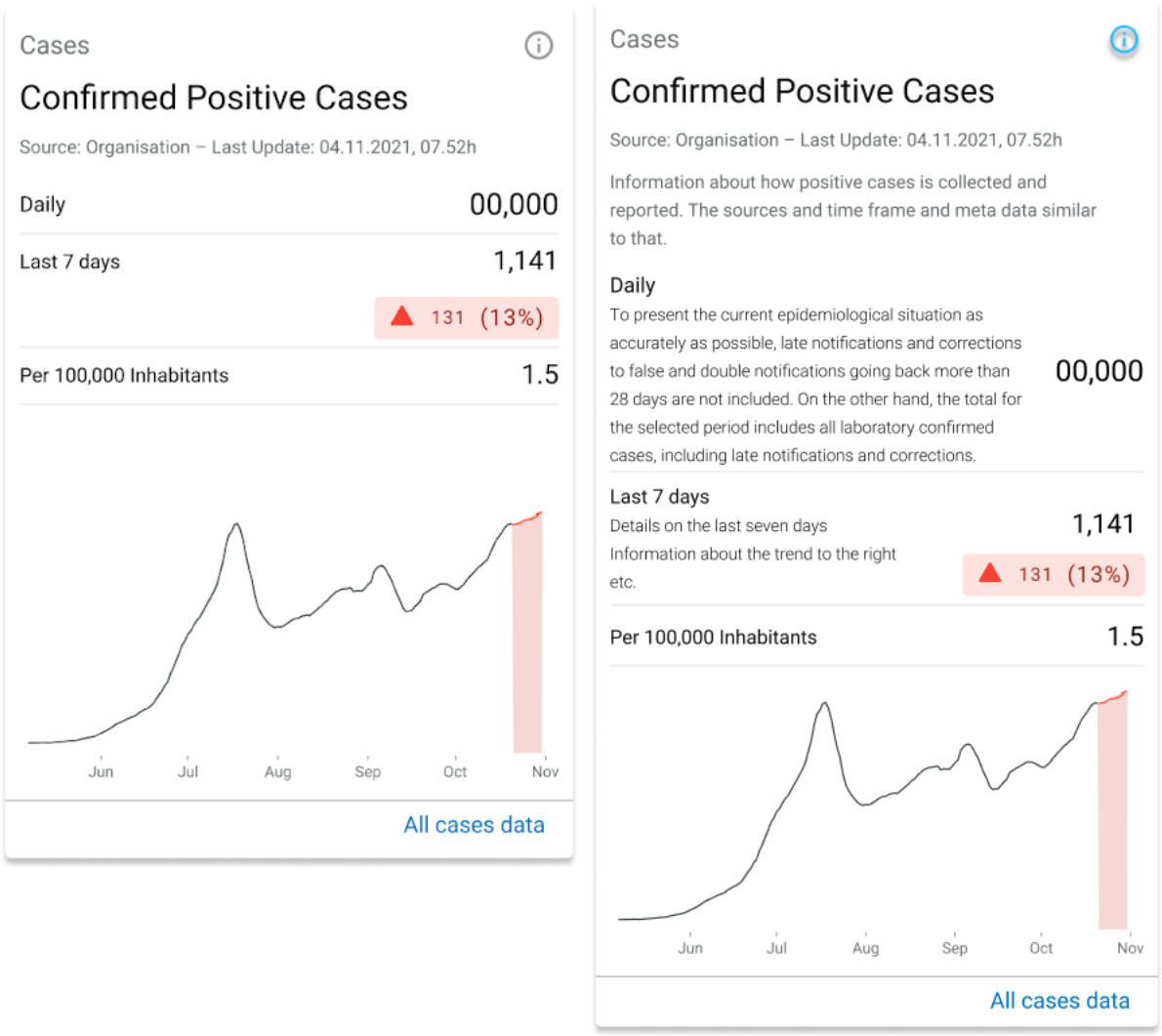



The Menu bar sits at the top of each page within the PANDEM-2 Dashboard. It is the main method of user navigation. The menu bar consists of a number of items; the PANDEM-2 logo, the high-level functional groupings within the Dashboard, and the user icon. The PANDEM-2 logo acts as a link to the landing page and will bring the user back to that page on clicking. The high-level functional groupings combine indicators under relevant high-level headings. These functional groupings were proposed at the initial stage of the project and evolved from the user requirements. Each of these headings contains a drop-down list of relevant indicators which will bring the user to the relevant indicator view. Finally, the user icon will allow the user to control how the PANDEM2 Dashboard will work for them. This icon will lead to the user settings page allowing users to choose which indicators are important to them and therefore which should be shown in various parts of the Dashboard, what region they wish to view, and other settings like default timeframes.

**Landing Page - Overview**




The first component in the content section of each of the views is the overview section. This component has a number of features. The first is the title of the view that the user is on. This is usually the indicator the user is viewing. Alongside the title will be the region that the user is viewing that indicator for, whether it be at a national level or regional level. This region will be a clickable drop-down menu allowing the user to easily switch between regions at the top of the page, updating the information for the whole view. Underneath the page title is an explanation of what is being shown on the current view. This is a description and explanation of the indicator, why it is relevant, and any other important information that the user should be shown with regards to that indicator. Finally at the bottom of this component is the date when this data was last updated. This allows the user to see how up to date the information is and allows for transparency.




**Landing Page - Indicator Cards**

**Videos which explain to end users how to use the Dashboard**

Testing - https://youtu.be/xov1NJiphNA

Vaccination uptake - https://youtu.be/1ACl7a1_660

Deaths - https://youtu.be/1oKLHW1r9IE

Hospitalisations - https://youtu.be/x-7DhJX1H44

Cases - https://youtu.be/RGODS5Xj8Dk

Landing page - https://youtu.be/OEkaejjeXfE

Modeling page - https://youtu.be/9Pgb4h68T6Y

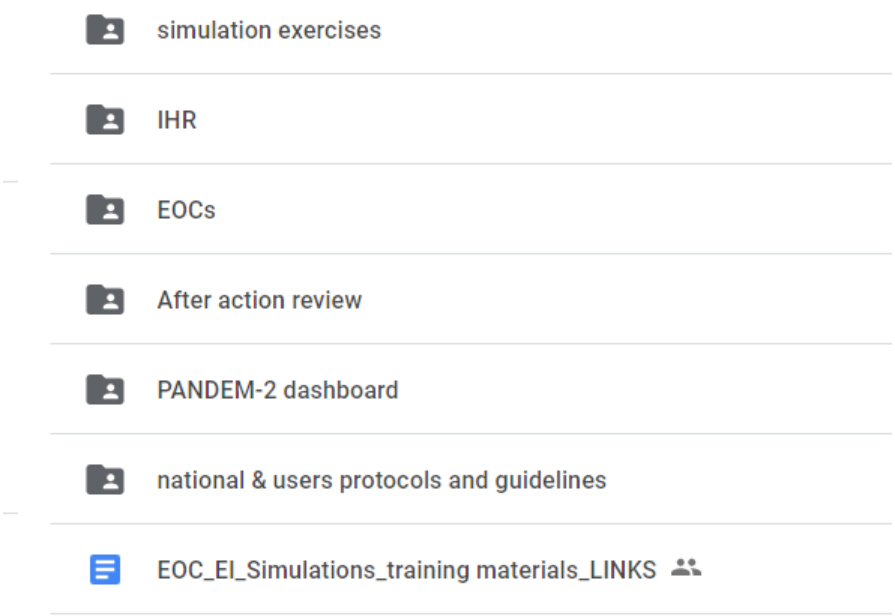
## 6.4 Training material repository for PANDEM-2 demonstrations

Below, a screenshot of the initial proposal for the organisation and main folders in the repository for PANDEM-2 demonstrations, this repository will evolve during the second year of the project according to the development of the Dashboard and WP6 demonstrations and simulation exercises.

The current repository can be accessed here:

https://drive.google.com/drive/folders/1yHMCf_TvCJz49W8Twi81oHLpxXud1PYc?usp=sharing

The main folder is called “Training material repository for PANDEM-2 demonstrations” and these are the current subfolders:




### 6.4.1 Links of available training material

Due to the huge amount of material that can be downloaded from specific websites, we decided to keep an updated document with related links of interest "Demonstrations_training materials_LINKS". Mostly ECDC and WHO training material have been listed so far:

**ECDC material**

1. ECDC - Simulation exercises
https://eva.ecdc.europa.eu/totara/catalog/index.php?catalog_fts=simualtion%20exercise&orderbykey=score&itemstyle=narrow
https://eva.ecdc.europa.eu/course/index.php?categoryid=35

2. ECDC – Table top exercise
https://eva.ecdc.europa.eu/totara/catalog/index.php?catalog_fts=_SIMEX&orderbykey=score&itemstyle=narrow

3. ECDC - EI Training material
https://eva.ecdc.europa.eu/course/view.php?id=465

4. ECDC - Training tools and training catalogue of courses on prevention and control of communicable diseases (Association of Schools of Public Health in the European Region (ASPHER))
https://www.ecdc.europa.eu/en/tools/training-tools

5. Part of the outputs produced by ECDC after epidemic intelligence activities:
ECDC Communicable Disease Threat Reports: https://www.ecdc.europa.eu/en/threats-and-outbreaks/reports-and-data/weekly-threats.
Additional information on ECDC epidemic intelligence (https://www.ecdc.europa.eu/en/about-us/what-we-do/ecdc-activities-epidemic-intelligence-and-outbreak-response)
and sources used in epidemic intelligence at ECDC (https://www.ecdc.europa.eu/en/threats-and-outbreaks/epidemic-intelligence).

6. GitHub discussions on epitweetr (https://github.com/EU-ECDC/epitweetr/discussions/categories/2-training-material) which includes some videos and slides in relation to the use of epitweetr and epidemic intelligence.

**WHO material**

1. WHO - EOC - implementing EOC
https://openwho.org/courses/PHEOC-EN

2. WHO Collaborating Centre for Infectious Disease Preparedness and IHR monitoring and evaluation - National Institute for Public Health and the Environment (RIVM) – The Netherlands

WHO Collaborating Centre for Infectious Disease Preparedness and IHR monitoring and evaluation | RIVM ,

**Open-source material and tools for epidemiological data analysis**

1. The R Epidemics Consortium (RECON): next generation of analytics tools for informing the response to disease outbreaks, health emergencies and humanitarian crises, using the R software and other free, open-source resources
https://www.repidemicsconsortium.org/

2. R for applied epidemiology and public Health: https://epirhandbook.com/en/

### 6.4.2 Simulations exercises, IHR, EOCs, and After-action reviews

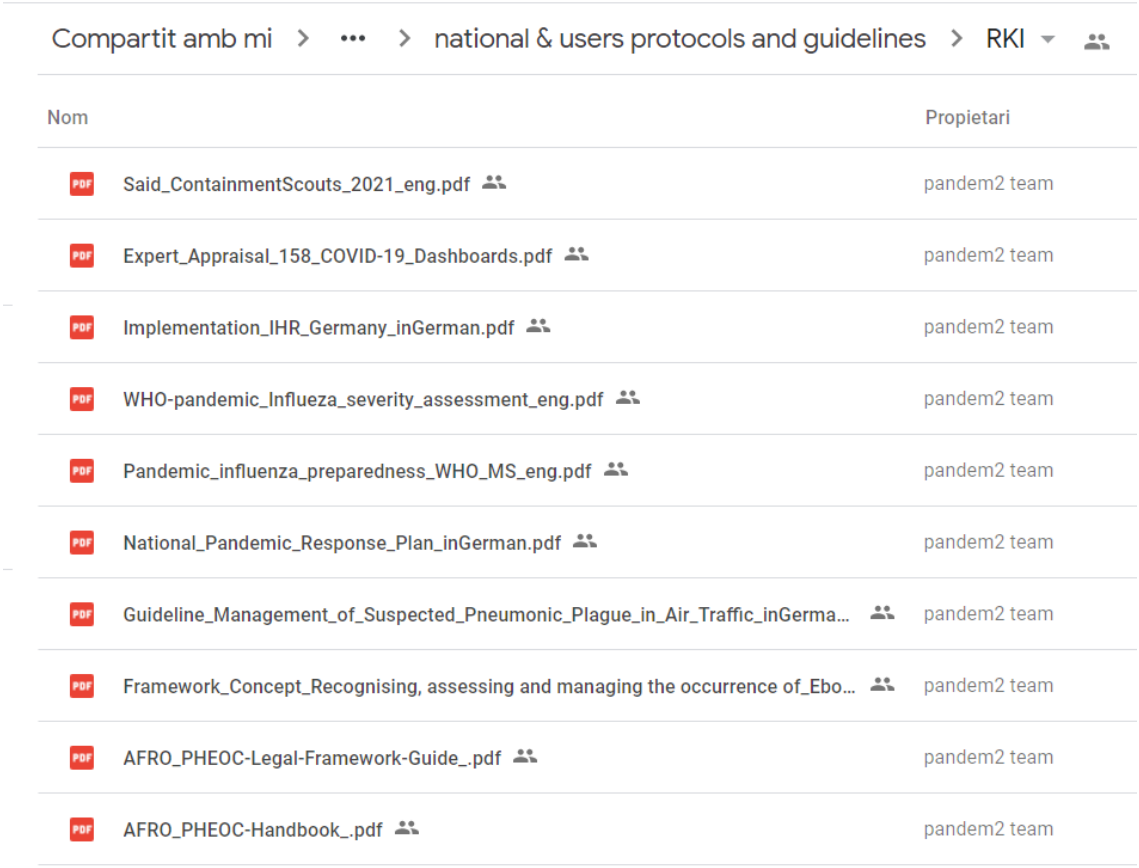
These subfolders are planned to be populated with the main material to be used in the demonstrations and simulation exercises within the WP6 PANDEM-2 project or with related material from other organisations, projects, or initiatives that could complement the links facilitated in 6.4.1.

### 6.4.3 PANDEM-2 Dashboard

This subfolder will contain the main material related to how to use the Dashboard and the PANDEM-2 functionalities, mainly focused on the demonstrations in WP6. The material currently already developed includes some videos which explain to end users how to use the Dashboard (the parts that have been developed until now). It is planned also to include Dashboard standard operational procedures documents; an overview of the landing page of the Dashboard has been included so far (included also in section 6.3).

### 6.4.4 National & Users protocols and guidelines

This subfolder will contain useful material for end users as training material for simulation exercises and demonstrations at the national level. It is also planned to cover EOC-specific protocols and guidelines. Eventually, it could be used to share different protocols and guidelines related to pandemic management across different national public health agencies, responders, or PANDEM-2 users. So far, RKI and THL have populated their specific subfolder with some material of interest (see screenshot below for the RKI subfolder).


Compartit amb mi
national & users protocols and guidelines
RKI
Nom
Propietari
Said_ContainmentScouts_2021_eng.pdf
pandem2 team
Expert_Appraisal_158_COVID-19_Dashboards.pdf
pandem2 team
Implementation_IHR_Germany_inGerman.pdf
pandem2 team
WHO-pandemic_Influeza_severity_assessment_eng.pdf
pandem2 team
Pandemic_influenza_preparedness_WHO_MS_eng.pdf
pandem2 team
National_Pandemic_Response_Plan_inGerman.pdf
pandem2 team
Guideline_Management_of_Suspected_Pneumonic_Plague_in_Air_Traffic_inGerma...
pandem2 team
Framework_Concept_Recognising, assessing and managing the occurrence of_Ebo...
pandem2 team
AFRO_PHEOC-Legal-Framework-Guide_.pdf
pandem2 team
AFRO_PHEOC-Handbook_.pdf
pandem2 team