



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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Innovative Tools and Approaches for Surveillance in Animal Health

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FAO AGAH/GLEWS

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Why a mobile app for animal diseases surveillance/reporting?

- Enhance surveillance and communication in real time between stakeholders
- Information transmitted from local to central level
- Improve communication/coordination between local actors (veterinary services, animal health workers, laboratory experts)
- Effective and timely response to disease threats
- Feedback on guidance, advice, services, access to veterinary drugs to support disease management
- Cost/effective



EMPRES-i: Information – intelligence

EMPRES-i - Global Animal Disease Information System - Windows Internet Explorer
http://empres-i.fao.org/eipws3g/index_en.html#h=0

EMPRES-i - Global Animal Disease Information System

english français español

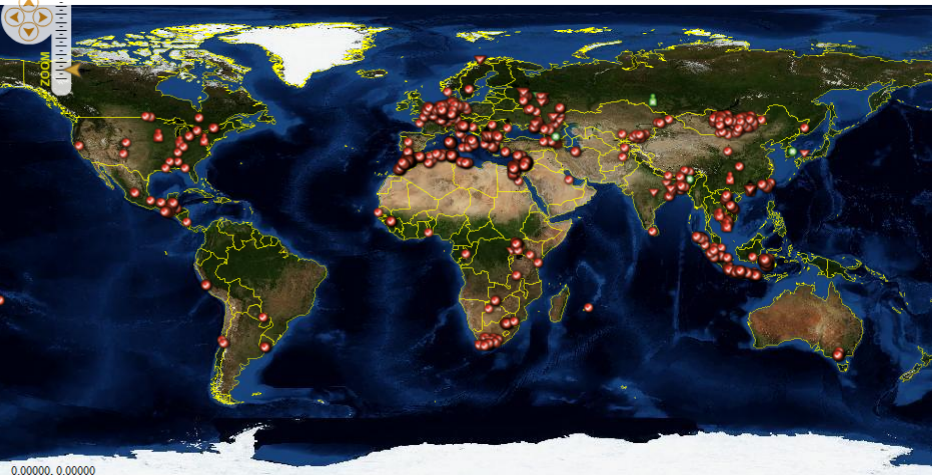
EMPRES-i
Global Animal Disease Information System

My EMPRES-i RSS FEEDS USER MANUAL

EMPRES Global Animal Disease Information System (EMPRES-i) is a web-based application that has been designed to support veterinary services by facilitating the organization and access to regional and global disease information. Timely and reliable disease information enhances early warning and response to transboundary and high impact animal diseases, including emergent zoonoses, and supports prevention, improved management and progressive approach to control.

DISEASE EVENTS ▶

EMPRES-i provides up to date information on the global animal disease distribution and current threats at national, regional and global level. Disease Events can be presented on a map and further analyzed by choosing from a variety of optional layers.



0.00000, 0.00000

1 / 156 [1 - 10]

- Highly pathogenic avian influenza
09/02/2012 - Viet Nam
- Highly pathogenic avian influenza
09/02/2012 - China, Hong Kong SAR
- Schmallenberg
08/02/2012 - Netherlands
- Schmallenberg
08/02/2012 - Netherlands
- Schmallenberg
08/02/2012 - Netherlands
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08/02/2012 - Netherlands
- Schmallenberg
08/02/2012 - Netherlands

DIRECTORY ▶

EMPRES-i provides contact details of the Chief Veterinary Officers (CVOs) for each country.

LABORATORIES ▶

EMPRES-i provides contact information of FAO/OIE reference laboratories and Regional laboratory networks.

LIBRARY ▶

EMPRES-i provides access to FAO technical publications such as bulletins, journals, reports, documents and other publications.

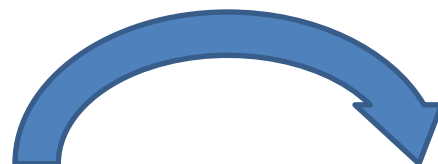
http://empres-i.fao.org

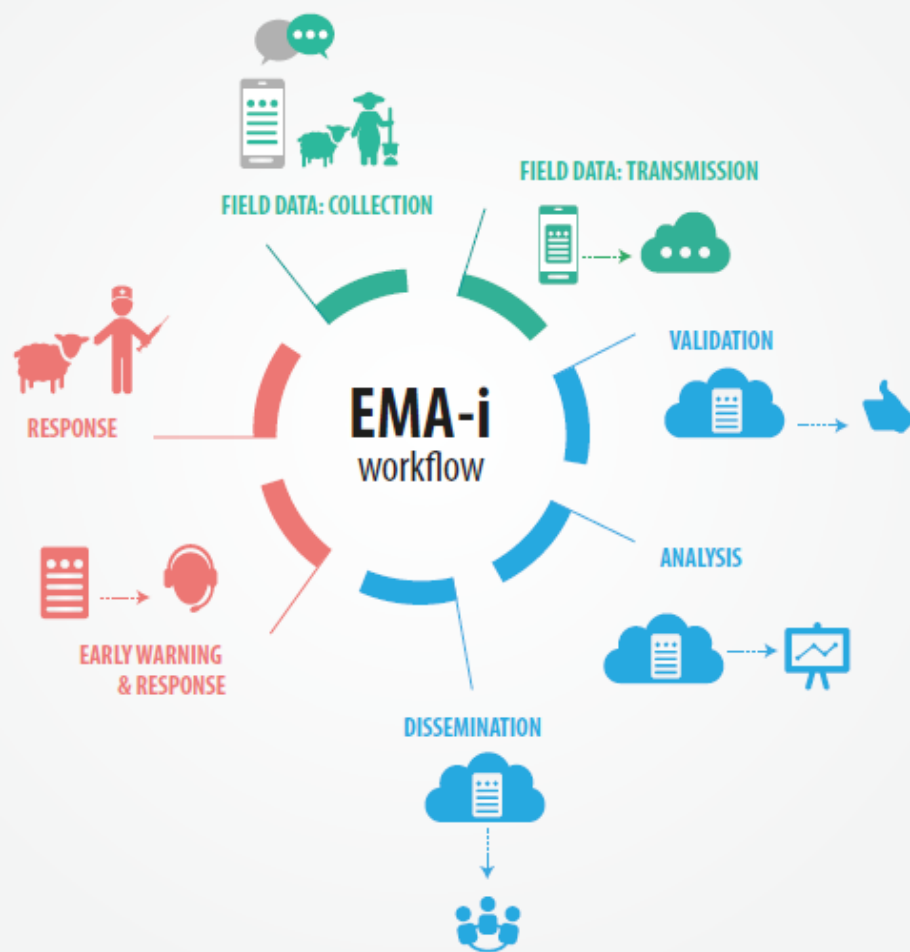
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EMA-i and EMPRES-i







Event Mobile Application (EMA-i)

- **To collect** livestock disease data from the field
- To report in **real-time** livestock disease data
- **To safely store** epidemiological data in one database – EMPRES-i platform
- **To access** to reported outbreaks' from a map ("Event Near me")
- **To analyse/visualize** the reported data in charts ("Report Analysis")





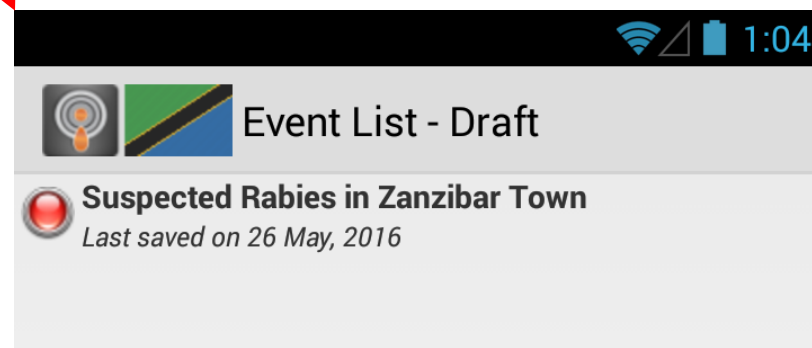
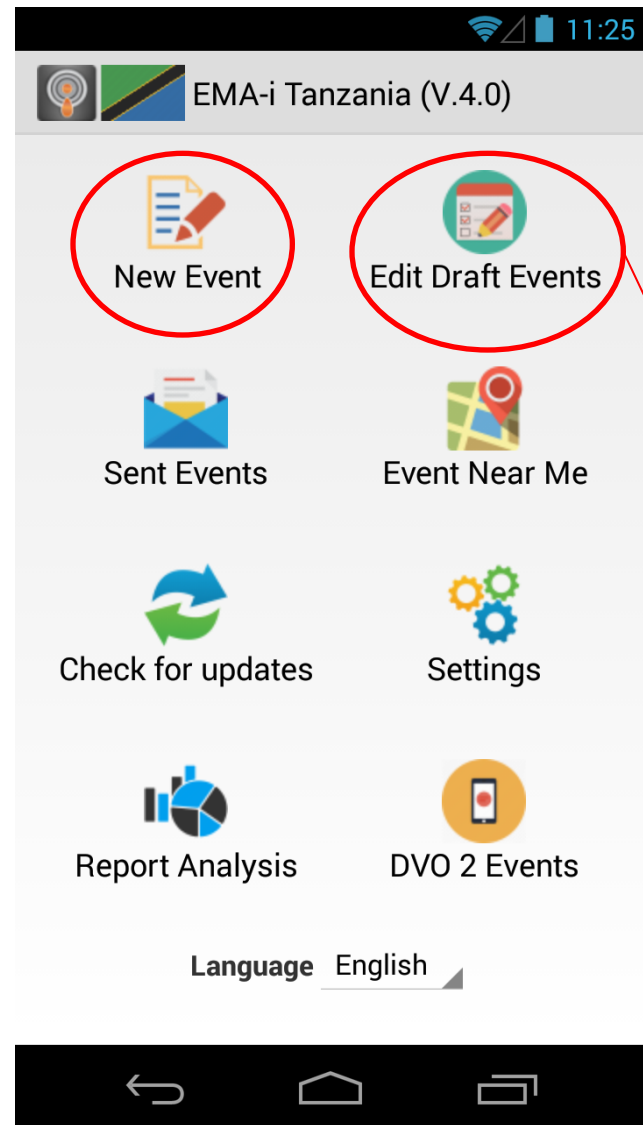
FAO's Event Mobile Application (EMA-i)





EMA-i – data collection:

- ✓ Data can be collected with or without internet connection
- ✓ Data from an event can be collected in different moments
- ✓ Drafts are saved and stored in the app and can be easily accessed at the user's convenience





Methodology - EMA-i at country level

- **STEP 1 - Preparatory phase: adapting EMA-i to the national animal disease surveillance system**

- Assessment of existing national surveillance and reporting system
- Agreement on data property (FAO and National authorities)
- Personnalisation of EMA-i (Actors involved)
- Procurement (smartphones, internet...)
- Training programme

- **STEP 2 - Customisation & start-up of EMA-i:**

- Customisation of EMA-i
- Training
- EMA-i/EMPRES-i tested at country level
- Standard Operational Procedures (SOPs)

- **STEP 3 – Monitoring & Evaluation**

- Strengths and weaknesses of EMA-i

- **STEP 4 – Improvement of EMA-i**

EMA-i: implementation in Uganda (2013-2016)



1) Phase 1: First implementation (January 2013 – July 2014)

- a. Preparation and customization: January 2013 - July 2013
- b. Implementation – 10/112 districts (15 users)
- c. First evaluation: July 2013 – July 2014

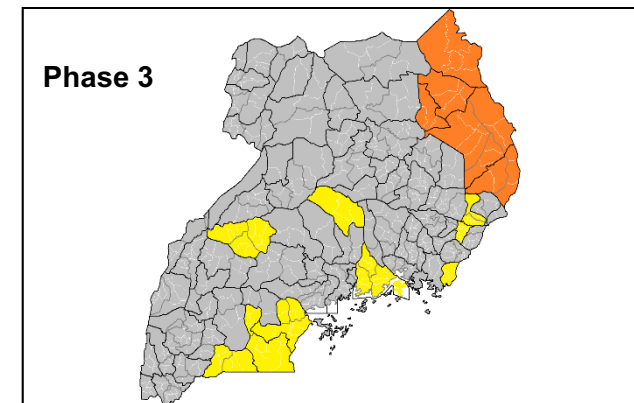
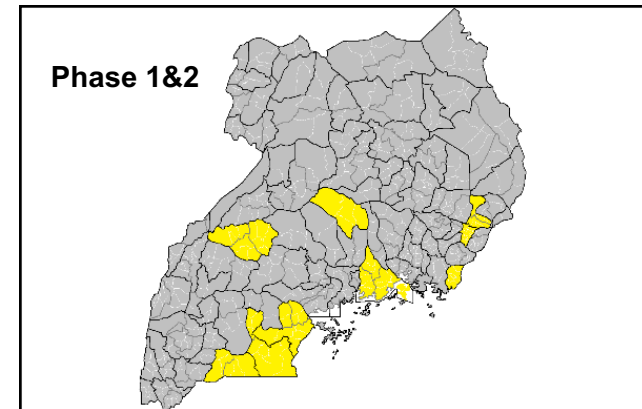
2) Phase 2: Second implementation (July 2014 - December 2015)

- Expansion within the 10 districts
➡ More users (33 users)

3) Phase 3: Third implementation (January 2016 -> onward)

- Geographical expansion to **Karamoja Region** (additional 7 districts)

➡ More users & more districts



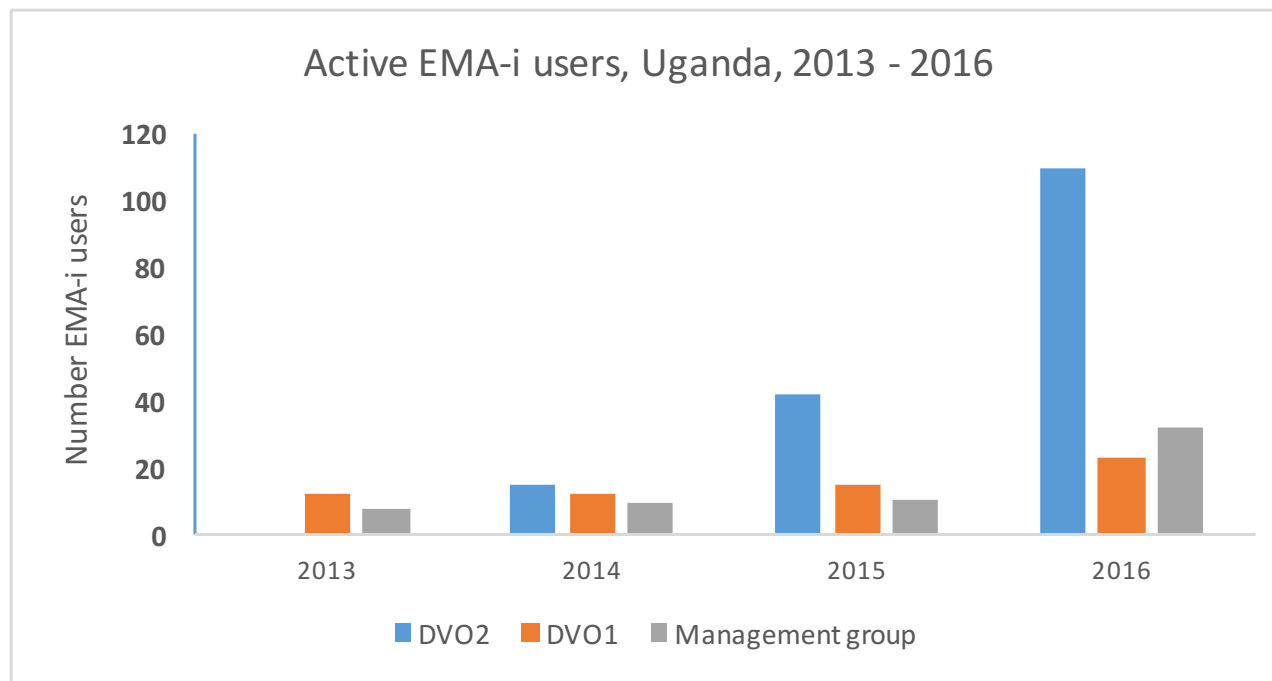
Uganda: Overall results since July 2013



- **EMA-i active users: 162 Animal Health Officers**

- 110 DVO 2
- 20 DVO 1
- 32 from the Management Group (NADDEC):
 - 18 Verification
 - 20 Validation

- **1,158 disease events reported/sent with EMA-i.**





EMA-i Mali

- Period of implementation:
November 2016-April 2017
- 3/11 districts : Koulikoro, Kayes et Sikasso
- Number of users: 25 (districts) + 10 (Management)





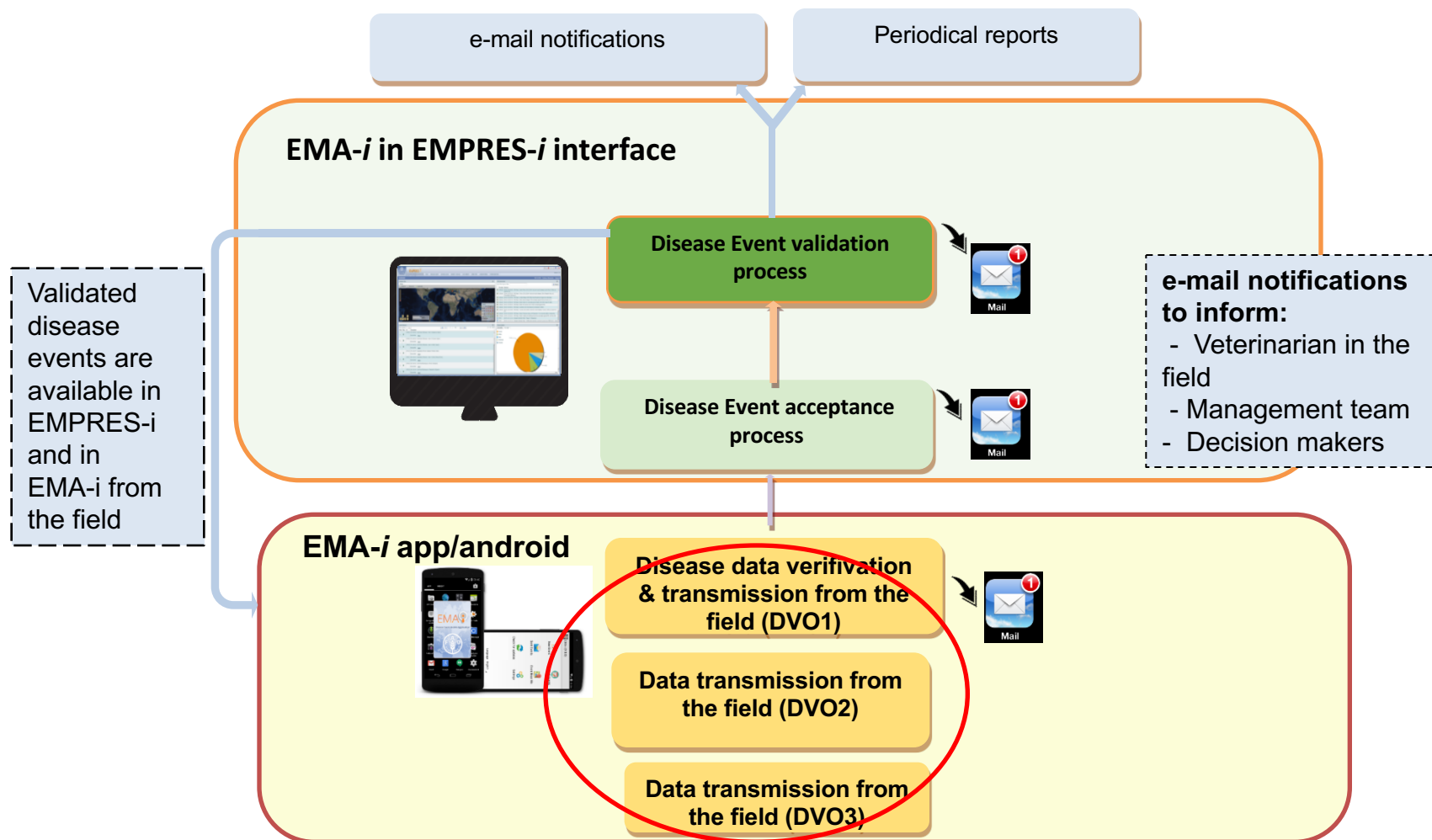
EMA-i Tanzania (Zanzibar)

- Period of implementation: June 2016 – February 2017 (on-going)
- All the Island (11 districts)
- Number of users: 35 veterinarians/paraveterinarians





EMA-i – Flexible tool





EMA-i Tanzania (FAO/SACIDS)

- EMA-i workshop, Dodoma, United Republic of Tanzania
6-11 November 2017
- Event Mobile Application (EMA-i) and AfyaData are being introduced to the national disease surveillance system to improve surveillance of animal health events at various levels.
- Future plans include integrating data collected through AfyaData and EMA-i, training for the new EMA-i and AfyaData users, improving, customizing and configuring tool variables in compliancy to Tanzanian context



EMA-i implementation at country level

- East Africa:

- Uganda → started in 2013 and currently implemented in 21 district;
- Tanzania → started in Zanzibar in 2016 and mainland in 2017

- West Africa:

- Mali → started in 2016 and currently implemented
- Ghana → under preparation
- Cote D'Ivoire → plan for 2018

- Southern Africa:

- Zimbabwe → under preparation 2017/2018
- Lesotho → under preparation 2017/2018



FAO- Digital technical services: mobile app for livestock farmers

- Keeping your livestock healthy and productive
- Target audience: not only farmers but also Extension workers, FFS, community based animal health workers
- Species: Dairy Cattle, Poultry and Pigs.
- Small scale production systems in Nutrition; Feeding strategies, providing appropriate quantities of **water & feed**.
- Disease and Animal Health issues, Prevent diseases; biosecurity practices, main diseases.

CURE AND FEED YOUR LIVESTOCK

Animal diseases control and animal feeding strategies.

Health component

Livestock owners and their families without access to veterinary services and assistance lose their assets and source of livelihood due to diseases that could be prevented or easily treated.

The app will allow livestock owners to enter information on clinical signs and syndromes (including pictures) and receive immediate information on diagnosis/differential diagnosis and cure and prevention measures.



One cow per poor family

Links with Project One Cow per Poor Family in Rwanda.

Involvement of state and district veterinarians/livestock officers, community animal health workers foreseen.



Feed component

Feed is the key factor in animal production. Only when animals are fed a balanced ration will production level be satisfactory.

Locally available feedstuffs will vary in quality and quantity according to the time of the year and the location.



Feedipedia

The app uses data from Feedipedia and local data on chemical composition and nutritional value. Feedipedia is an open access information system on animal feed resources that provides information on nature, occurrence, chemical composition, nutritional value and safe use of nearly 1400 worldwide livestock feeds. It covers feeds mainly available in tropical, subtropical and Mediterranean regions but also includes common feeds used in temperate countries.

Provide real time information and advice to livestock owners

The app will help reducing losses in assets and optimize productivity using locally available resources, create groups of farmers that exchange information and learn from the experience of others and good practices in animal feeding, hygiene and disease prevention.



FAO DIGITAL SERVICES PORTFOLIO

Food and Agriculture Organization of the United Nations



FAO's Global Coordination Meeting on Field Veterinary Epidemiology Capacities (FETP-V) (February 2017)

- To map out the status of global veterinary epidemiology capacities and FETP-V programs implemented and related training programs in Africa and Asia,
- To identify a means to map the workforce under a **Framework for a harmonized approach**.
- To establish core competencies for FETP-V training and set standards for trainings
- To develop a strong mentorship network of institutions and partners at all levels
- Partners: WHO, OIE, CDC, USAID, DTRA, USDA, TEPHINET, Universities



Rift Valley Fever Early Warning Tool (FAO prototype)

Near-real time monitoring and mapping of areas at risk of RVF vector amplification. Based on Google Earth Engine technology and RVF risk modelling algorithms (i.e., rainfall and vegetation anomalies; dry spells)

The screenshot displays the Google Earth Engine web interface. The top navigation bar includes the Google Earth Engine logo, a search bar, and a user profile dropdown. The left sidebar shows a file explorer with folders like 'Scripts', 'Docs', and 'Assets'. The main area is divided into three panels: a script editor, a console, and a map view.

Script Editor: The script is titled 'rvf-ui-integrated-v7_20170405'. It contains the following code:

```
Imports (3 entries)
var modis: ImageCollection "MYD13Q1.005 Vegetation Indices 16-Day Global 250m"
var appUI: Object (0 properties)
var rvfe: Fusion Table "test_EMPRESFT" (212 rows, 5 columns)

1 //
2 // November 2016 - Erik van Ingen (CIO) - Claudia Pittiglio (AGAH)
3 // This script uses Modis in order to calculate the accumulated average anomalies on the NDVI.
4 // The anomalies are part of an indicator for the Rift Valley Fever. The other part of the
5 // indicator comes from the calculated dryspells, which is another script.
6
```

Console: The console shows the output of the script, including a list of months and years.

| uiMonths | JSON |
|--------------------------------|------|
| 95 | |
| years | JSON |
| List (16 elements) | JSON |
| months | JSON |
| ImageCollection (176 elements) | JSON |

Map View: The map shows a satellite view of a region in East Africa, with red dots indicating Rift Valley Fever hotspots for vector amplification. The map includes a legend, a scale bar, and a 'Layers' panel.

FA/OIE/WHO Common Vision:

To improve global disease prevention, detection, early warning and response from biological threats (GHSA, G7 EIOS)

