



SPATIAL DATA INFRASTRUCTURE (SDI) FOR ADDRESSING HUMAN-NATURE CONFLICTS IN THE SUB-SAHARAN AFRICA REGION

A conceptual framework for building an evidence based solution to Address the problem and to meet SDGs



Presented by

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Contributing partners:



esri



INTRODUCTION OF RESTEC

- Company Name : Remote Sensing Technology Center of Japan
- Head Quarter : Tokyo, Japan
- Established : August 1, 1975
- Employees : 259 staff (as of Jan 1, 2022)
- Purposes : To research and study on remote sensing
To develop technologies of remote sensing
To promote utilization of remote sensing

Our Products:

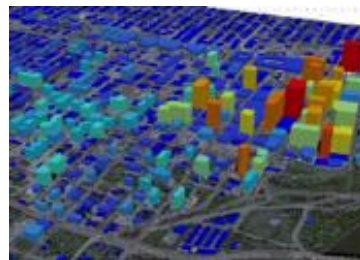
◆AW3D (Digital Elevation Model)



AW3D Standard
(Global Level)



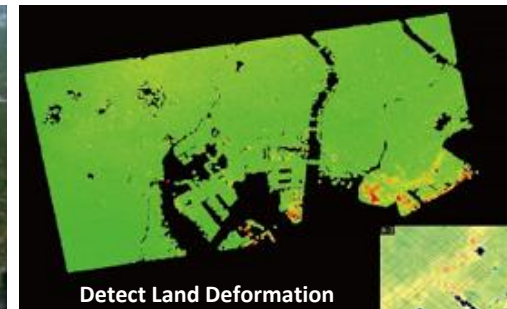
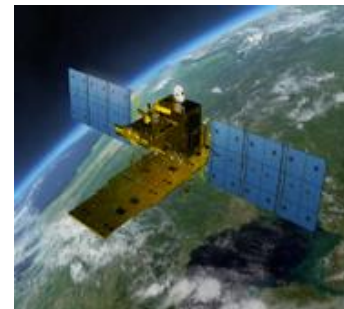
AW3D Enhanced
(City Level)



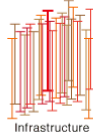
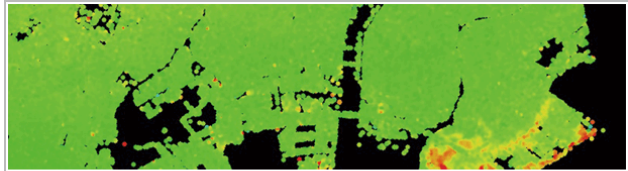
AW3D Building
(Building Foot Print)

◆ALOS-2

(Japan Aerospace Exploration Agency's SAR Satellite)

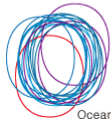


APPLICATION



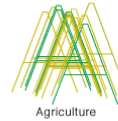
Infrastructure

Detecting Dangerous Spots in Social Infrastructure in their early stages



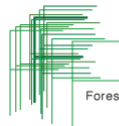
Ocean

Surveying Wider Areas of Global Oceans and Smaller Localized Areas of Ocean



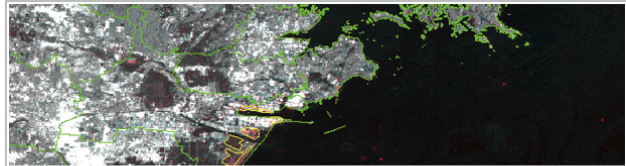
Agriculture

Using Satellite Data to Vitalize Agriculture and Solve the Problem of Food Shortages



Forest

Japan's Top Professionals Monitor Forests around the World from Space



Disaster

Minimizing Flood Damage by Ascertaining the Movement, Spread and Amount of Water



GEO-SPATIAL TECHNOLOGY TO MONITOR PRESSING BIODIVERSITY PROBLEMS

Supporting global implementation of **SDG 9, 15 and SDG 16**

SDG 9

Helping to build resilient infrastructure, promoting inclusive and sustainable industrialization, and fostering innovation

SDG 15

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests and halt biodiversity loss

SDG 16

Promote peaceful and inclusive societies for sustainable development

Human-wildlife Conflict is a major problem in Sub-Saharan Africa



Image Copyright© Baraka FM

Poaching continues to be a challenge in Sub-Saharan Africa



Image Copyright@The David Sheldrick Wildlife Trust

Conflicts between indigenous people, pastoral and Agro-pastoral communities



Image Copyright
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Science-Policy Forums to address the challenges related to
information sharing on Human-Nature Conflicts
March 3, 2014 -Tokyo Conference on Combating wildlife Crime.
United Nations University, Tokyo.



Moderator: Dr. Remi Chandran, Researcher, United Nations University & Chief Policy Advisor of Wildlife Enforcement Monitoring System Initiative.

Panelists: Ms Maria Mutagamba, Minister of Tourism, Wildlife and Antiquities of Uganda; Mr.Kunio Mikuriya, Secretary-General of the World Customs Organization; Ms. Elizabeth Mrema, Executive Secretary CBD, Dr. Ng Chong, Director, Campus computing, United Nations University; Prof. Robert Hoppe- University of Twente; Vivek Menon Executive Director Wildlife Trust of India.

Science-Policy Forums to address the challenges related to information sharing on Human-Nature Conflicts
Pan-African Conference
Strengthening Information Sharing Infrastructure and Governance Frameworks to Address Human-Nature
Conflicts - Arusha- Tanzania, June 17-19, 2019



The distinguished delegation included Hon. Dr. Hamisi A. Kigwangalla (MP)-Minister for Natural Resources and Tourism; His Excellency Mr. Shinichi Goto, Ambassador of Japan; Ms. Jenny CORREIA NUNES Head of Section, EU Delegation to Tanzania; UNDP Resident Representative of Tanzania; Permanent Secretary of MNRT, Director of MNRT and President of RESTEC.

Science-Policy Forums to address the challenges related to information sharing on Human-Nature Conflicts

TICAD -7 Side Event



Strengthening Information Sharing Infrastructure and Governance Frameworks to Address Human-Nature Conflicts



TICAD -7 Side Event

Strengthening Information Sharing Infrastructure and Governance Frameworks to Address Human-Nature Conflicts

A high level panel of experts attended the side event organised by Lusaka Agreement Task Force (LATF) supported by RESTEC



His Excellency, Félix Tshisekedi
President of Democratic Republic of Congo



Dr. Aloyce Nzuki ,Permanent Secretary of
MNRT, Republic of Tanzania



Prof. Chiho Watanabe
President , NIES Japan



Dr. Midori Paxton, Head of Ecosystems
and Biodiversity, UNDP

The Governing Council of Parties to the Lusaka Agreement Task Force - 11th March 2022.



Ambassador of Japan to Zambia, H.E. Mr. Ryuta Mizuuchi , Speaking on the occasion of the Governing Council of LATF



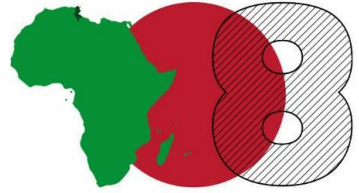
Mr. Evans Muhanga, Permanent Secretary at Ministry of Tourism, speaking on the occasion

The Governing Council of Parties to the Lusaka Agreement Task Force - 11th March 2022.



The Governing Council approved the decision to develop a Spatial Data Infrastructure or a regional information command and control center (CCC) as envisioned in the outcomes of the Pan African Conference on “Strengthening Information Sharing Infrastructure and Governance Framework to Address Human-Nature Conflicts” held in June 2019 in Arusha, Tanzania and the TICAD-7 Side Event held in August 2019, in Yokohama, Japan

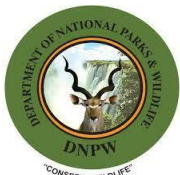
TICAD Tokyo International Conference
on African Development



Tunisia
2022

Official Side Event

Spatial Data Infrastructure for Addressing Data Gaps
for resolving Human-Nature Conflicts and Meeting
Sustainable Development Goals in Africa



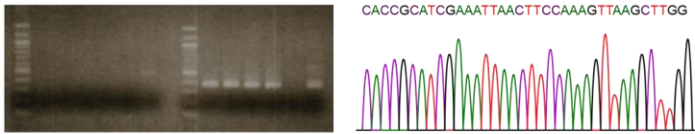
Work of National Institute of Environmental Studies

Method of species identification

DNA barcoding (COI and Cyt b)



DNA extraction and Geo-coding



PCR with primers for DNA barcoding Sequencing

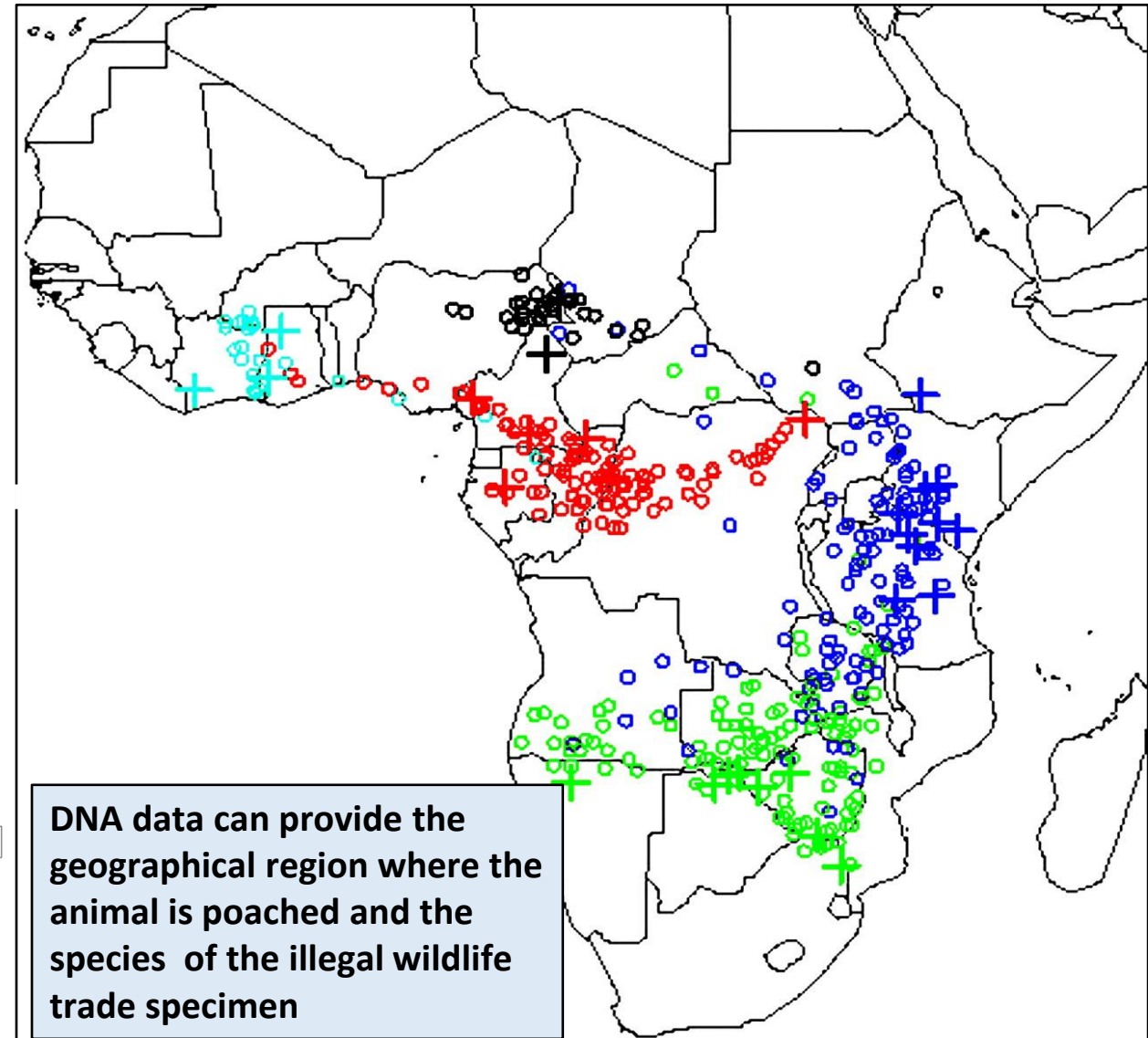


<https://blast.ncbi.nlm.nih.gov/Blast.cgi>

Comparison with a registered sequence in the databases

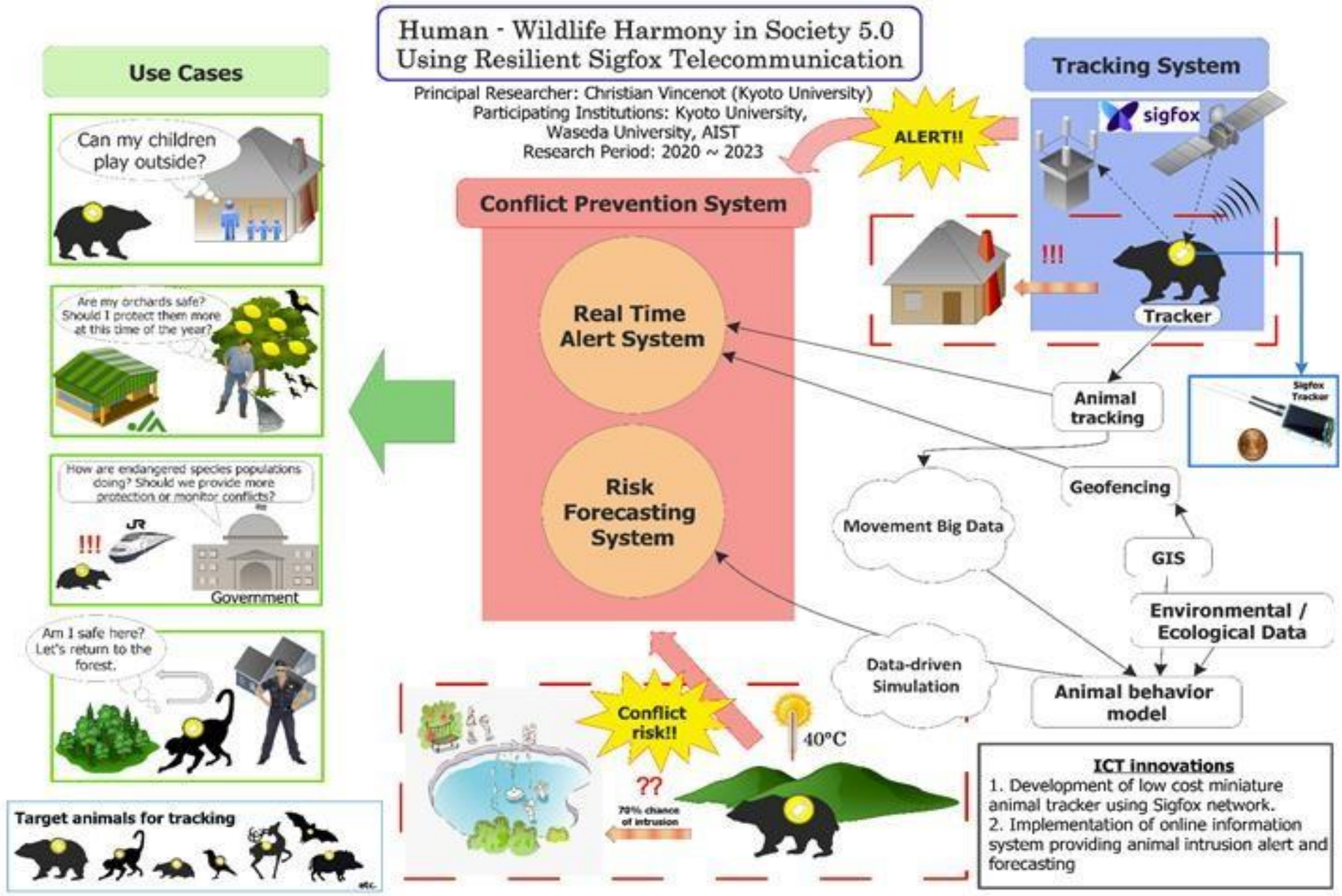
Copyright@ Dr. Manabu Onuma, NIES, Japan

Work of University of Washington



DNA data can provide the geographical region where the animal is poached and the species of the illegal wildlife trade specimen

Science Application - Transfer of Technology– Sensors for Addressing Human-Wildlife Conflicts



Japan

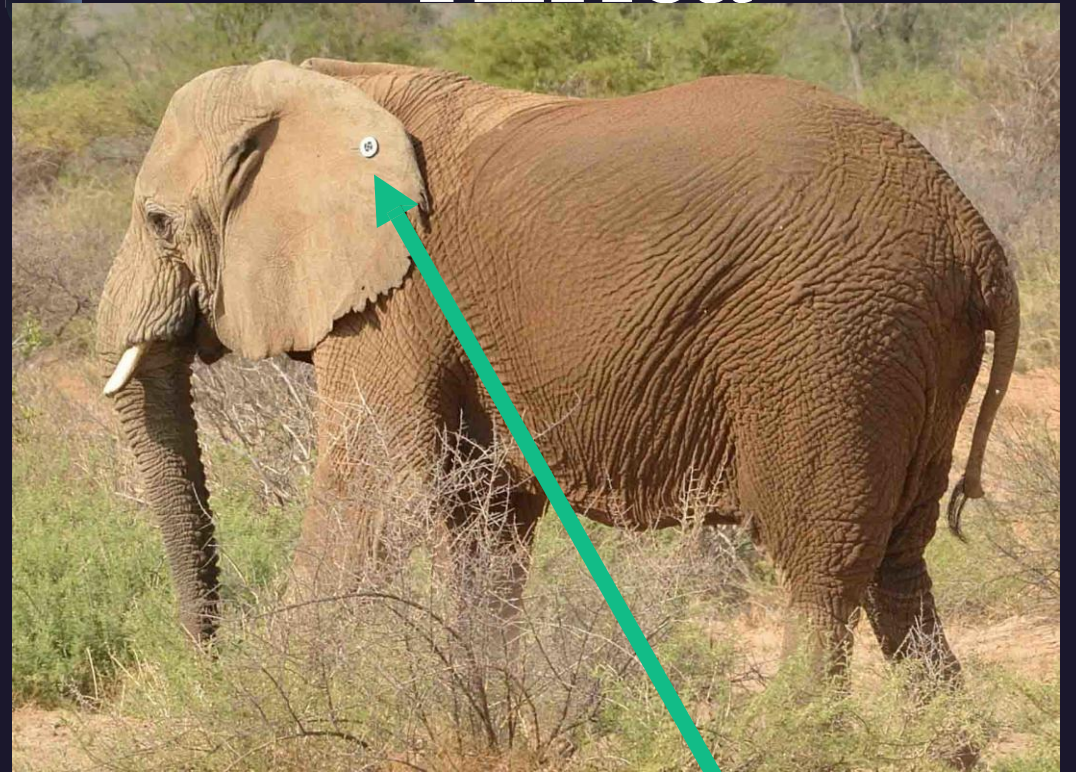


Asiatic Black Bear
Ursus thibetanus
(Nagano Pref.)

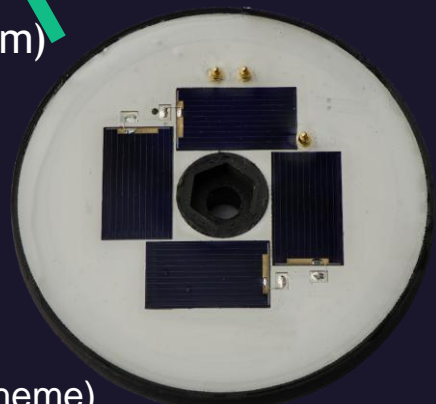


Ryukyu fruit bat
Pteropus dasymallus
(Okinawa Pref.)

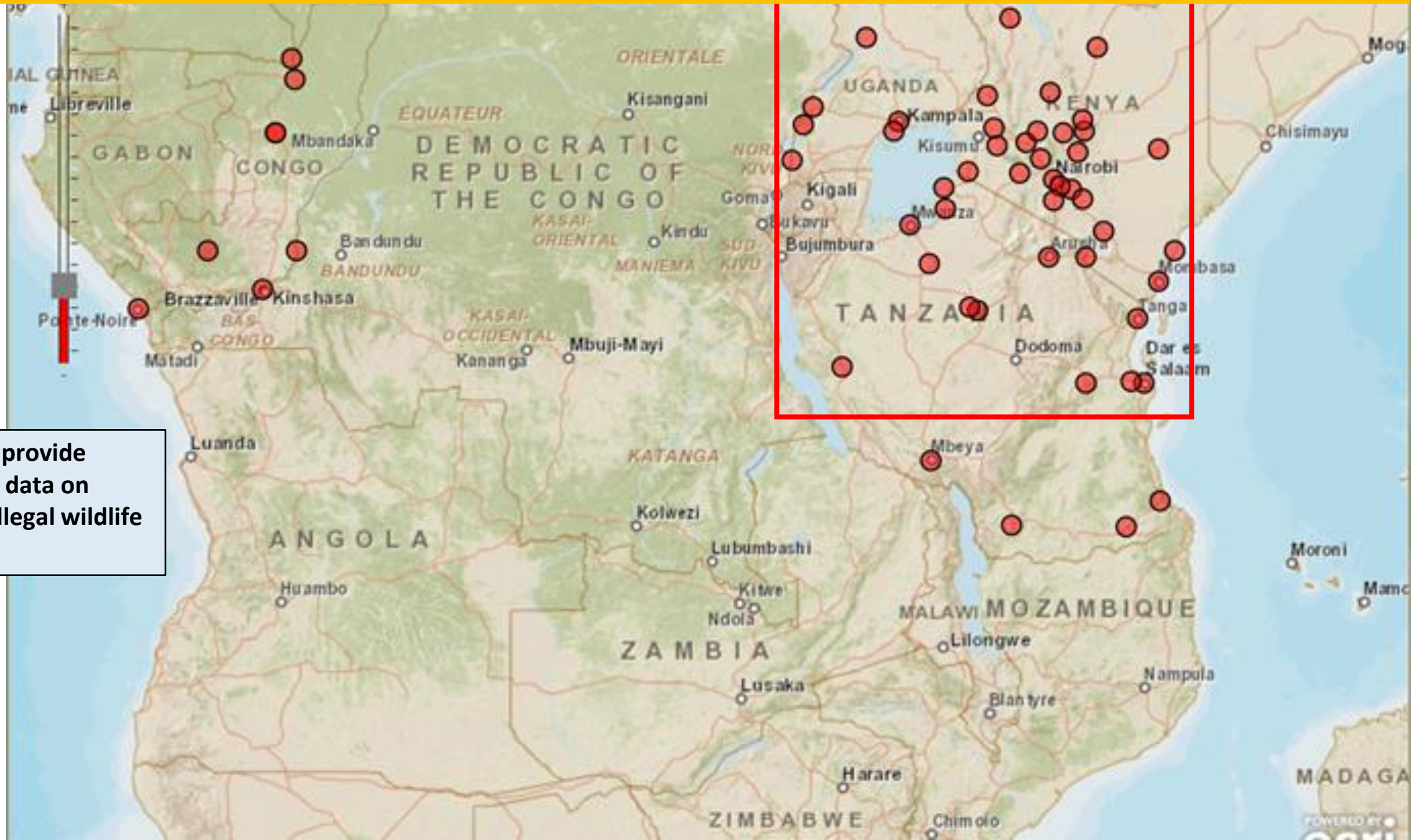
Africa



Early tracker testing only (not full system)
Elephants, Giraffe, Cheetah

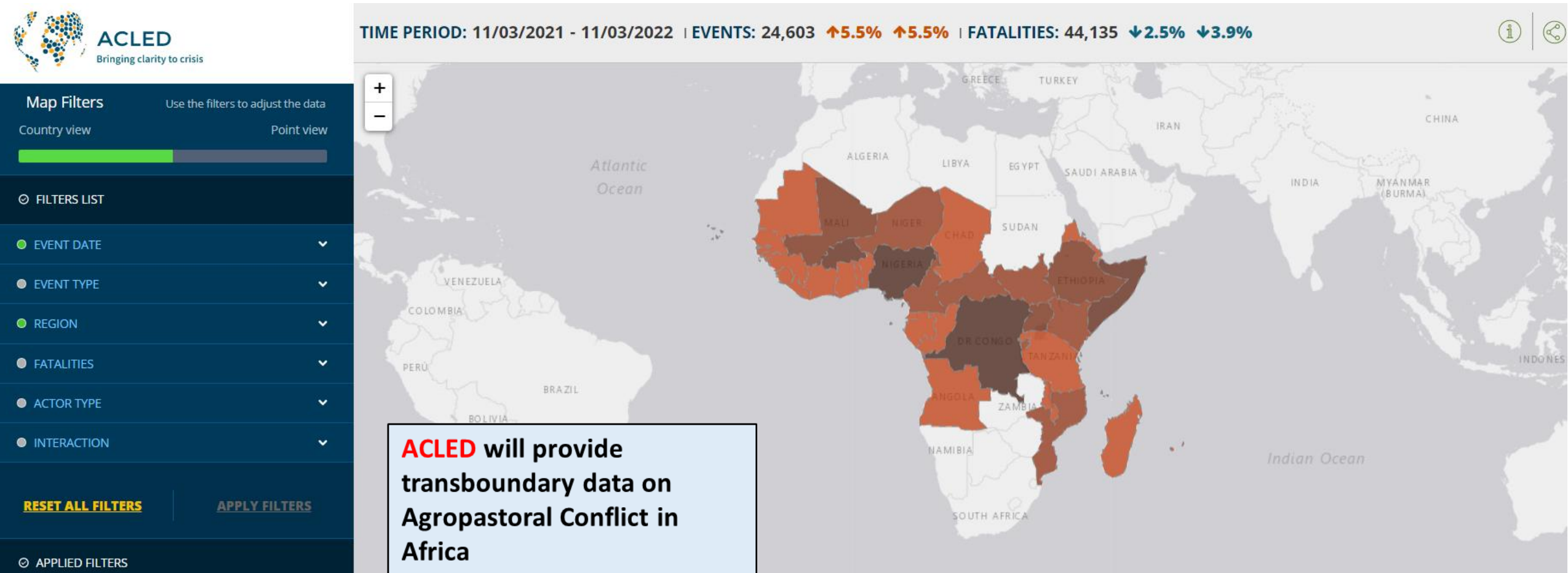


Science Application -Innovation– Geo-spatial technology to address Illegal Wildlife Crime



WEMS-3.0 will provide transboundary data on poaching and illegal wildlife trade seizures

Science Application - Collaboration– the Armed Conflict Location & Event Data Project (ACLED)

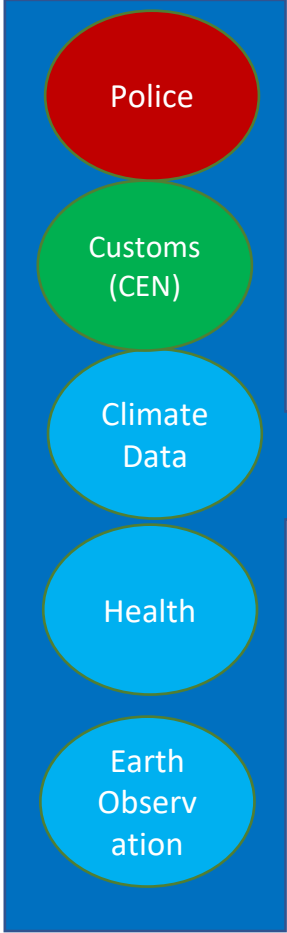


Source: <https://acleddata.com/#/dashboard>

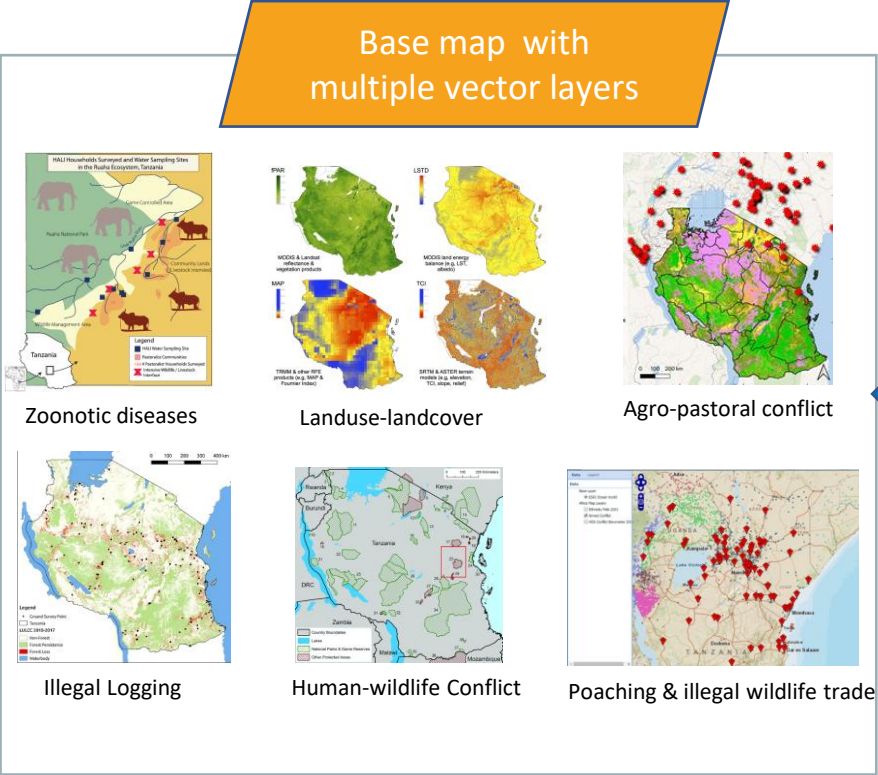
Evidence based data compilation

Conceptual model of the Spatial Data Infrastructure

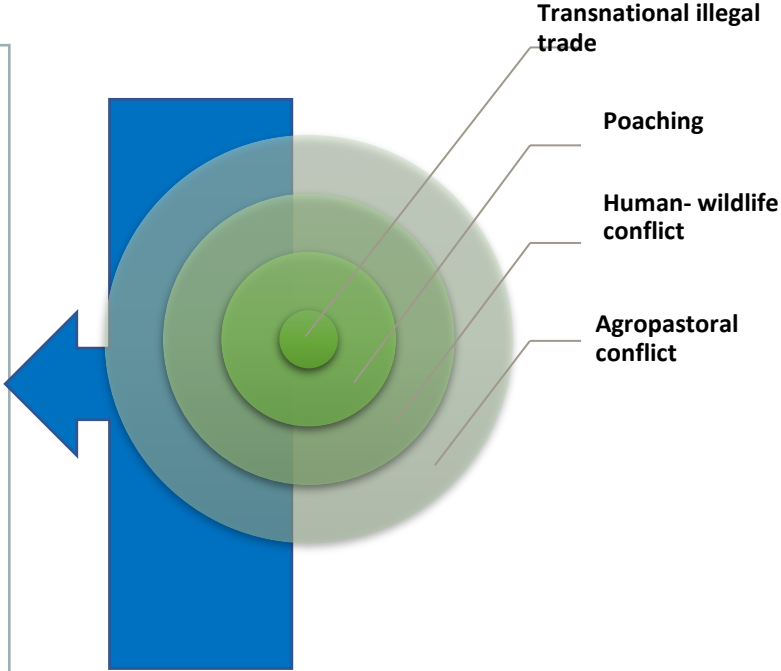
Datasets from other databases



Visual Display Monitors



Datasets



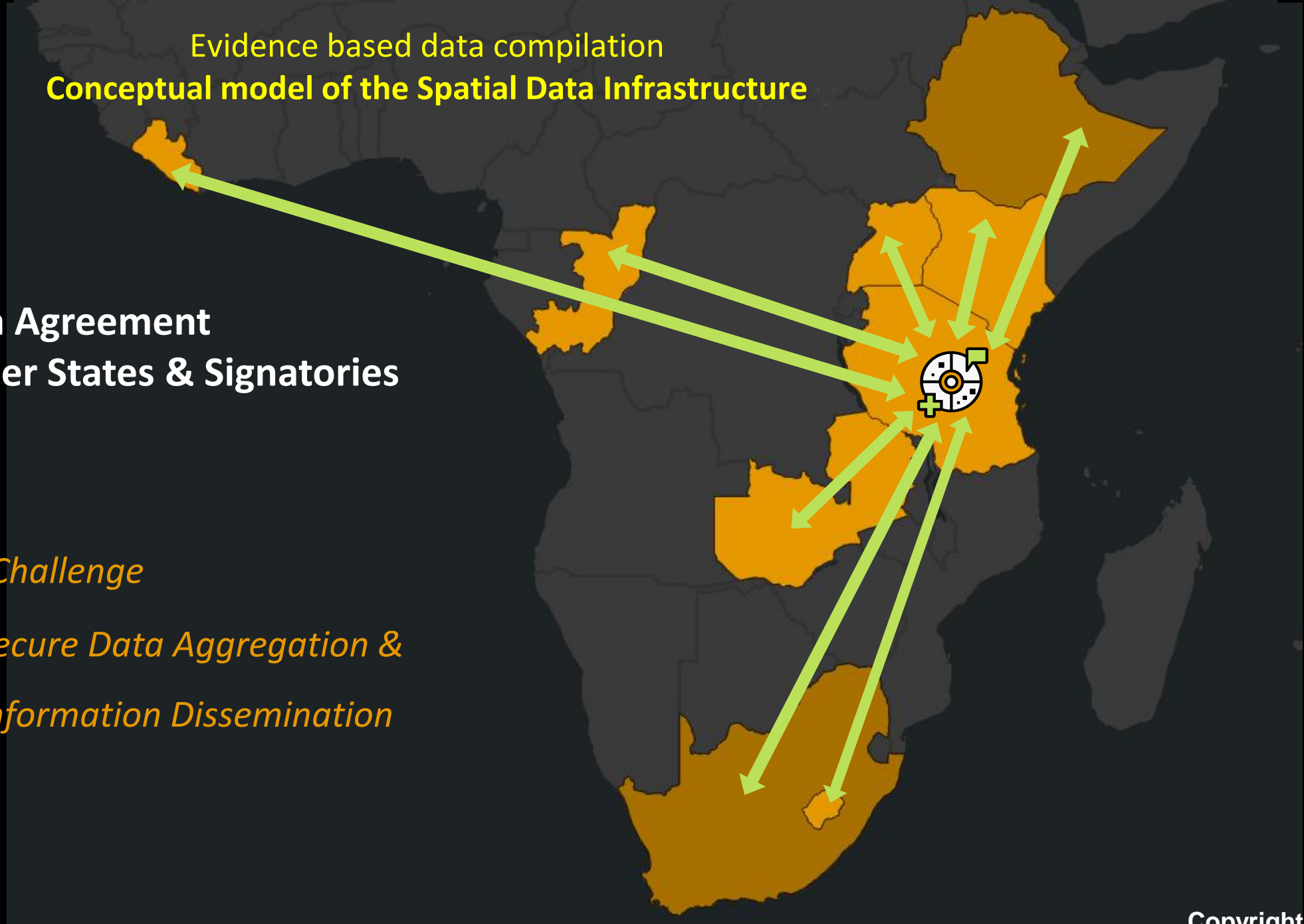
Evidence based decision making Process

Evidence based data compilation
Conceptual model of the Spatial Data Infrastructure

**Lusaka Agreement
Member States & Signatories**

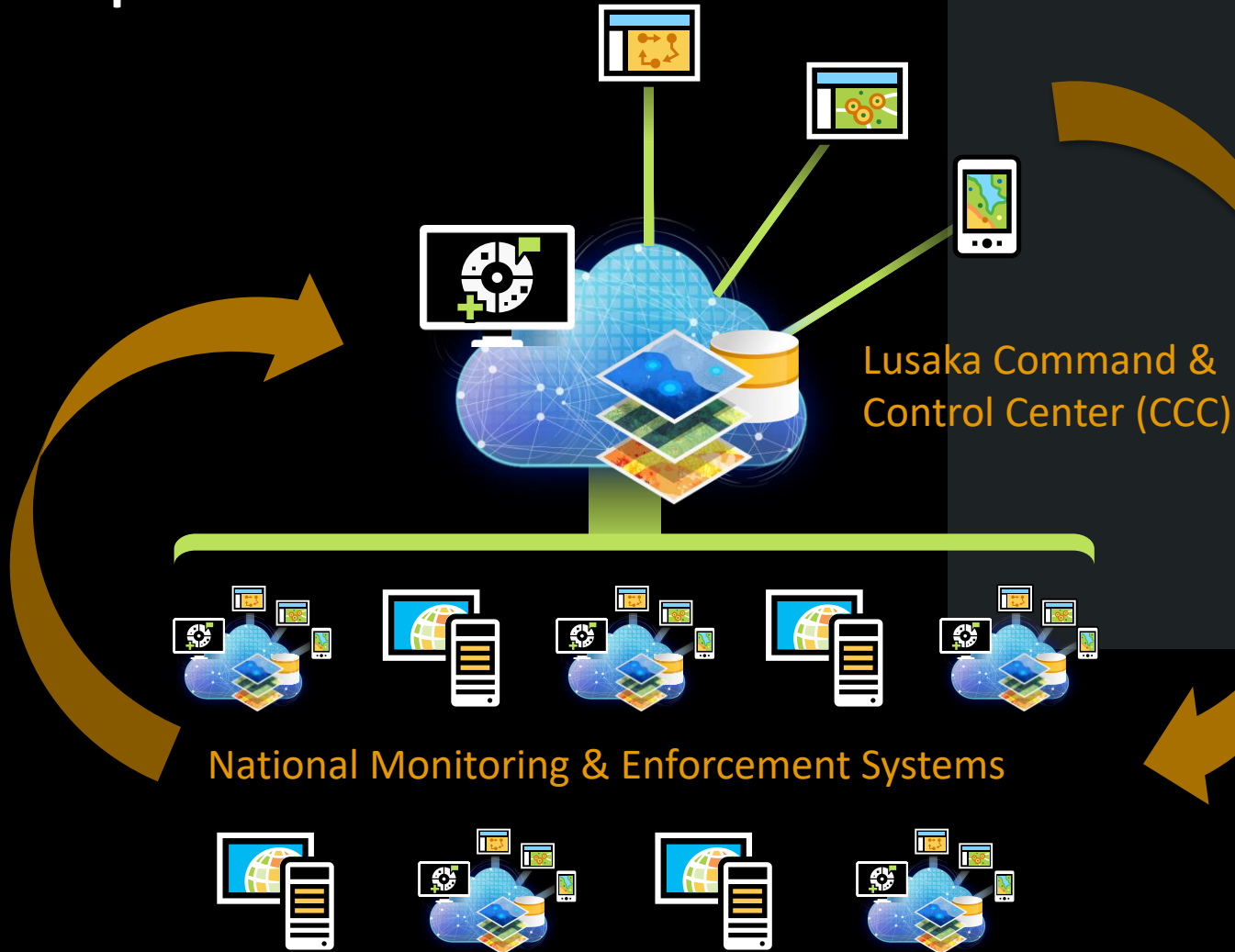
The Challenge

*Secure Data Aggregation &
Information Dissemination*



Evidence based data compilation
Conceptual model of the Spatial Data Infrastructure

**Lusaka Agreement
Geospatial Infrastructure**



Liberia

Congo

Uganda

Kenya

Tanzania

Zambia

Ethiopia

Lesotho
South Africa

Structured – Timely - Accurate





Conceptual model of the Spatial Data Infrastructure Wildlife Enforcement Monitoring System 3.0 Dashboard

- Easy to Understand
- Ready to Use
- Interactive
- Flexible
- Configurable



Interactive Data Visualization + Location-Based Analytics

Image of an SDI comprising of multiple data-sets.



SCIENCE-POLICY MEASURES TO BE UNDERTAKEN TO MEET SUSTAINABLE GOALS IN AFRICA

1. Encourage data input through incentives
 - One dollar - One Record – Providing incentives to primary data compilers
2. Turning Governments to Data Scientists
 - Training government officials to analyse data
3. Developing tools to validate data sharing protocols.
 - Easy to understand tools that can help government understand who has access to the data

SCIENCE-POLICY MEASURES TO BE UNDERTAKEN TO MEET SUSTAINABLE GOALS IN AFRICA

4. Don't let governments bear the pain of fixing systems!!
 - Dedicated cloud services with a technical team from industry
5. Focused theme – not to get the system overcrowded
 - SDI exclusively focusing on Human-Nature Conflicts
6. Moving from NSDI to RSDI to address transboundary issues
 - Cost saving measure and to address transboundary challenges

CONTACT

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