Food and Agriculture Organization of the United Nations
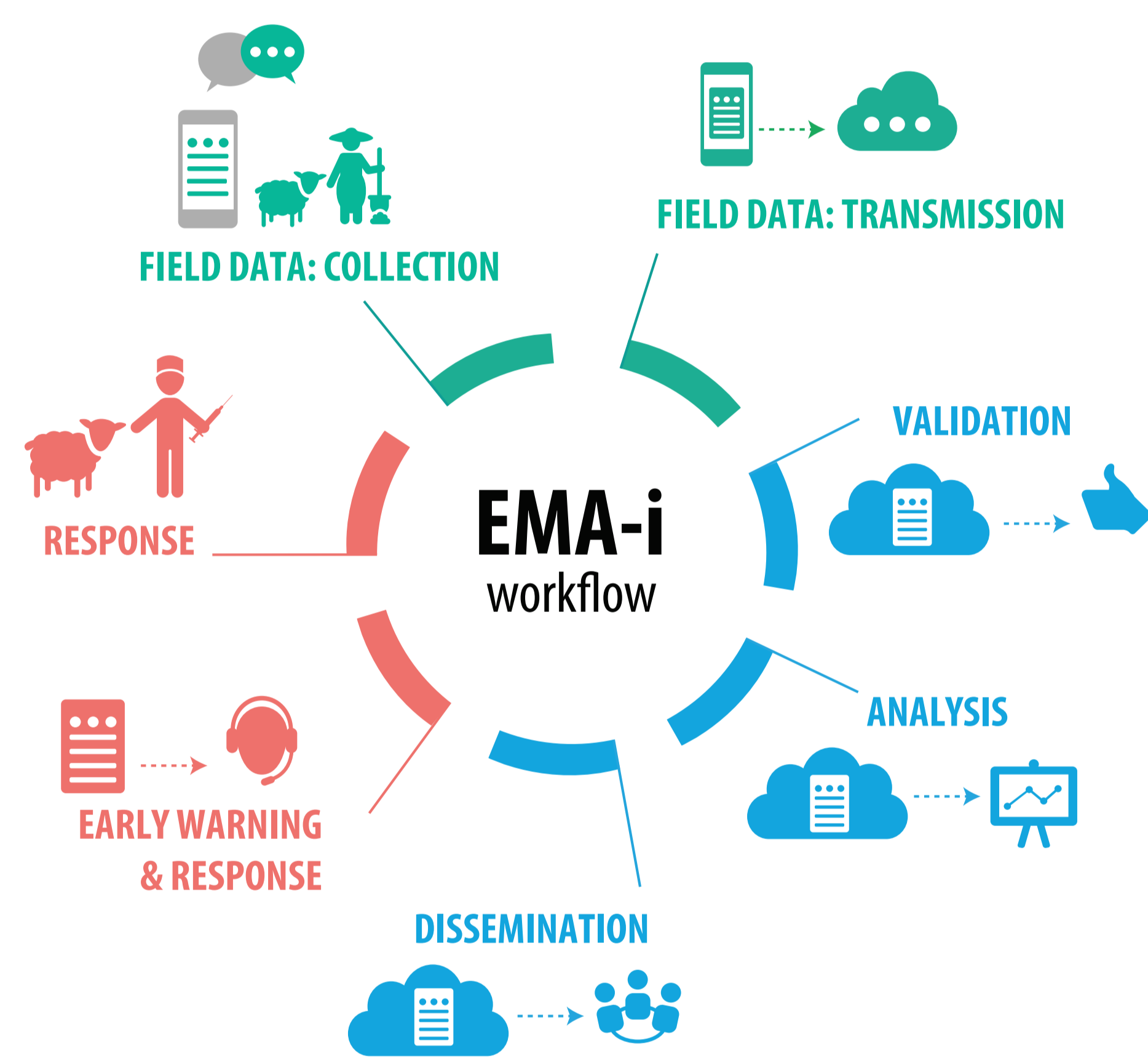
One Health Intelligence and early warning

A multi-scale community-based approach to enhance early detection for early response

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Introduction

In the last century, communities relied on communication in local languages, with limited global discourse deemed adequate for addressing disease outbreaks. However, the landscape has shifted dramatically due to globalization, climate change, and transportation shifts. These factors have transformed disease dynamics, prompting the need for a global response.

Diseases now spread through globalized networks such as processed food chains, international trade, and seasonal migrations, posing heightened pandemic risks. This necessitates enhanced surveillance and governance to effectively monitor and respond to emerging health threats on a global scale through the enhancement of national, global and global early warning systems.

EMA-i workflow

FIELD DATA: COLLECTION — FIELD DATA: TRANSMISSION — VALIDATION — ANALYSIS — DISSEMINATION — EARLY WARNING & RESPONSE — RESPONSE

Results: 10 years of EMA-i uses in Africa

State of the art

- 4.000 users
- 30-100% admin unit
- 40.000 reports
- > 200 types of diseases

Figure 1. Number of report per year

Figure 2. Number of countries per year

Figure 3. Historical deployment

EMA-i Use (number of Year): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11; Pilot or demo only (no official report)

■ Eastern Africa ■ Middle Africa ■ Southern Africa ■ Western Africa

Figure 4. Regional top 5 reported diseases by country

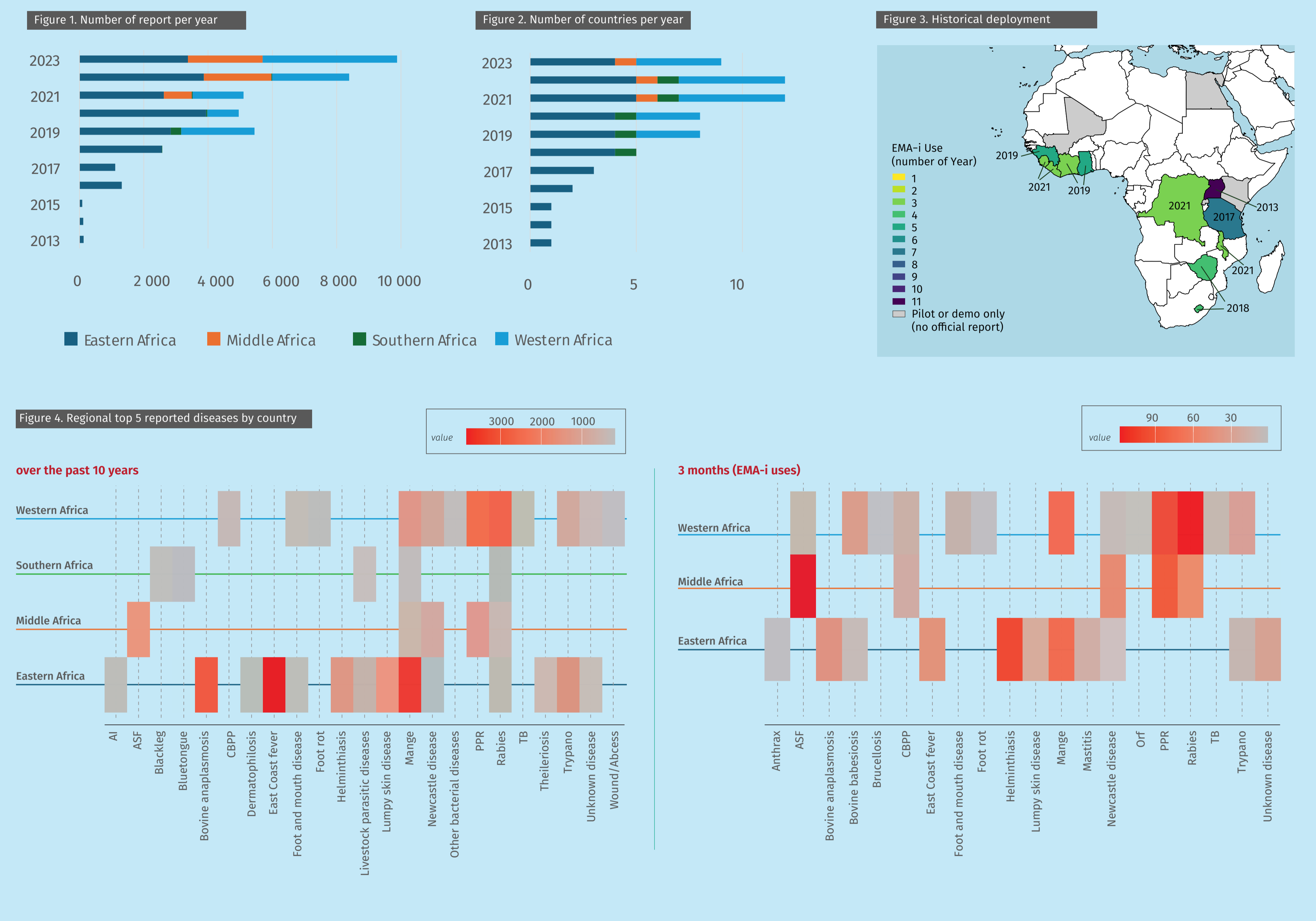over the past 10 years

3 months (EMA-i uses)

Material & Methods

To identify the top priority diseases from EMA-i's user perspectives and drive FAO's actions and recommendations, the 10 years EMPRES-i country data (2013-2023), have been accessed. Analyses, implemented using R software, were done on data aggregated to ensure the confidentiality.

Year of official reporting start/end, top reported diseases and yearly number of reports have been compiled by country and region.
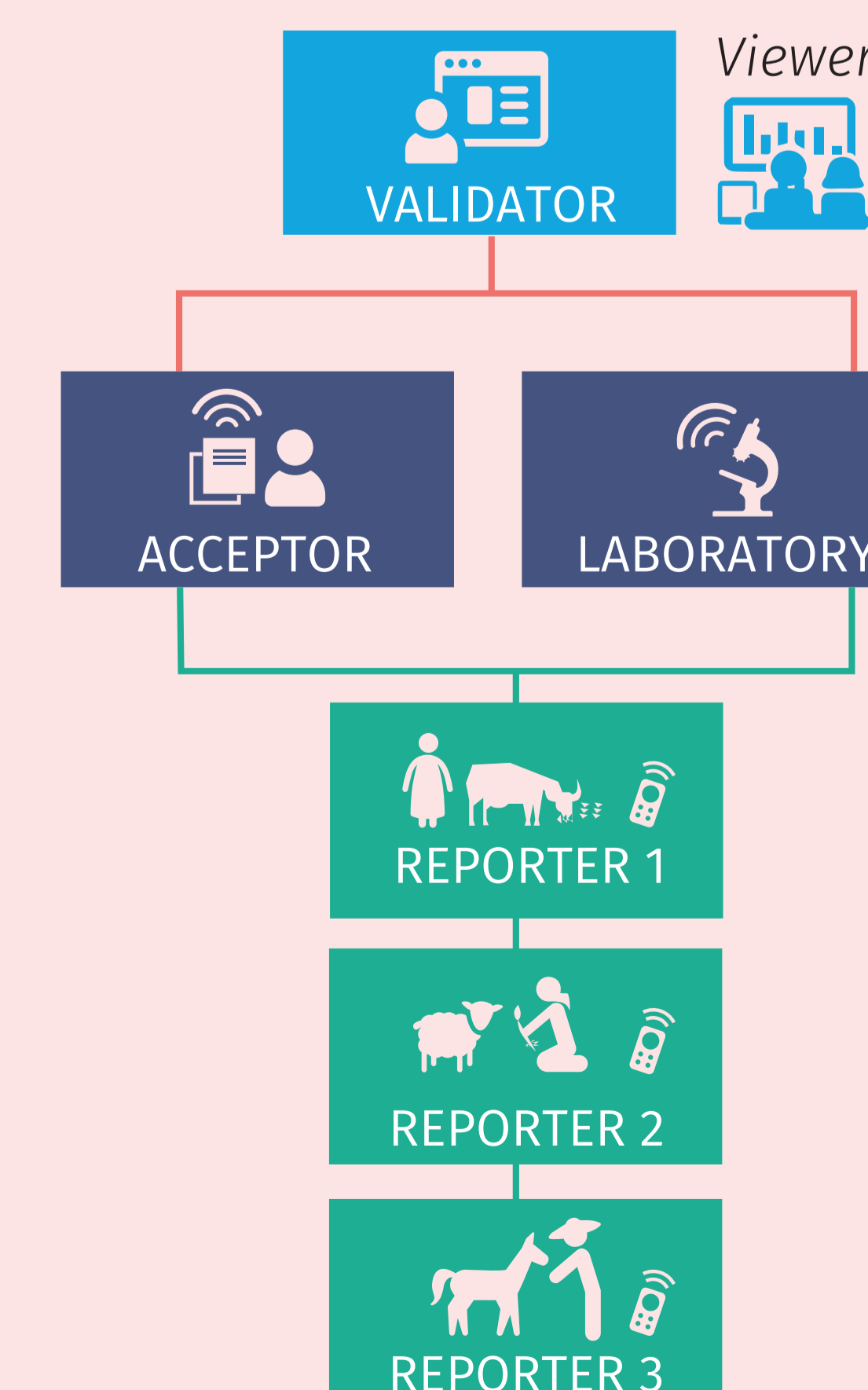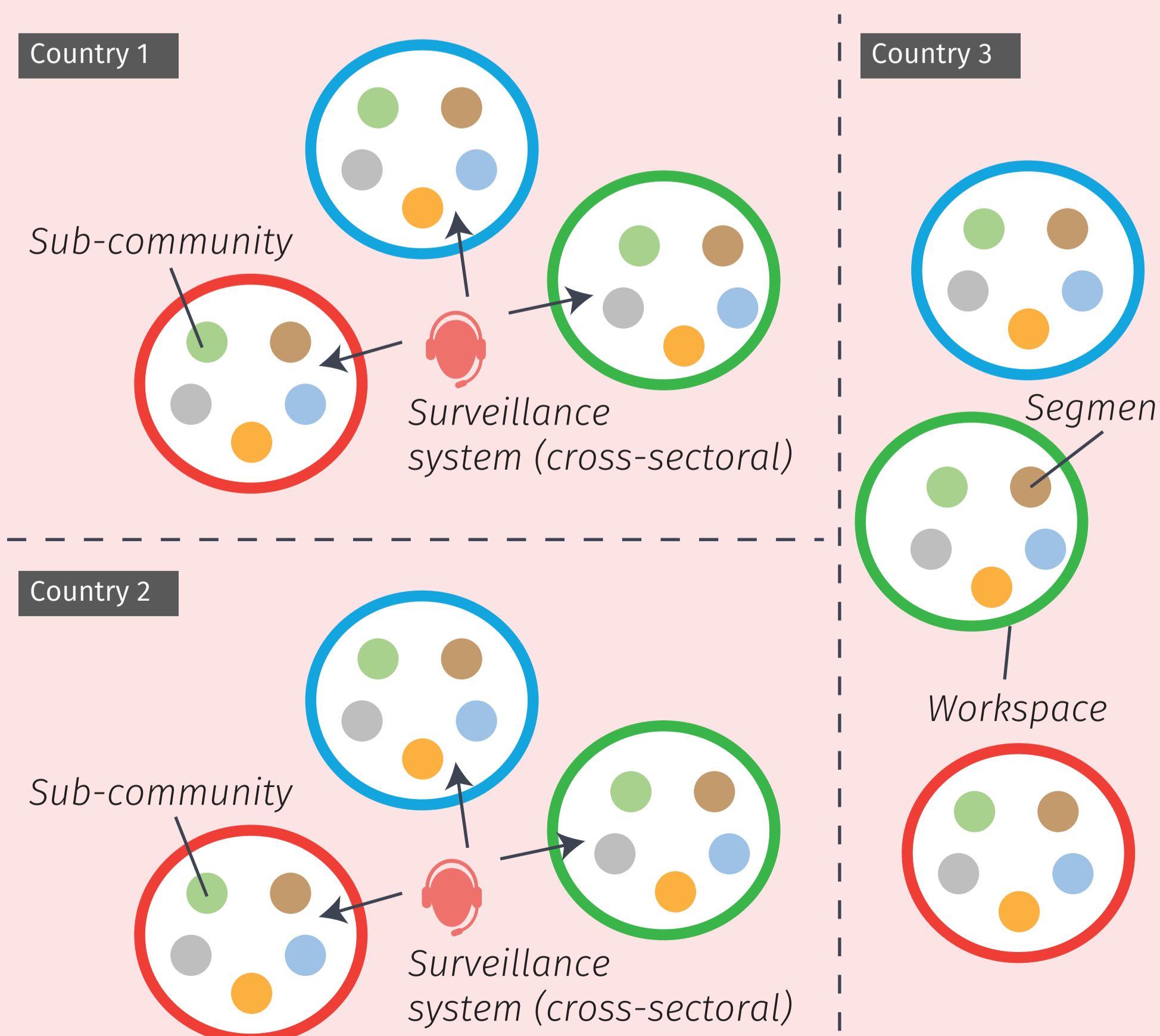
Discussion

The mobile application (EMA-i+) provides near real-time reporting for key users, allowing a cross-sectoral multi-level community-based surveillance implementation and supporting early detection and response activities. FAO emphasizes a One Health approach, integrated with existing systems such as Laboratory Information System (LIMS), Afyadata for Syndromic surveillance, and Diseases Health Information System (DHIS2/CDC) amongst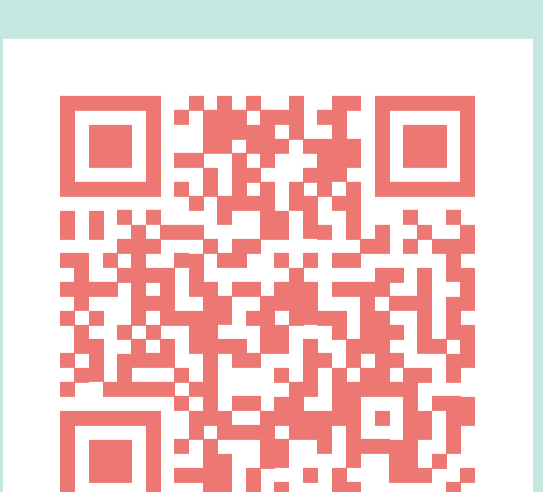 other. This strategy enhances disease intelligence and early warning capabilities, vital for global food security and public health.

FAO's initiatives focus on strengthening surveillance, fostering collaboration across sectors, and investing in capacity-building efforts. By leveraging technology and cross-sectoral partnerships, FAO aims to safeguard against emerging disease threats, ensuring a proactive and coordinated global response and prevent the next pandemic.

One Health Intelligence and Early Warning (EMPRES-i+/EMA-i+)

- Information sharing management based on data sharing agreement (when, who, what).
- Users can report in a specific segment and be informed about what is happening in surounding areas.
- Working within communities with privacy and full expert-knowledge based support as well as FAO's backstopping.
- Focus on Quality Assurance and Quality Control (QA/QC) for national report and integrate Laboratory results.
- Full control and customization to ensure the national governance with understanding of the risk in surounding areas.
- Communicate with national and international partners to receive and provide alert on TAD of interest.
- User friendliness.

Country 1 — Sub-community — Surveillance system (cross-sectoral)

Country 2 — Sub-community — Surveillance system (cross-sectoral)

Country 3 — Segment — Workspace

Viewer — VALIDATOR — ACCEPTOR — LABORATORY — REPORTER 1 — REPORTER 2 — REPORTER 3

EMPRES Global Animal Disease Information System (EMPRES-i+)

Informational session to Launch EMPRES-i+/EMA-i+