EIOS
EPIDEMIC INTELLIGENCE
FROM OPEN SOURCES

July 2023

EIOS NEWSLETTER

CONTENT

DEAR READER,

Wherever this newsletter reaches you, chances are you are experiencing some extreme weather events. Record temperatures, wildfires, flash floods, rivers of ice in Milan, and snowfall in Johannesburg. What seems stranger than fiction, sadly, is reality today. We have long learnt and been painfully reminded during the COVID-19 pandemic that everything is connected. Clearly, our joint effort to connect information, data and people, to detect and respond to health threats early and rapidly, has never been more relevant.

Further building and strengthening the global EIOS community working towards our common goal of better protecting the world from health threats, we are thrilled to welcome 19 new communities to the initiative since the start of the year. Some of our most recent Member State communities are highlighted in the updates from our WHO regional offices. Our long-standing collaborators from the US CDC and the WOAH update us on some of their related work, including the recent expansion of WOAH's EIOS activities to the Asia Pacific region.

In this issue, we are pleased to share with you our recent EIOS Implementation Evaluation, latest system updates, the launch of the Open Source Programme Office at the WHO Pandemic Hub in Berlin, a "close up" of the Poland community, and much more. Sounds exciting? Start reading!

Our sincere greetings,
The EIOS Core Team

SPOTLIGHT

THUMBS UP or THUMBS DOWN: Which factors influence successful implementation of EIOS?

Since its launch in 2017, the EIOS initiative has expanded significantly to include over 100 EIOS user communities globally, encompassing Member States, organizations, networks, UN agencies, and collaborative research projects, as well as training and test groups. As demand for expansion of the initiative continues, we decided to take a closer look at how the EIOS initiative is applied in different settings, how it contributes to PHI activities, as well as best practices and barriers to its implementation and sustainability. An evaluation was conducted in 2022-2023, which generated recommendations related to work processes, engagement, training methods, and technological improvements.
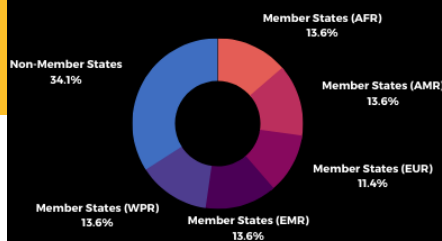
Methodology

A mixed-methods approach with two phases was used to evaluate key implementation factors (adoption, acceptability, sustainability). The first phase included a survey questionnaire completed by participants. The second phase consisted of key-informant interviews. Target participants for this evaluation included EIOS community team leads of communities that had been onboarded prior to January 2022.
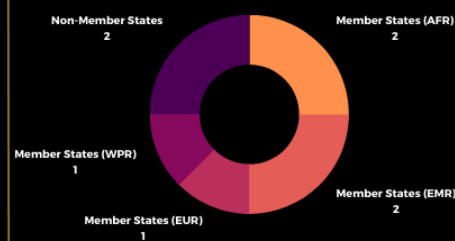
Results

The evaluation exercise lead to a range of insightful results and recommendations, which will be used to inform our community engagements, internal planning processes and future expansion strategy. On the right, we have summarized the main findings in an infographic for you.

EIOS IMPLEMENTATION EVALUATION

44 SURVEY RESPONDENTS

- Member States (AFR) 13.6%
- Non-Member States 34.1%
- Member States (AMR) 13.6%
- Member States (EUR) 11.4%
- Member States (WPR) 13.6%
- Member States (EMR) 13.6%

8 KEY INFORMANT INTERVIEWS

- Non-Member States 2
- Member States (AFR) 2
- Member States (WPR) 1
- Member States (EMR) 2
- Member States (EUR) 1

KEY SURVEY FINDINGS

80 %
REPORT USING THE EIOS SYSTEM DAILY OR WEEKLY

73 %
BELIEVE EIOS STRENGTHENED THEIR UNITS' PHI ACTIVITIES

73 %
REPORT HIGH TOPIC INCLUSIVITY OF THE EIOS SYSTEM

61 %
ESTIMATE THAT THE EIOS SYSTEM DETECTS MORE SIGNALS THAN OTHER SURVEILLANCE TOOLS

52 %
REPORT EBS/EIOS KNOWLEDGE AND SKILLS HAVE IMPROVED SINCE TRAINING

WHAT FACTORS ENSURE IMPLEMENTATION SUCCESS?

Training

- Communities prefer face-to-face, interactive training approaches that are tailored.
- There is high interest to have webinars and trainings led by EIOS communities for step-by-step tutorials on how they navigate the system.
- Communities that have check-in calls and follow-up trainings were associated with increased usage and a higher sustainability rating.

EIOS Implementation Setting

- EIOS communities should ensure implementation readiness before starting the initial training.
- Uptake of the EIOS initiative is improved when EIOS communities have:
  - Reliable internet
  - Leadership buy-in
  - Standard Operating Procedures
  - Human resources (including sufficient capacity and low turnover)
  - Surveillance staff who are included in decision-making processes
  - Engagement in partnerships (including those outside of EIOS)

EIOS System Improvements

- Frequent follow-up trainings are wanted to ensure teams are maximizing system functions.
- Most requested updates to the EIOS system are: additional filters to reduce noise, board-sharing, and more sources from local dialects and remote regions.

WHAT EIOS DEVELOPMENTS ARE UNDERWAY?

EIOS system upgrades include a new interface design, updating search functions, and shared boards

"Clinic hours" that offer technical support and engagement between communities and the EIOS Core Team.

The EIOS Core Team is developing an events-based surveillance foundational framework to enhance skills and knowledge across the EIOS community

SELECT RECOMMENDATIONS

Increase staffing on the EIOS Core Team and EIOS positions in Regional Offices to increase capacity for community outreach, training, and implementation support.

Conduct noise and other outcomes evaluations on the EIOS system to ensure continued efficiency and acceptability for EIOS communities.

Create sample SOPs and customised trainings that address barriers in different implementation settings, such as limited access to resources and partners or low staff capacity.

Provide implementation readiness checklists before onboarding, ensuring that staff are well-equipped to receive and apply training in a timely manner.

EIOS Updates

EIOS trainings in the first half of 2023

A total of **29 EIOS system trainings and refreshers** were conducted across all WHO Regions in the first six months of 2023. This year alone, **over 800 trainees** have completed the EIOS system training. This great achievement was possible thanks to the support of our growing global team of EIOS trainers across WHO Regions, collaborating organizations, and networks. A warm welcome to all newly onboarded communities!

In June 2023, the EIOS Core Team (ECT) led a two-day hybrid **EIOS system training at WHO Headquarters in Geneva, Switzerland.** Over 25 public health intelligence (PHI) participants attended, which included teams from: Acute Events Epidemiology (AEE), Public Health Intelligence (PHI), Fragile, Conflict-affected and Vulnerable settings (FCV), GOARN and Incidents and Substandard/ Falsified Medical Products (ISF). For more on training activities, consult the Training tab within your EIOS system portal or visit the **training page on the EIOS website**.

EIOS system training at WHO HQ, Geneva, Switzerland. Photos: ©WHO.

EIOS Community Webinar Series

On 7 June, the ECT proud presented the third EIOS Community Webinar of 2023! In this latest webinar, the **Public Health Intelligence team in the WHO Regional Office for the Eastern Mediterranean** (WHO EMRO PHI) and the **United Kingdom Health Security Agency** (UKHSA) presented their PHI activities, including the use of EIOS. Experts from these two communities shared how they apply EIOS to their surveillance work and touched upon their experience using the system.

With nearly 300 participants from 77 different countries, this webinar was once again a great success – not least, thanks to our fantastic presenters!

In case you missed it, would like to watch it again or share it with your colleagues, please find the link to the recording of the Wednesday's webinar here, passcode: *EIOS2023!.*

News from the EIOS Core Team

The EIOS Core Team's (ECT) key priority for 2023 is the development of an overarching, **multi-year EIOS Expansion & Sustainability strategy** that will guide further expansion of the EIOS initiative to WHO Member States, as well as other organizations and networks. Developing this strategy is crucial to **align and coordinate expansion activities across all stakeholders** and ensure sustainability of the initiative while reflecting the initiative's vision and mission. It is paramount to determine the strategic direction of the initiative's expansion, both from a **technology** perspective, as well as from the **community, governance** and **funding** perspectives.

With the current pace of the initiative's expansion, and its increased visibility, it is vital to strengthen and engage existing communities, while new Member States, organizations and networks join EIOS. It is also essential to ensure that the EIOS system is supported with appropriate resources for sustainability, as well as capacity for further expansion.

Do you have a particular vision for the initiative's expansion? If so, please share it with us via email!

EIOS self-paced online course now available in Arabic

Exciting news! The "Introduction to Epidemic Intelligence from Open Sources (EIOS)" online course is now available in Arabic, joining the existing English, French, and Portuguese versions. Interested in having a sneak peek of Module 1? Access it here.

The online course is open to all active EIOS system account holders. Its self-paced format allows flexible learning and complements EIOS system workshops. Our ongoing objective is to offer the course in even more languages, ensuring greater accessibility and inclusivity for current and future EIOS members. Over 1000 EIOS system users have already enrolled since it was first launched in English last year, demonstrating a high demand and relevance of this online training format.

مقدمة للاستخبارات الوبائية من المصادر المفتوحة

الوحدة الأولى

Arabic version of the "Introduction to Epidemic Intelligence from Open Sources (EIOS)" course

AFRO: Committed to expanding EIOS to all Member States in the region by 2024

Eight new Member States (MS) from across the WHO Africa region have joined the EIOS initiative since the beginning of the year. A total of 220 individuals from **Angola, Chad, Congo, Gabon, Ghana, Lesotho, South Sudan, and Zimbabwe** have been trained in the use of the EIOS system in the first half of 2023. This brings the total number of MS in the African region that have joined the EIOS global community to 25. Since the start of EIOS expansion to MS in 2019, a total of 745 individuals across the WHO African region have been trained to use the EIOS system. Most training involved face-to-face facilitation led by an expert team of trainers from the WHO Regional Office for Africa (AFRO).

Recently, AFRO has embarked on peer learning and experience-sharing as part of its onboarding and training activities. Experienced EIOS system users from the Zambia and Uganda Ministries of Health, along with trainers from AFRO, co-facilitated EIOS trainings in Lesotho and Zimbabwe. These experience-sharing sessions constitute a valuable part of the onboarding process, and are beneficial for expediting new MS to begin using the system.

With a solid commitment to **expanding the initiative to all MS in the WHO Africa region by the end of 2024,** AFRO continues to reach out to new MS with technical and operational support for facilitating onboarding to the EIOS initiative as part of its broader effort to strengthen and transform surveillance systems in the African region.

EIOS system trainings in Gabon (left) and Ghana (right). Photos: © WHO/AFRO.

EURO: Welcome Italy!

Following the first EIOS training in Poland for national authorities in 2022, and thanks to the support from the WHO Country Office in **Poland**, the EURO-EIOS team pursued a series of back-to-back trainings for subnational authorities in May 2023. The team also followed up with the community managers and focal points after months of exploring and piloting EIOS. We look forward to seeing this community continue to grow!

It was our pleasure to welcome **Italy** to the EIOS community in June 2023. The EIOS training was warmly hosted and facilitated by the Isituto Superiore di Sanità (ISS), and joined by colleagues from the European Centre for Disease Prevention and Control (ECDC). The event was directed by the Italian Network of Epidemic Intelligence, including representatives from the subnational level, and guided by their existing strategy, which facilitated the planning and development of the workshop content and activities. Follow-up training activities are planned by ISS to engage the remaining epidemic intelligence officers from sub-national levels later this September 2023.

EIOS system training in Italy (above) and Poland (below). Photos: © WHO/EURO.

PAHO/WHO: Bienvenido Chile, Colombia, Costa Rica, Honduras & Canada

During the second quarter of 2023, PAHO/WHO continued to expand the implementation of EIOS in the WHO Region of the Americas, with the addition of five Member States: **Chile, Colombia, Costa Rica, Honduras, and Canada.** Four of the trainings (Chile, Colombia, Costa Rica, and Honduras) were multi-day, in-country trainings held with the support of the PAHO/WHO Country Offices, totalling 100 participants trained from the Ministries of Health and National Institutes of Health. In Canada, virtual trainings were conducted over the course of six weeks.

To further strengthen existing EIOS communities, trainings were held in **Argentina** (for 21 participants at the national and provincial levels), and in **Brazil,** during the month of June. Additionally, as the first EIOS community to implement EIOS at the subnational level, the Brazil Ministry of Health initiated a survey regarding the use of EIOS in its subnational units, to gain further insight about the successes and challenges of this implementation.

Furthermore, the PAHO/WHO Regional Office continued to host **weekly Q&A sessions in Spanish**, as a forum to engage and support EIOS users. With the help of the Regional Sources Coordinator, along with input provided from the EIOS communities in the region, 893 new sources were identified and added to the EIOS system.

EIOS Training in Colombia. Photo: © WHO/PAHO.

Weekly virtual Q&A session. Photo: © WHO/PAHO.

EMRO: Subnational expansion in Morocco and Hajj in KSA

Morocco has expanded its EIOS network to the subnational level. A comprehensive three-day training was recently conducted with the support of the Moroccan Ministry of Health. The training brought together 28 participants from the central level and eight subnational regions of Morocco, in addition to representatives from the Ministry of Agriculture and other public health services. This EIOS expansion at Morocco's subnational level strengthened the country's public health surveillance capabilities.

The **Kingdom of Saudi Arabia** (KSA) has also leveraged the power of EIOS during the annual Hajj pilgrimage. With an estimated participation of over three million individuals, the Hajj season poses unique public health challenges. In anticipation of this momentous event, the team at the WHO Regional Office for the Eastern Mediterranean (EMRO) conducted virtual refresher training for EIOS system users in the KSA. Collaborating closely with the KSA Ministry of Health, a dedicated category, "Hajj," was introduced within EIOS. These efforts collectively ensured timely and accurate surveillance of health-related incidents.

The **Communications, Resource Mobilization and Partnership team** (CRP) at EMRO has also been recently trained on EIOS. This significantly enhanced the scope and timeliness of information gathered through EIOS, which empowered EMRO's CRP team to remain well-informed and respond effectively to emerging health concerns.

EIOS system training in Morocco. Photos: © WHO/EMRO.

WPRO: China CDC joins the EIOS community

In May 2023, representatives from the EIOS Core Team, the WHO Regional Office for the Western Pacific (WPRO), Chinese Center for Disease Control and Prevention (China CDC) and GOARN (WHO HQ), with guidance from the WHO China Country Office, conducted a **3-day EIOS system training at the China CDC in Beijing for over 35 participants.** The training was attended by Public Health Intelligence experts from the Center for Global Public Health, the Public Health Emergency Center, the National Institutes for Communicable and Viral Disease Control and Prevention, as well as the Hainan, Yunnan and Guangdong Provincial CDCs. The training was a crucial step for China to strengthen its national and provincial Public Health Intelligence capacities with the goal of early detection, verification, assessment and communication of public health threats using publicly available information. Important discussions have also taken place regarding concrete next steps for cooperation between China CDC and WHO.

EIOS system training in China. Photos: © WHO/WPRO.

Feedback from EIOS training participants

"It is said that training is an essential part of professional development. Training is also a critical element for capacity building of health taskforce for health for all. It is a great way to keep us up with new technologies and changes in the workplace and in the world. Quoting Chinese idioms, 'Sharp tools make good work. A good start is half the battle'. Looking forward to our further joint efforts and collaboration."

CHEN Hong, China CDC

"Through access to the EIOS system and the 3 day- training, I have become familiar with EIOS and its application. Now I have used the system in daily surveillance practice, such as creating a customized board with global-level important information within the past day, global official information from any health institution within the past day, keywords related to 'Asian Games' and 'World University Games' (including Chinese and English and different wording combinations) within the past 30 days, and information containing keyword of 'XBB' within the past day. All the customized boards on the EIOS system created by myself above were generated into RSS feeds and imported into my daily reading sources. The increase of the above information sources in EIOS has been an important supplement to my current work."

TU Wenxiao, China CDC

"After three days of training, although the schedule was very tight, I still learned a lot: how to use the EIOS system, including the creation of boards, sorting and communication functions. Attending the training together with many colleagues strengthened our team. In particular, the communication between different departments promoted mutual understanding."

FANG Yuansheng, China CDC

US CDC: 7-1-7 approach

Through a project funded by Resolve to Save Lives (RTSL), the U.S. Centers for Disease Control and Prevention (CDC) and the CDC Foundation have partnered to build event-based surveillance (EBS) capacity in Africa, as to identify and respond to health risks early. The EBS capacity-building project provides participating countries opportunities to collaborate, build learning networks and exchange lessons, including around the use of systems such as EIOS and approaches such as 7-1-7. Specifically, the 7-1-7 approach involves using timeliness metrics to clearly assess and rapidly improve how early detection and response systems are performing in real-world situations. The **7-1-7 global target sets performance standards for three outbreak timeliness metrics:** 7 days to detect a suspected disease outbreak; 1 day to notify relevant public health authorities; and 7 days to complete early response actions. Following an RTSL-led 7-1-7 training-of-trainers workshop this summer, CDC intends to further serve as a catalyst for 7-1-7 implementation globally through CDC Headquarters and Country Offices' partnerships with Ministries of Health around the world.

WOAH is expanding EIOS use to the Asia Pacific Region

The World Organisation for Animal Health (WOAH, founded as OIE) is the global authority in animal health with the mission of improving animal health globally. Since its creation in 1924, one of its main missions is to ensure transparency on the global animal health situation. To comply with its mandate of transparency, WOAH contacts its members to confirm or refute circulating unofficial news that may be of interest to other members and stakeholders. As a result, **one of the major activities of WOAH is disease rumour tracking**. The Active Search Team (AST) of World Animal Health Information and Analysis Department (WAHIAD) at WOAH-HQ conducts rumour tracking using EIOS and verifies a range of information with the veterinary officials of countries.

To reinforce rumour tracking activities and better support countries in the Asia Pacific region, WOAH, led by the Regional Representation for Asia and the Pacific (RRAP, Tokyo), supported by the WAHIAD Department (WAHIAD, AST), Data Integration Department (DID) and Sub-regional Representation for Southeast Asia (SRR SEA), is expanding the use of the EIOS system for active search of unofficial information at regional level through the **creation of an Asia-Pacific Active Search team**. This activity is funded by the Australian Department of Agriculture, Fisheries and Forestry (DAFF) to support early health threat warning.

The expansion strategy is divided into three phases (as shown in the below chart).
Phase 1: Training on the use of the EIOS system
Phase 2: Strengthen the knowledge on EIOS
Phase 3: Workshop to develop and finalise Standard Operation Procedures (SOP) to coordinate the use of EIOS among WOAH headquarters, RRAP, and SRR SEA.
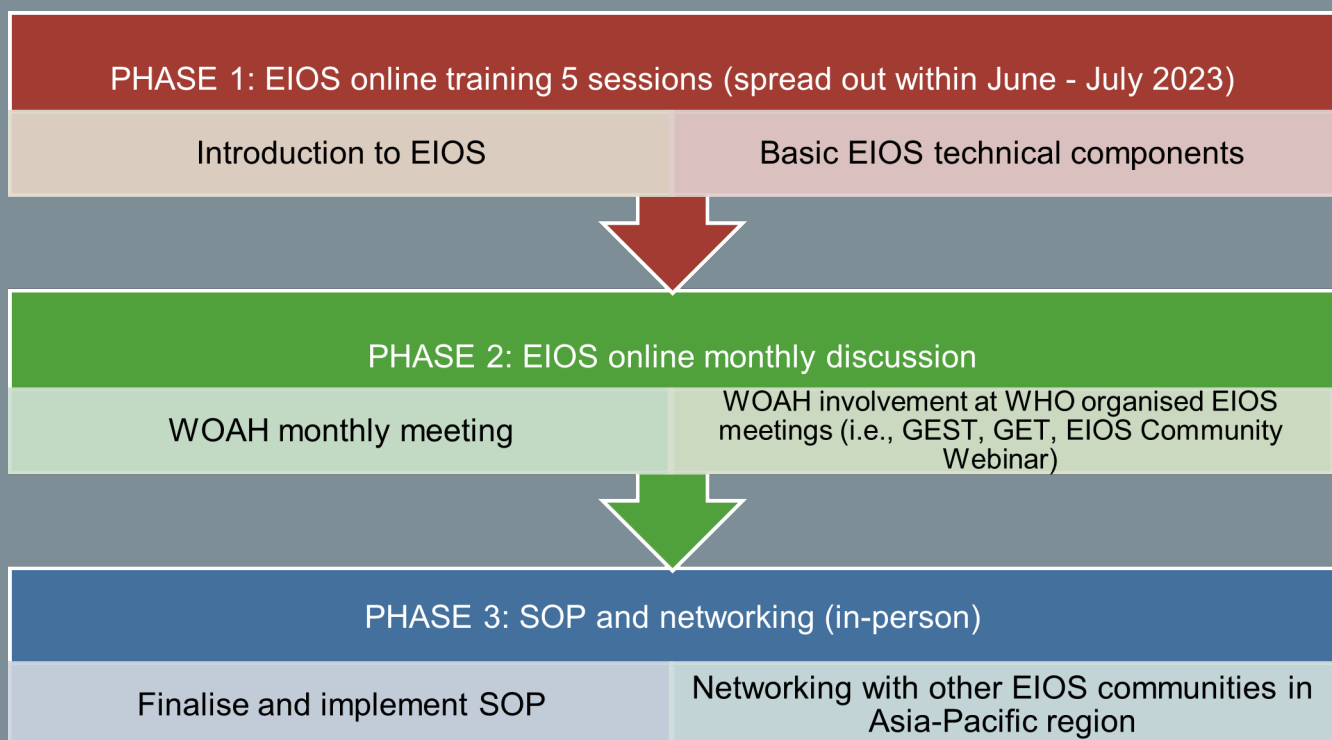
PHASE 1: EIOS online training 5 sessions (spread out within June - July 2023)	
Introduction to EIOS	Basic EIOS technical components

PHASE 2: EIOS online monthly discussion	
WOAH monthly meeting	WOAH involvement at WHO organised EIOS meetings (i.e., GEST, GET, EIOS Community Webinar)

PHASE 3: SOP and networking (in-person)	
Finalise and implement SOP	Networking with other EIOS communities in Asia-Pacific region

Fig. 1: Flow chart showing WOAH's phased expansion strategy for EIOS in the Asia-Pacific region.

WHAT'S NEW
in EIOS?

CATEGORY CORNER

In Q2, we added a total of **61 new categories** to the EIOS system. We continued to develop categories to further strengthen the system's capacity for One Health and all-hazards monitoring with the addition of **30 new animal and plant health disease or pathogen categories**. Additional natural disaster categories were added for monitoring **tornadoes and air pollution**.

As we continue to adapt to the needs of the EIOS community, we released a number of categories related to non-communicable diseases including **cardiovascular diseases** such as myocarditis, microthrombosis, postural orthostatic tachycardia syndrome, thrombocytopenia, arrhythmia and coronary heart disease.

In addition, we added categories across all communities for monitoring acute respiratory illness, post COVID-19 condition (Long COVID), bird-die off, shortness of breath, seizure disorders, laboratory safety, echoviruses, laboratory seizure and tunga penetrans.

We strive to provide categories that cover various languages and dialects, as to provide relevant articles to users. By the end of June 2023, we added additional translations to **extend the language coverage for >90 categories** within the EIOS system. In addition, we refined eight category definitions for priority diseases, resulting in improved performance and decreased noise.

If a category you are interested in is missing, or an existing category could use some refinement to better support your monitoring objective, please **contact us**!

NEW SOCIAL MEDIA CHANNEL

Spoiler alert: We are now testing the addition of **Telegram** social media channels to the EIOS system, and hope to make it available to our users soon.

The global EIOS team strives to add new relevant sources on a continual basis. Currently, we have **over 22,000 sources** feeding into the system. In addition, our colleagues from the Joint Research Center of the European Commission (JRC) are researching new ways to improve web scraping processes, so that the system can keep up with a variety of ever-changing sources.

Constantly monitoring categories' performance, we kindly request you, our dedicated system users, to report any issues with sources that you come across such as missing articles from important sources, or sources you would like to add to the EIOS system.

EIOS SYSTEM UPDATES

Over the past quarter, there has been ongoing iterative development of the **new version of EIOS**. The overall 'core system' development continues to be refined by JRC developers, with added features and functionality, based on feedback and analysis, while the new User-Management feature has been deployed to UAT for internal testing.

Additionally, the current User-Feedback Form is in the process of being migrated to an **internal AppBuilder platform**, for EIOS users to provide feedback within the EIOS system. Please note that you can also provide feedback through eios@who.int.

SNEAK PREVIEW: Within the new interface, community managers will be able to update certain information on their community directly in the system...

...and create and invite new users individually or in bulk:

UPDATES FROM BERLIN

Launching the Open Source Programme Office (OSPO) at the WHO Hub Speaker Series

On 13 June, the WHO Pandemic Hub held the fifth session of the Speaker Series, discussing **Open Source solutions for health emergency preparedness and response**. The event served as a launch pad for the WHO OSPO, which is incorporated in the WHO Pandemic Hub. Samuel Mbuthia, leading the OSPO, introduced his colleagues Mala Kumar and Catharina Maracke who shared their insights into what open source is all about beyond software licensing, including collaborative development, reducing duplicative efforts and shared innovation costs. Dr Yaw Anokwa, Computer Scientist and Founder of ODK, laid out challenges and opportunities in open-sourcing digital tools, drawing on his experiences building the Open Source platform ODK. Dr Hajer Letaief from the National Observatory of New and Emerging Diseases of the Ministry of Health in Tunisia, gave crucial insights into the country's digital health strategy and its journey in implementing the open-sourced SORMAS system for integrated disease surveillance.

Dr Alain Labrique, Director of the Department of Digital Health and Innovation at WHO, moderated an engaging panel discussion, highlighting the need for sustaining human networks and financial resources for Open Source solutions, lowering barriers and de-risking investment in these solutions for Member States and WHO's role in achieving this goal.

Speaker Series No.5. Photos: © WHO/ Steffen Kugler.

COMMUNITY CLOSE-UP:

Poland

Name of Community: Poland
Active on EIOS since: 2022
Number of members: 86

HOW MANY DIFFERENT ENTITIES ARE REPRESENTED IN YOUR COMMUNITY?

Six entities and five teams.

WHAT DO YOU USE EIOS FOR?

The majority of the EIOS Poland teams use the system to detect signals related to various public health events according to the scope of their institutions' activities. At this stage it is mainly used on an ad hoc basis in response to emerging events. However, some teams have a more systematic approach to using EIOS. For example, the National Focal Point for the International Health Regulations began to incorporate EIOS search results in their weekly internal epidemiological presentations. Two rounds of EIOS workshops in Poland, both on a national and subnational level, have enabled broader usage of the system and the building of a stronger community.

WHAT DO YOU LIKE BEST ABOUT EIOS?

The flexibility of the system is outstanding. With more experience with EIOS, it becomes easier and easier to tailor to ones' particular needs. Even though the system is already powerful, it constantly evolves. The shape of this evolution is driven by active users as well as the changing world.

Compiled by Paulina Nowicka, WHO Country Office Poland