EIOS in the COVID-19 PANDEMIC: Collaboration, not Competition

Without a doubt, the emergence of SARS-CoV-2 and the ensuing COVID-19 pandemic have heavily influenced all our lives, professionally as well as privately. It has clearly dominated the first quarter of 2020 for everyone in the EIOS Community and is likely to continue to do so in the months ahead.

Since the very onset of this global emergency, the EIOS Community has played a role in the pandemic. In this edition, we will be glancing back at the detection of the first signal, take stock of what has been achieved so far, and look ahead at projects that are in the works to respond to specific needs of the EIOS Community to help manage and fight this outbreak.

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COVID-19: The First Signal

While this has not made the headlines, the detection of the COVID-19 outbreak can be considered a success story for the EIOS initiative. In fact, the EIOS system picked up the first signal of the unknown pneumonia cluster in Wuhan, Hubei Province, at 03:14am UTC on the 31st of December 2019. The signal came directly into the EIOS system from a media source and within a short time frame, was complemented by other reports from systems collaborating on EIOS (i.e. ProMed, GPHIN, HealthMap and the Europe Media Monitor), as well as through notification by Chinese authorities. However, due to the particular day and time – an early morning on a public holiday – it was actually an email alert from ProMed that first caught the attention of WHO’s duty officer that morning and subsequently triggered further action. Necessary assessment and verification processes were immediately set in motion.

This example testifies to the very philosophy behind the EIOS initiative, underlining the value of collaboration rather than considering early detection a competition. When it comes to detecting a health threat as early as possible, it is not about being the first to do so but about what comes next. The strength of EIOS lies in combining and connecting systems, actors and expertise to pick up signals early and allow for a quick response, to save lives and to protect global health security overall. On the 31st of December, this is exactly what happened.

Navigating the COVID-19 “Infodemic”

With the high-visibility in the media around the globe, the EIOS system has experienced an unprecedented increase in the volume of articles. At the time of writing, the system imports and processes an average of more than 2 articles related to the coronavirus category every second! As the situation continues to change and evolve, this volume may be expected to increase even further. This excessive amount of information or “infodemic” surrounding COVID-19, including both relevant updates as well as misinformation and “fake news”, has been one of the biggest challenges for analysts around the world, including EIOS users working on COVID-19.

To help navigate this endless sea of information, the EIOS Core Team (ECT) together with collaborators from the Joint Research Centre (JRC) of the European Commission have worked hard to develop solutions and support tools for the EIOS community. One such tool is the new Twitter Dashboard based on the coronavirus-hashtags, that users can manipulate and search. Adding Twitter data through our developer account as we continue to negotiate an enterprise agreement with the company and being able to visualize and group this data on a dashboard add a new dimension to the EIOS system, with immense and direct tangible benefit to many users who often spend hours manually scanning Twitter accounts. Similarly, we are working with JRC on a mechanism for clustering articles to help group and distil the big volume of information and make it more digestible for the EIOS community.
COVID-19 Collaboration Projects

In addition to joint efforts with the JRC, the ECT together with partners from the WHO division of Information Management and Technology (IMT) are exploring several projects with external vendors, many of whom have generously offered pro-bono support in the context of COVID-19.

The most production-ready of these is a dashboard allowing visualization of the progression of the outbreak over time through counts of COVID-19 cases and deaths based on different geographic aggregations. What makes this application unique is that it presents the counts as reported by different sources side by side, helping identify reporting differences and prompting further investigation where appropriate. The sources currently being shown are WHO, Johns Hopkins University, the European Centres for Disease Prevention and Control and Worldometer. The application has been developed by Preva Group with generous financial support from the Bill and Melinda Gates Foundation and is a result of discussions regarding workflows and needs expressed by analysts working on case counts at WHO. The application checks for updates every five minutes and is currently accessible through the EIOS system. The ECT is exploring the option of making it publicly available through the WHO web site.

Other work is exploring the addition of enhanced visual analytics, tapping into broader sources of social media, identifying mis- and dis-information, automated summarisation, and empowering users to prioritize content based on individual use-cases. Many of these incorporate natural language processing and machine learning and are being pursued with collaborators from the private sector and academia. Once again, this highlights collaboration as a true cornerstone of EIOS and expands beyond the Public Health Community, involving experts from a broad range of disciplines.

Coordinating all these endeavours to urgently and rapidly develop practical technological solutions — particularly ones linked to specific, time-bound pro-bono or “once-off” arrangements — is not without its challenges. What would have been taxing under “normal” circumstances is all the more challenging to manage in the current situation, with remote work arrangements, increased workloads and shifting situations and priorities, all of which further aggravate existing gaps and dire resourcing needs.

Putting EIOS to the Test

No doubt, COVID-19 is a true test for the EIOS system, in every sense of the word. However, it is also a stark reminder of the critical importance of global collaborations like EIOS, not only to find and assess new pathogens or health threats but to do so quickly and to be able to follow up and facilitate communication and information sharing around them.

In a mini survey conducted at the end of March, we asked our EIOS community how they were using the EIOS system in the context of COVID-19. Out of the 24 full responses we received, 20 were using EIOS in their work related to COVID-19. Looking at the qualitative responses on how they use the system, nine themes emerged, showing that EIOS is being utilized and valued in a diverse manner by different users.

In the context of COVID-19, survey respondents used EIOS for

- Event-Based Surveillance (EBS) activities
- Collating updates for communication to colleagues and partners
- Animal health monitoring
- Monitoring public health measures
- Collaborating with network on and communicating within EIOS
- Gathering information on vaccine development
- Extracting official government sources for manual checks
- Analyzing the impact of COVID-19 on other public health activities
- Monitoring impact on the health care system

Ultimately, despite the challenges and hardships COVID-19 has imposed on all of us, we are committed to learning from this experience to further improve EIOS and are convinced we will come out stronger from this emergency, both as a community, as well as technologically.
Changes in the EIOS Core Team

Transformation Update

The EIOS Core Team at WHO headquarters has undergone significant changes since the beginning of the year. Following WHO transformation, the team name has changed from Epidemic Intelligence Development and Innovation (EDI) to Information Systems and Innovation for Public Health Intelligence (III). We are also no longer in the same unit as the former DVA team, which is now the Public Health Intelligence (PHI) unit. Rather, we are now part of the Innovation, Systems and Analytics (ISA) unit, which is managed by Dr. Babatunde Olowokure. Both units remain part of the Health Emergency Information and Risk Assessment (HIM) department under Dr. Oliver Morgan.

Hello, goodbye

Both Alastair and Elvis, our consultants working on categories and sources in the EIOS system, left WHO at the end of 2019. Luckily, we were able to bring Carolyn Briody on board to continue the important work on sources, including testing source performance, adding new and removing dysfunctional ones. Carolyn had previously been working on the Attacks on Health Care initiative, supporting the implementation of a surveillance system. The position for the classification consultant remained vacant in the first quarter but recruitment is ongoing.

In late January, we welcomed back Julie Fontaine from her maternity leave. She has since started to work 80%, tackling updates to reference materials, creating new user guidance documents and focusing on user requests for improved functionalities. In March, both Emilie Peron, our Evaluation Coordinator, as well as Blanche Greene-Cramer, who had been supporting the ECT in developing trainings and most recently covered the Training Coordinator position, joined PHI. While this is a great loss for the ECT, we are happy to continue working with them on the operational side of EIOS for PHI.

In the EIOS Core Team, we have taken this moment of transition as an opportunity to review our set-up and needs in this phase of the EIOS initiative and have been reshaping our team composition accordingly. While previously focusing on trainings, Julie will continue to focus more on the user-experience and implementation of the public health intelligence function, including developing new and updating existing reference material and operating procedures. We are looking to recruit a new dedicated training resource to ensure continued support for training activities and support to the next phase of expansion into Member States later this year. To support Johannes and further strengthen our capacity on the technical side, we have received increased support from Dusan Milovanovic, a systems engineer and data architect from WHO-IMT. We will also be welcoming a new data scientist to the team as of 01 May 2020. In addition, we have opened a new consultancy position focusing specifically on taxonomy.

In short: 1) we are currently even more short staffed than usual, so please bear with us, while we are getting new colleagues on board and are supporting the COVID-19 response as best as we can, 2) there are open positions on our team! If you are interested in any of the mentioned vacancies or know someone who might fit any of the profiles, please get in touch with us for more information at eios@who.int.
What’s new in EIOS?

The Q1 EIOS release effected in March introduced a number of upgrades to the system. Here is a top-level overview of the newest EIOS system features. For more in-depth descriptions, visit the updated User Manual on the EIOS system.

MAPPING OF GEOLOCATIONS AND INFORM INDEX-
A new map, accessible on the article panel by turning on the Map-switch, allows you to visualize locations mentioned in articles on your board, apply a spatial filter by drawing an area of interest on the map and store this filter as part of a board definition. You can now also access some contextual information (i.e. INFORM INDEX) for each country.

COVID-19 CASE COUNT DASHBOARD - The new Dashboard dropdown menu allows you to access the Big Screen Map as well as a new COVID-19 Dashboard visualising the evolution of COVID-19 cases and deaths while comparing multiple data sources (ref. above).

FEEDBACK FORM - You can now provide feedback, report a technical issue or ask a question directly in EIOS by using the Provide feedback-button found on the Feedback page, under the Help and Feedback dropdown menu.

ID SEARCH FUNCTION - It is now possible to search an article by its unique ID. The unique ID is displayed in the article’s details view. To search for an article by ID you can enter the ID enclosed in “quotes” in the text search.

If you would like to brush up on your familiarity with the EIOS system, check out the Getting Started-guide, as well as the self-practice exercises available in the document tab on the EIOS system.

Expansion and Trainings

COVID-19 related travel restrictions and a strain on Human Resources in the EIOS Core Team, at the regional level, as well as in the Member States, have limited training and expansion activities in Q1. However, we managed to run one full system training in Uganda (see below), and to onboard a number of new communities and teams within WHO, as well as from other organizations working on COVID-19. We are currently exploring new ways to increase our capacities in the regions by piloting alternative approaches for training and onboarding to accelerate our expansion into Member States and with other user groups.

EIOS Training in Uganda

Just before COVID-19 was declared a pandemic, evoking worldwide travel bans and physical distancing measures, we successfully onboarded our latest Member State Community by running the EIOS system training in Uganda. The training took place in Kampala in late February and, like our training in Nigeria last year, was combined with wider event-based surveillance training facilitated by the Centers for Disease Control and Prevention. Garnering a lot of interest from various governmental bodies and partnering organizations, the Uganda Community fully embraced the cross-sectoral philosophy underlying EIOS’ approach to One Health, enabling a wide range of participants to discuss the importance of EBS and train those actively involved in EBS activities on the use of the EIOS system.

“I use EIOS to search for, analyse and verify signals of COVID-19 suspect and confirmed cases in Uganda and in the region. I then produce a daily event-based surveillance report on COVID-19 for the Public Health Emergencies Operations Center and key partners in Uganda. EIOS has been beneficial for the dissemination of information to community members and district level surveillance officers for verification.”

Wilbrod Mwanje, PHEOC Ministry of Health, Uganda