



Food and Agriculture
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World Organisation
for Animal Health

Epidemic intelligence to improve early detection

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for



Summary

- Context and why epidemic intelligence is important
- Definition of Epidemic intelligence for WOAHA
- WOAHA current epidemic intelligence framework
- The EIOS system
- How to improve early detection through epidemic intelligence – ASF example
- Key messages and way forward



Context and why epidemic intelligence is important

- In recent decades, there has been a **drastic increase in the amount of information** circulating via a wide variety of media
- The **way we obtain information has evolved**, taking into account the characteristics of each source (speed of information, reliability, availability, ease of sharing, etc).
- The model of obtaining information only from official/recognised sources **no longer holds - the veterinary public health sector (and public health in general) has had to adapt.**
- That's what epidemic intelligence is all about: **considering all possible sources**, with the right **human interpretation** to provide a rapid and continuous analysis of risks of health threats, **for decision-making.**



Context and why epidemic intelligence is important

Official information

Successes :

- Standardized information, in several languages, reliable
- Publicly available
- Consistency in the reporting approach
- **Completeness up to 97%** for certain diseases
- **Median of 3 days for submission** after confirmation

Gaps :

- **Completeness down to 13%** for other diseases – overall 27%
- **Timeliness gaps up to 120 days** compared with unofficial sources

Nonofficial information

Successes :

- **Fast!** (up to 112 days faster than official information based on some studies)
- Comes from a **variety of sources** : web, media, experts, partners, research

Gaps :

- **Completeness 6%** overall for EIOS in 2019
- **Needs processing** for digesting, evaluating reliability, relevance, etc.



Context and why epidemic intelligence is important

PLOS ONE

RESEARCH ARTICLE

Modelling the drivers of outbreak communication in online media news for improved event-based surveillance

Solene Rodde^{1,2}, Pachka Hammami^{1,2,e}, Asma Mesdour^{1,2}, Sarah Valentini^{1,3}, Bahdja Boudoua^{3,4}, Paolo Tizzani⁵, Lina Awada⁵, Carlene Trevenec^{2,4}, Paulo Pimenta⁶, Andrea Apolloni^{1,2,e}, Elena Arsevska^{1,2,e*}

1 French Agricultural Research Centre for International Development (CIRAD), Montpellier, France, 2 Joint Research Unit Animals, Health, Territories, Risks, and Ecosystems (UMR ASTRE), French Agricultural Research Centre for International Development (CIRAD), National Research Institute for Agriculture, Food and Environment (INRAE), Montpellier, France, 3 Joint Research Unit Land, Environment, Remote Sensing and Spatial Information (UMR TETIS), French Agricultural Research Centre for International Development (CIRAD), National Research Institute for Agriculture, Food and Environment (INRAE), Montpellier, France, 4 National Research Institute for Agriculture, Food and Environment (INRAE), Montpellier, France, 5 Data Integration Department, World Organisation for Animal Health (WOAH), Paris, France, 6 Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier, Microelectronics Department, Montpellier, France

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OPEN ACCESS

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ORIGINAL ARTICLE

WILEY

Sensitivity of an international notification system for wildlife diseases: A case study using the OIE-WAHIS data on tularemia

Angela Fanelli¹ | Lina Awada² | Paula Caceres-Soto² | François Diaz³ | Tiggy Grillo³ | Itala Gizo² | Keith Hamilton³ | Christine Leon Rolez² | Peter Melens² | Roberta Morales² | Lina Mur² | Sophie Muset³ | Lorenz Nake⁴ | Lesa Thompson⁵ | Chadia Wannous⁶ | Paolo Tizzani²

Epidemic intelligence to improve early detection of ASF

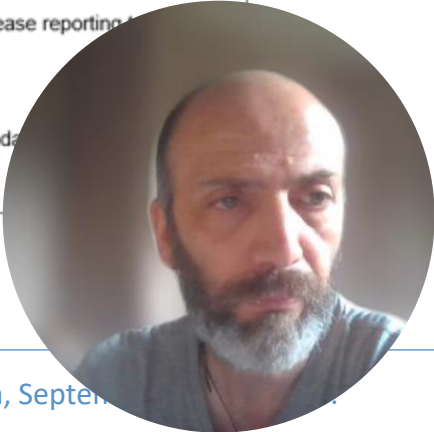
Hindawi
Transboundary and Emerging Diseases
Volume 2023, Article ID 6666672, 10 pages
<https://doi.org/10.1155/2023/6666672>

Research Article

Analysing WAHIS Animal Health Immediate Notifications to Understand Global Reporting Trends and Measure Early Warning Capacities (2005–2021)

Shu-Yu Lin,¹ Daniel Beltran-Alcrudo², Lina Awada³, Christopher Hamilton-West⁴, Andrea Lavarello Schettini,³ Paula Cáceres,³ Paolo Tizzani³, Alberto Allepuz¹, and Jordi Casal¹

- (i) **Manuscript title:** Timeliness and completeness of official disease reporting to the World Organisation for Animal Health (WOAH)
- (ii) **Full author names:** Awada Lina¹, Vada Rachele^{1,3}, Srairi Sindia¹, Laure¹, Cayol Claire¹, Donachie Alastair⁴, Tizzani Paolo¹



1st Meeting SGE-TSD, Panama, September 2023

Context and why epidemic intelligence is important



► *Animals* (Basel). 2022 Mar 5;12(5):656. doi: [10.3390/ani12050656](https://doi.org/10.3390/ani12050656)

African Swine Fever—How to Unravel Fake News in Veterinary Medicine

[Adriana Trotta](#)^{1,*}, [Mariarosaria Marinaro](#)², [Alessandra Cavalli](#)¹, [Marco Cordisco](#)¹, [Angela Piperis](#)¹, [Canio Buonavoglia](#)¹, [Maria Laura Corrente](#)¹

Editors: Paolo Tizzani, Valentina Lamorgia, Angela Fanelli

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PMCID: PMC8909113 PMID: [35268224](https://pubmed.ncbi.nlm.nih.gov/35268224/)

Abstract

Simple Summary

In recent years, fake scientific news has spread much faster through the Internet and social media within the so-called “infodemic”. African swine fever (ASF) is a perfect case study to prove how fake news can undermine the public health response, even in the veterinary field. ASF is a contagious infective disease exclusively affecting domestic and wild pigs such as wild boars. ASF can cause social damages and economic losses both directly (due to the high mortality rate) and indirectly (due to international sanctions). Although ASF is not a threat to human health, since 2018, newspapers have often reported false or misleading news, ranging from misinterpreted findings/data to fake or alarmistic news. In some cases, fake news was spread, such as the use of snipers at the border of nations to kill wild boars or the possible risks to human health. In order to provide real and fact-based news on epidemics, some organizations have created easy-to-read infographic and iconographic materials, available on



Definition of Epidemic intelligence

*Epidemic Intelligence conducted at WOAHA is defined as the cycle of **organised and standardised collection, analysis and interpretation** of information from **multiple sources (official and non-official)** to detect, verify and investigate potential animal health risks in a timely manner in accordance with WOAHA's mandate when relevant. This work is systematic or conducted on an ad hoc basis depending on the source of information. Epidemic Intelligence includes **risk monitoring and risk assessment** and is conducted with the objective of allowing for prompt and effective **risk management and communication**, whilst fostering **multisectoral collaboration** and taking into account a One Health approach.*



Definition of Epidemic intelligence

Risk monitoring



Risk assessment



Risk management



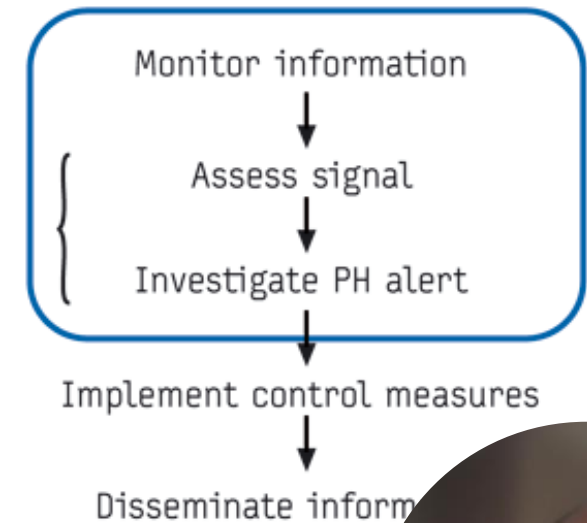
Risk communication



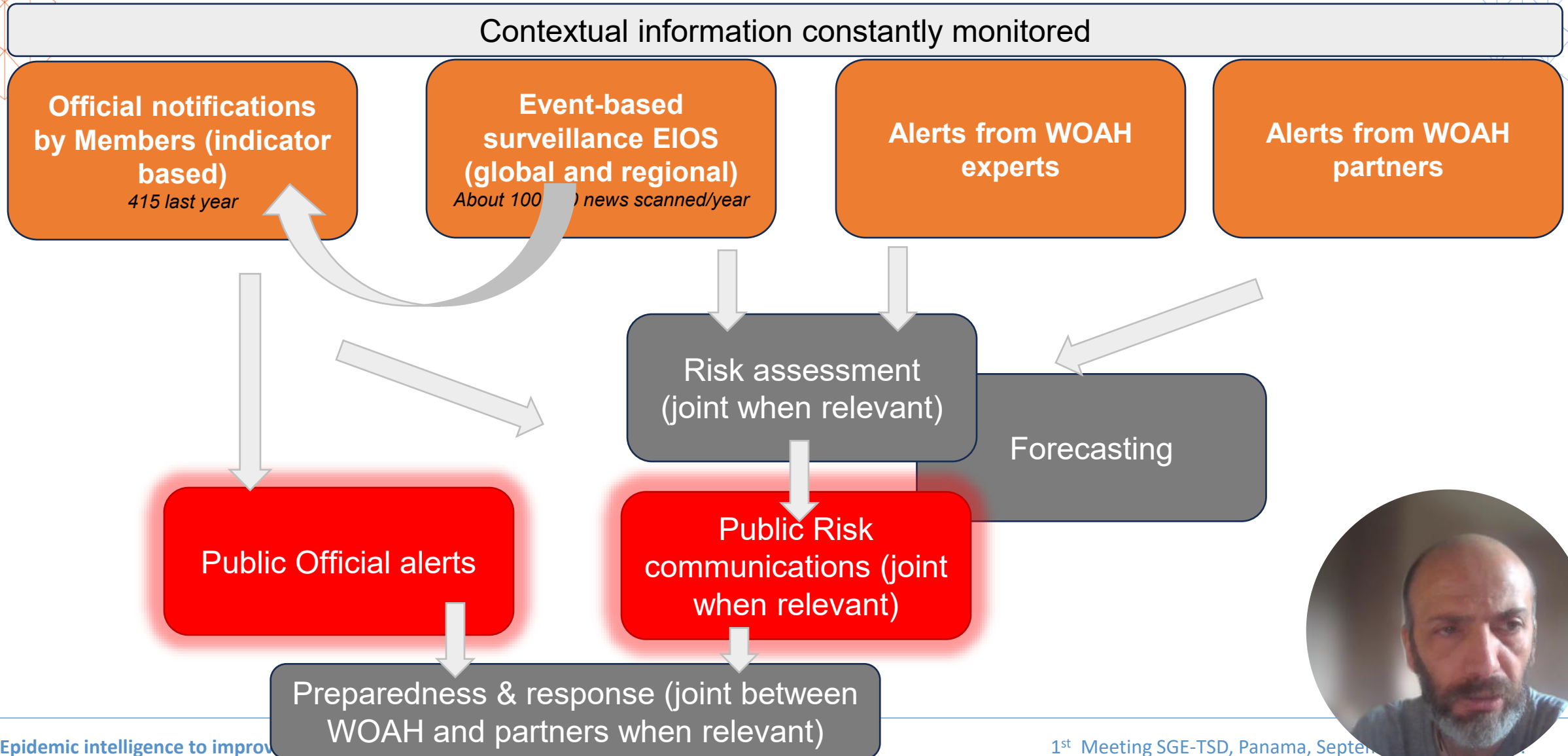
Functions of early warning and response related to epidemic intelligence

Risk assessment versus Risk management

Risk monitoring
Epidemic intelligence
Risk assessment
Risk management
Risk communication

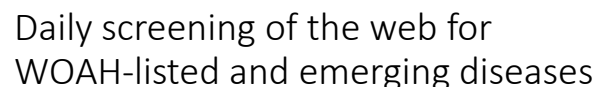


WOAH current epidemic intelligence framework





EIOS EPIDEMIC INTELLIGENCE
FROM OPEN SOURCES



723 disease categories

150,000 – 200,000 news/year

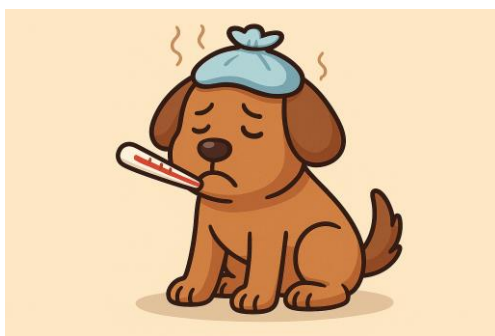
The screenshot displays the EIOS (Epidemic Intelligence from Open Sources) dashboard. The top navigation bar includes links for Monitoring, Documents, Dashboards, Training, Communities and Teams, Help and Feedback, and a Ticker. The main content area is divided into several sections:

- Board: OIE Diseases**: A world map showing the distribution of diseases, with black dots indicating outbreaks. The map is titled "119k TOTAL ARTICLES" and "3 of 200".
- TIME PERIOD**: A line graph showing disease incidence over time, with a date range from 01/01/2020 to 31/12/2021.
- CATEGORIES**: A list of disease categories, including African Horse Sickness Virus, African Swine Fever, American trypanosomiasis, Anthrax in Animals, etc.
- News Articles**: A list of news articles related to diseases, including "Omicron infection induces cross-reactive immune responses", "France - Min of Agri identifies 26 outbreaks avian flu virus in farms, 11 in wildlife and 3 cases in backyards", "Rip Bio (200119.5Z): Triple inactivated vaccines for chicken Newcastle disease, infectious bursal disease, and avian influenza (H9 subtype) obtained veterinary drug product approval numbers", "Japan - Authorities in Ehime prefecture will kill about 130,000 chicken bird flu outbreak https://t.co/148B3ouadK", and "Във Франция заклеха 600 000 домашни птици за месец заради птичия грип".

A circular inset in the bottom right corner shows a man with a beard and glasses, likely the researcher, looking at the dashboard.

1st Meeting SGE-TSD, Panama, September 2011

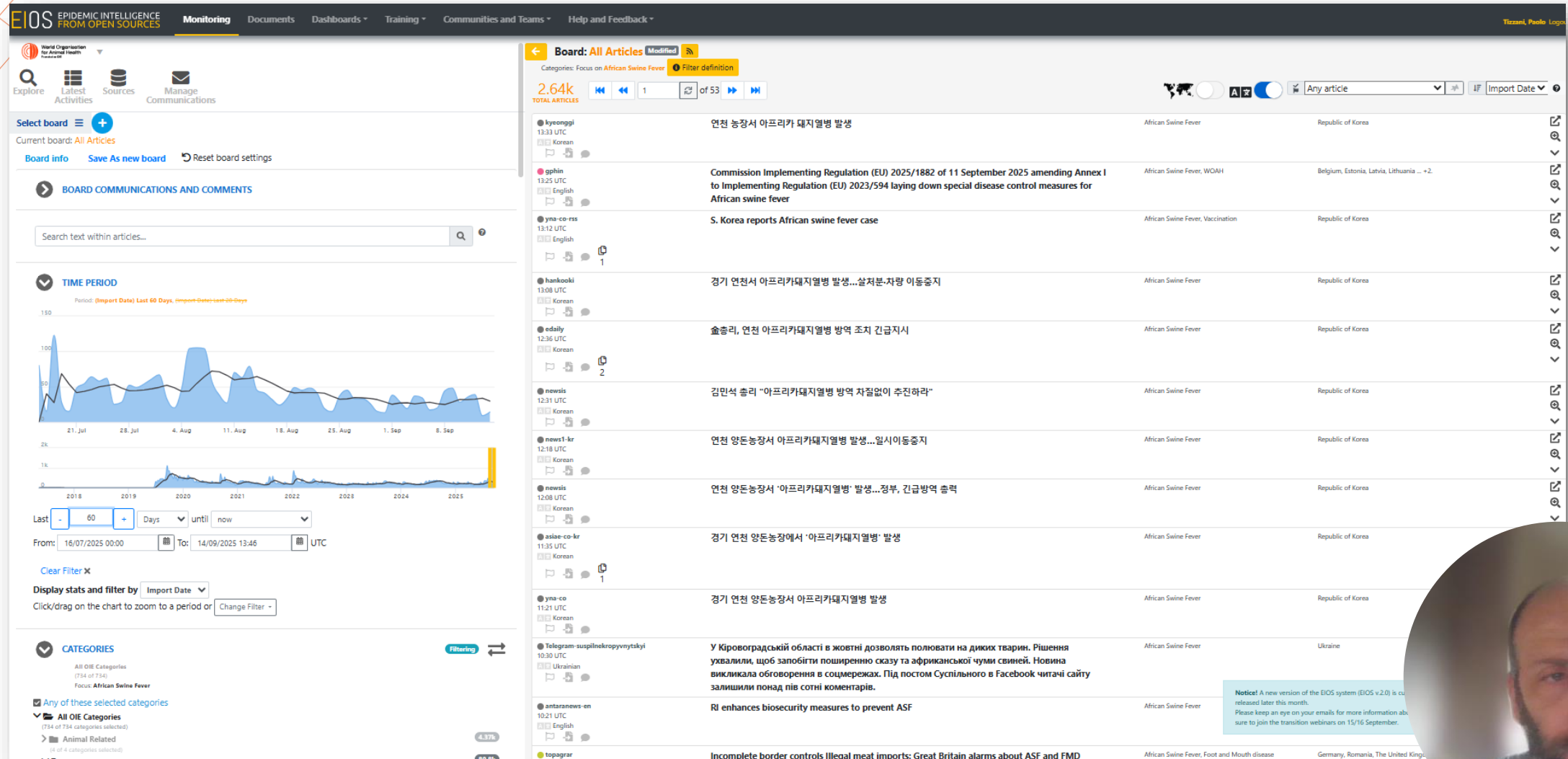
The EIOS system



WAHIS: World Animal Health Information System



How to improve early detection through epidemic intelligence – ASF example



Key messages and way forward – Epidemic intelligence for better data integration and use

Impact of epidemic intelligence

- Improve preparedness
- Improve early warning and response
- Improve official report sensitivity and timeliness
- Combat misinformation and disinformation
- Support risk assessment
- Guide and assess the implementation of preventing and control measures

Way forward

- Improve epidemic intelligence at the regional level
- Build on similar initiative such as the pilot currently ongoing in the Asia-Pacific region



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Thanks for your attention

