

By: Jan-Kees Schakel, CEO

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We are crime-fighting engineers



Data
Science





World press photo : Brent Stirton

Simple tools...



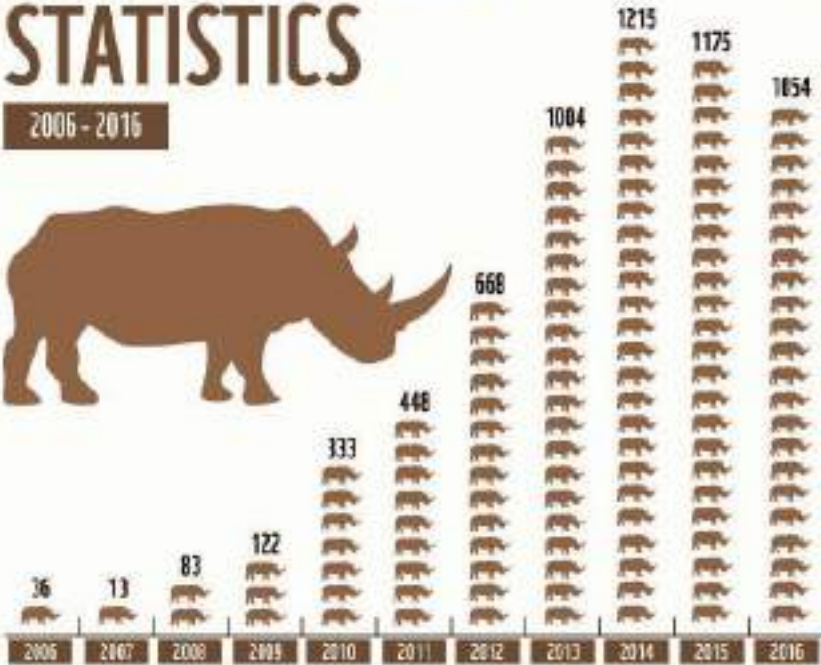


Destruction of natural environments



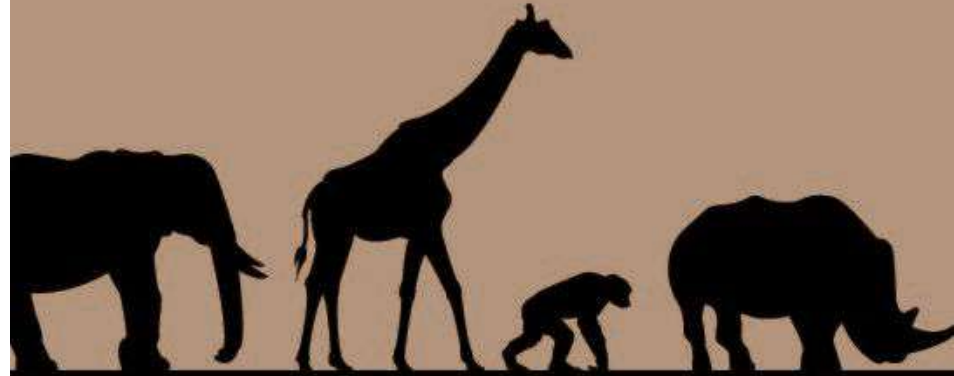
RHINO POACHING STATISTICS

2006 - 2016



NUMBERS OF RHINOS POACHED IN SOUTH AFRICA

The Earth is losing mammal species **20 to 100** times the rate of the past.



SOURCE: Study, Science Advances

 USA TODAY

A photograph of a savanna landscape with tall grass. In the foreground, a large adult rhinoceros and a smaller calf are walking. The adult rhino has several small birds perched on its back. A semi-transparent white box with dark blue text is overlaid on the image.

**making available best-of-breed technologies
to conserve ecosystems and protect wildlife**

Our growing coalition for wildlife

Solution Partners

Field Partners

Scientific Partners



and many
nature parks
and NGO's



You can help!

01

WORK WITH US

02

FUND OUR WORK



poachers at work...



area entry > searching target > tracking > **the kill** > securing trophies > escaping > area exit



< early warning phase

< fast response phase



protectors at work...

Human-Wildlife Conflicts





STEP 1

Develop intel networks

- Rangers
- Partners
- Community members
- Data collection
- Sharing observations and intel

STEP 2

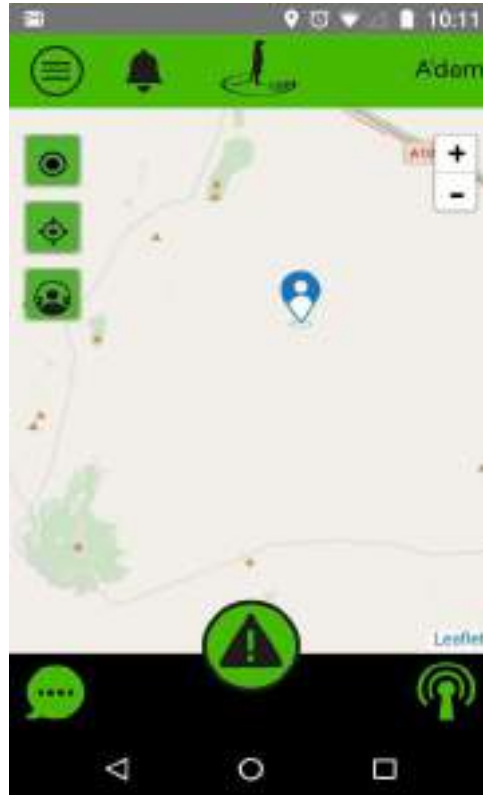
Strengthen analytical capabilities

- Combining data sources
- Semantic data integration
- Multiple visualisations
- Situational understanding
- Real-time intelligence

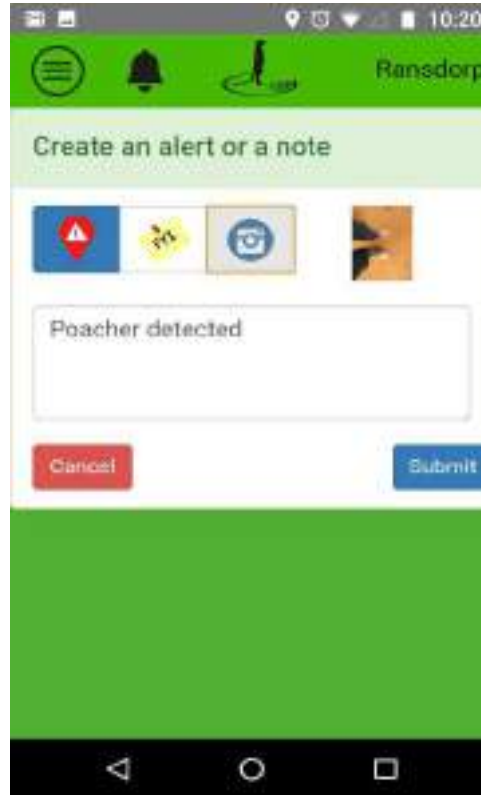
STEP 3

Extend virtual presence

- Sensors
- Trackers
- Geo-fences
- Knowledge rules
- Early warning signals



Know where your friends are



Know where the problems are



Coordinate a swift response



STEP 1
Develop intel networks

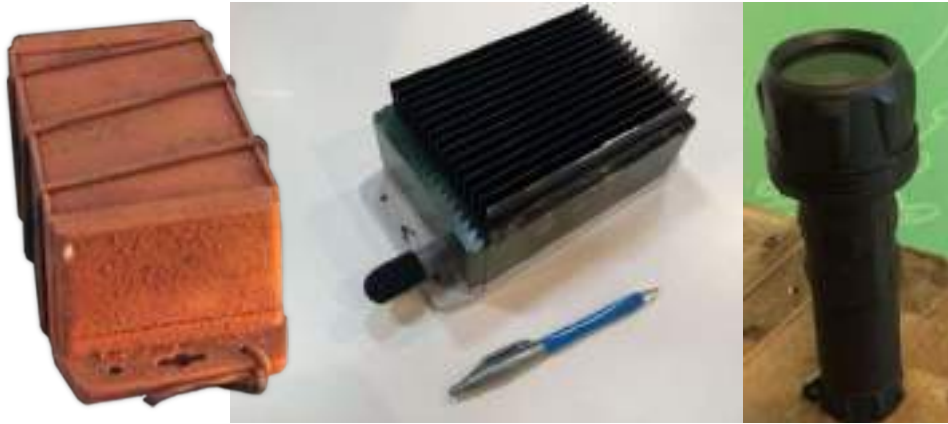


STEP 2
Strengthen analytical capabilities



STEP 3
Extend virtual presence

Sensors to detect poachers





Hiding a Trespasser field sensor

STEP 3



Photos: J.K. Schakel.



About sensors and sensemaking



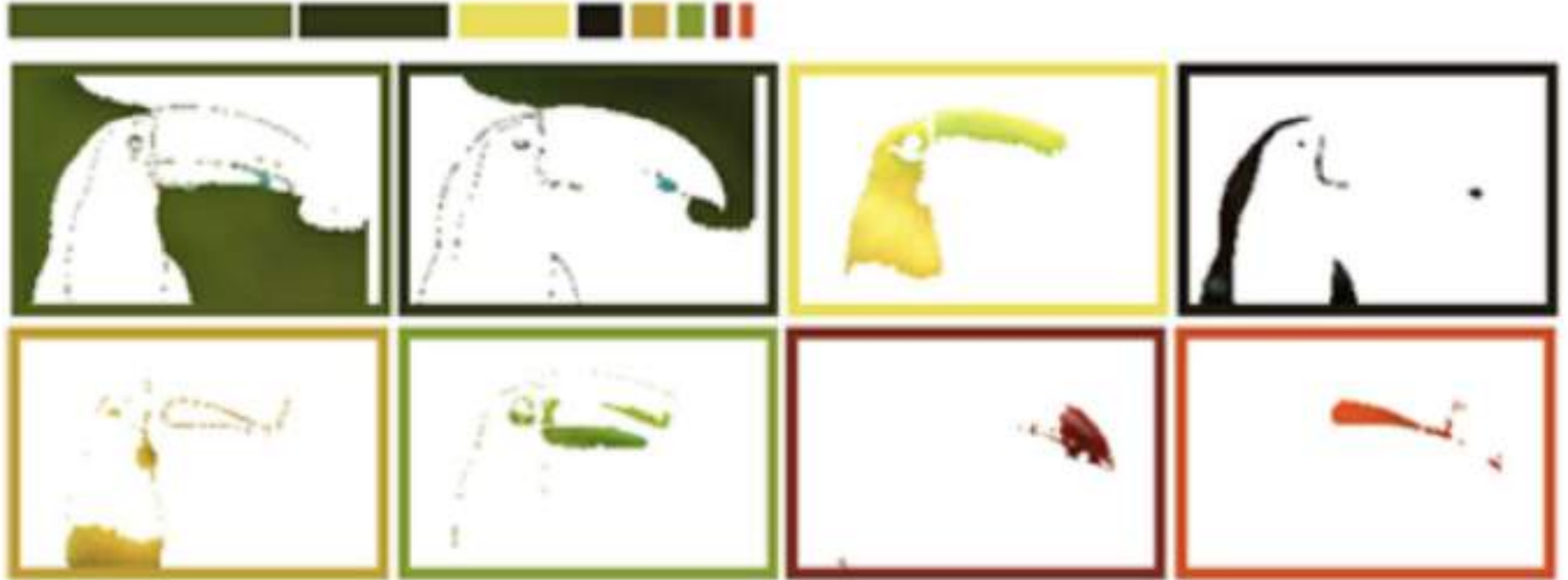
About sensors and sensemaking



About sensors and sensemaking



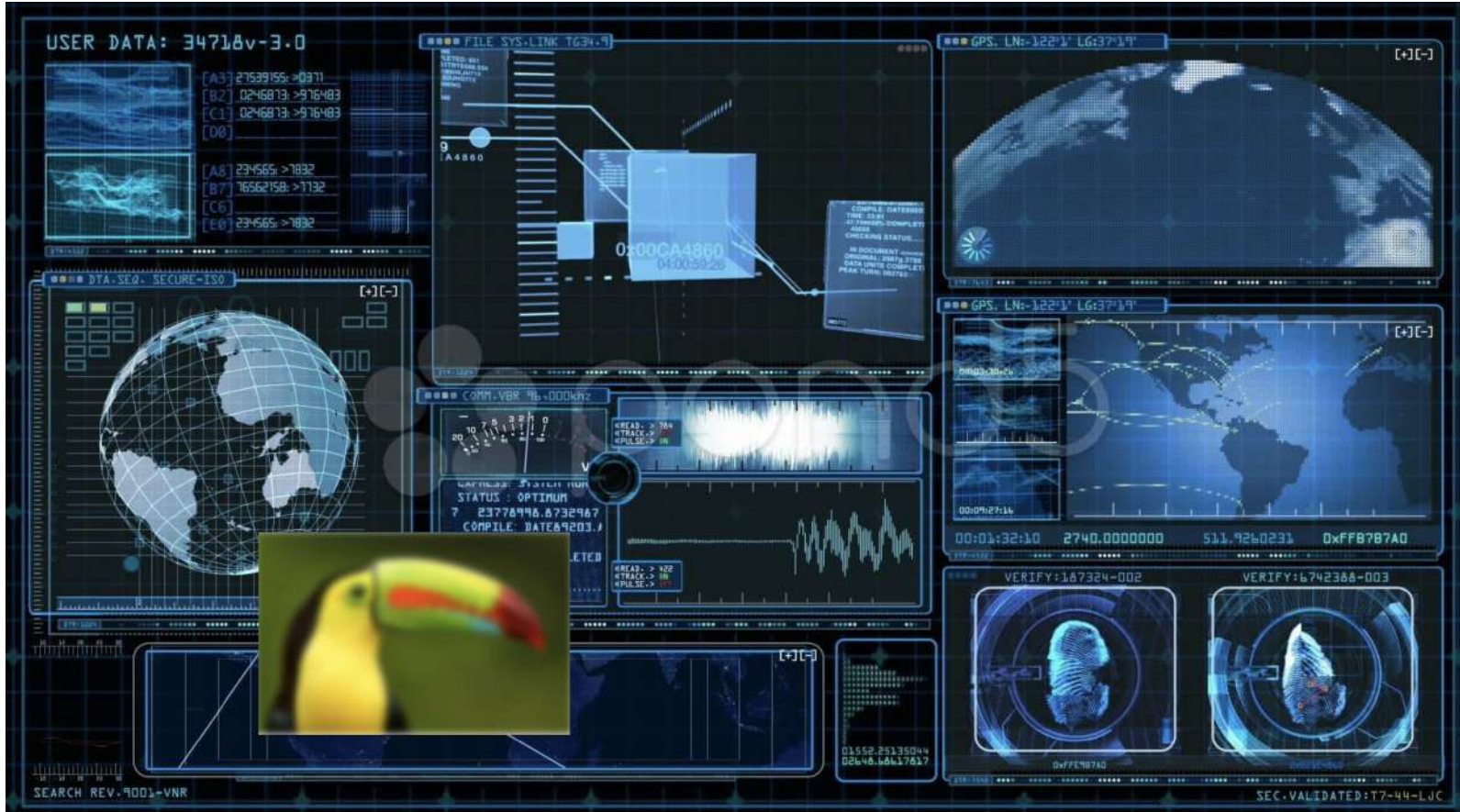
About sensors and sensemaking



About sensors and sensemaking



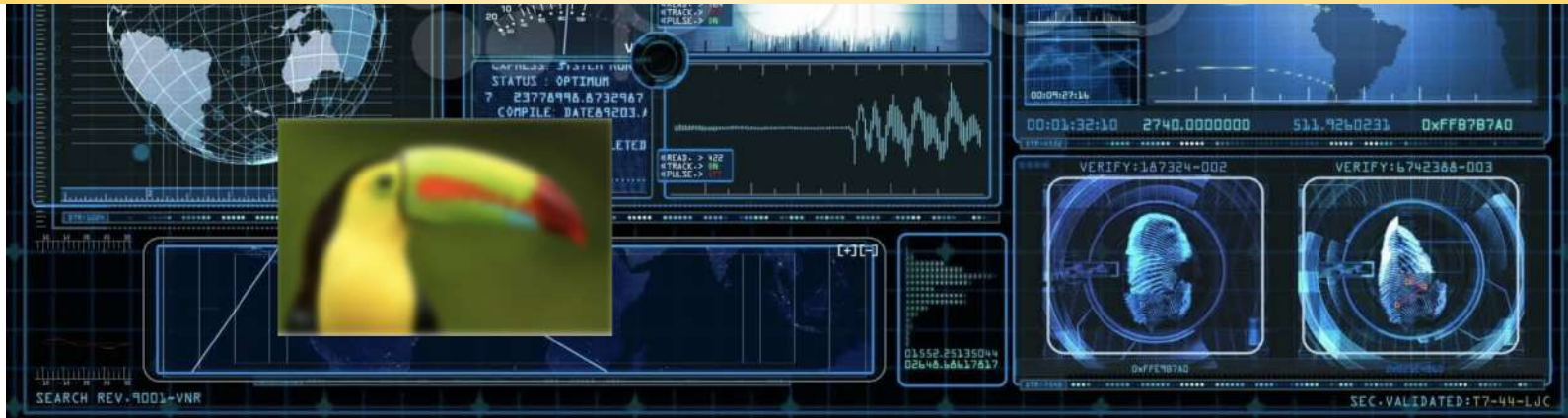
About sensors and sensemaking



Our definition of Sensing

Sensing = sentience automation, from sensor to sensemaking

Sentience = process of registration, reconstruction and meaning





STEP 1

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Strengthen analytical capabilities

- **Combining data sources**
- **Semantic data integration**
- **Multiple visualisations**
- Situational understanding
- Real-time intelligence

STEP 3

Extend virtual presence

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Transfer (syntactic):

Translate (semantic):

Transform (pragmatic):



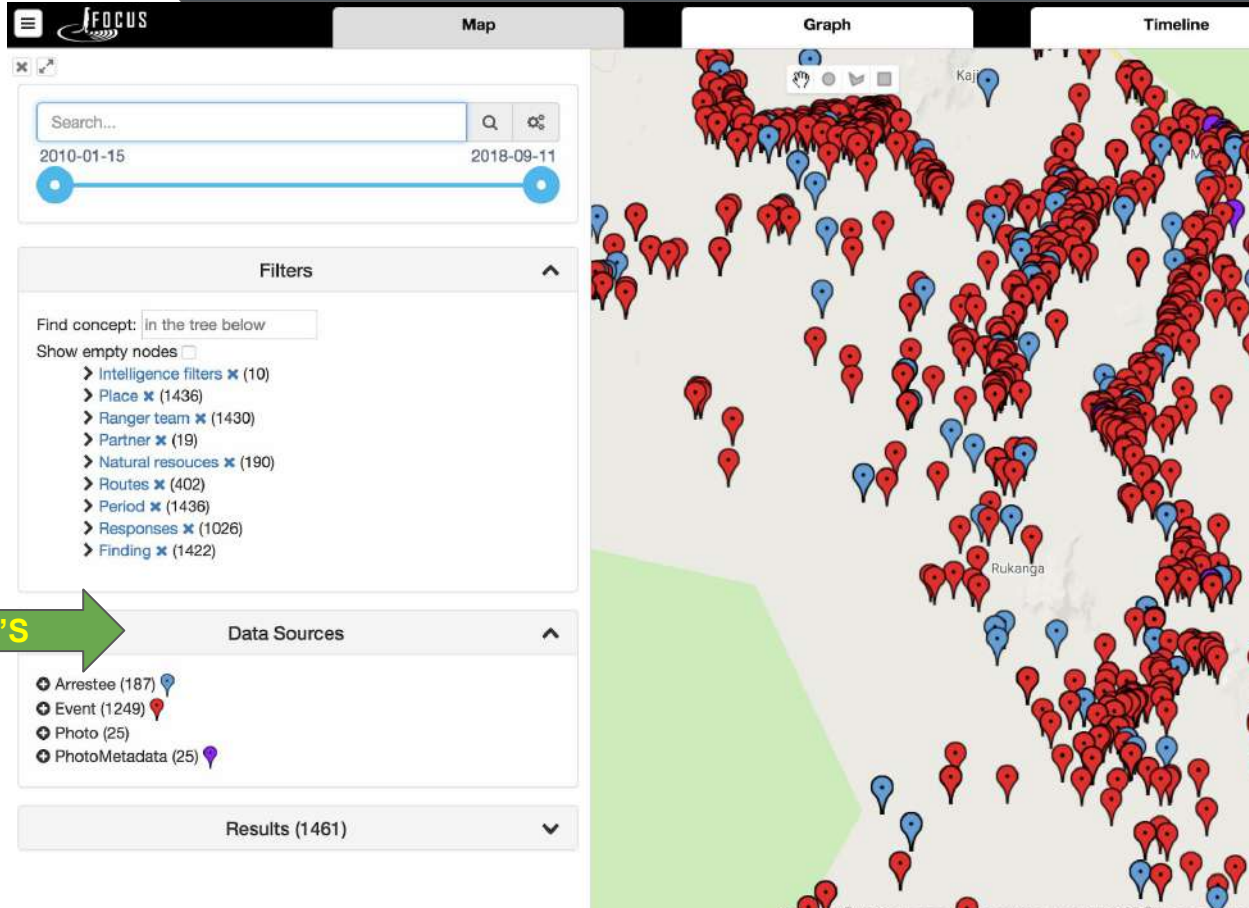
what you **type** is what you get

what you **mean** is what you get

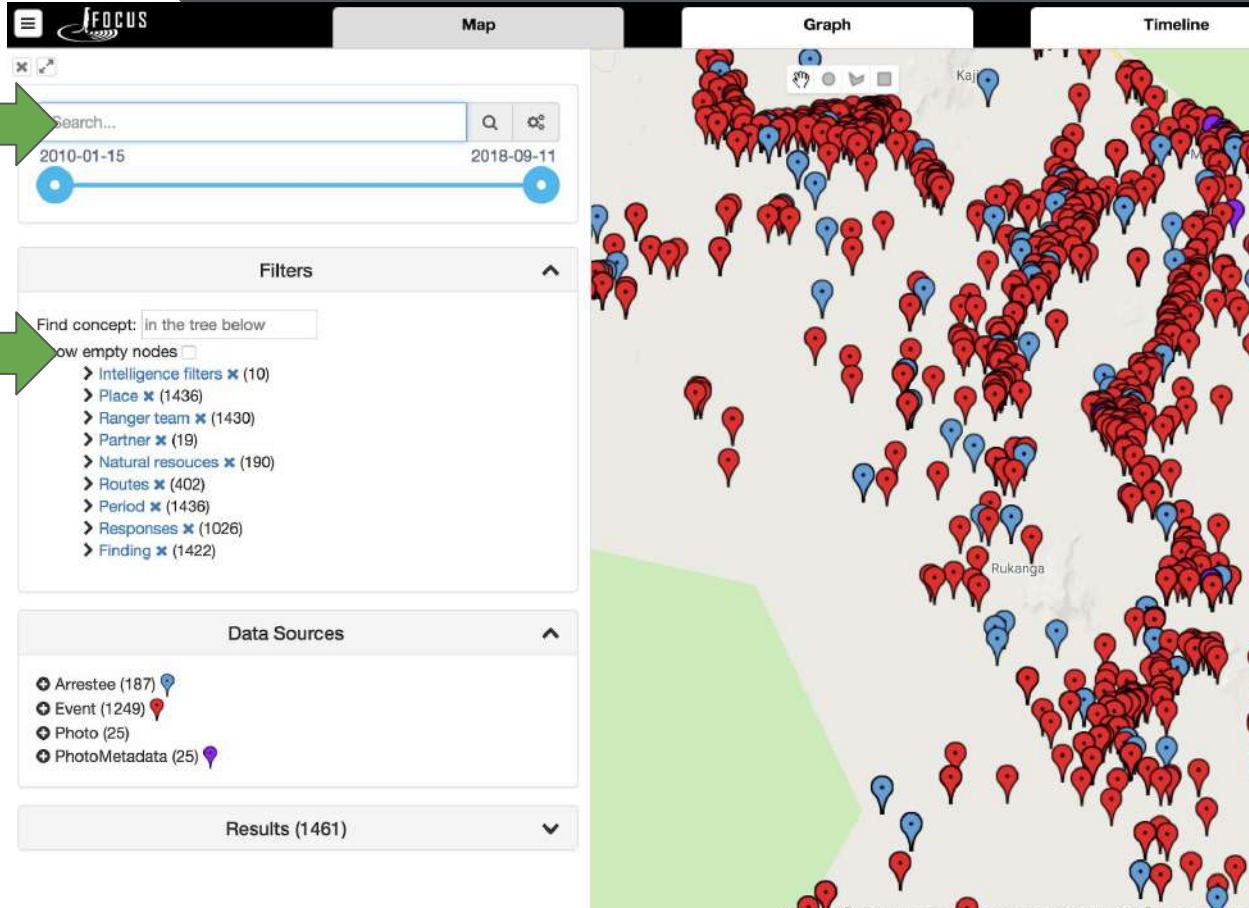
what you **want to know** is what you get

“The” 7 golden questions

- **What?** Concepts for natural resources, illegal actions, findings, etc.
- **When?** Concepts for time-spatial pattern, days, periods, seasons, etc.
- **Where?** Concepts for geo-spatial pattern, locations, routes, destinations, etc.
- **Who?** Concepts for people, groups, social networks, roles
- **With what?** Concepts for equipment, transport, etc.
- **How?** Concepts for modus operandi, performance, escape routes, etc.
- **Why?** Concepts for motives: e.g. commercial, subsistence, bycatch, etc.



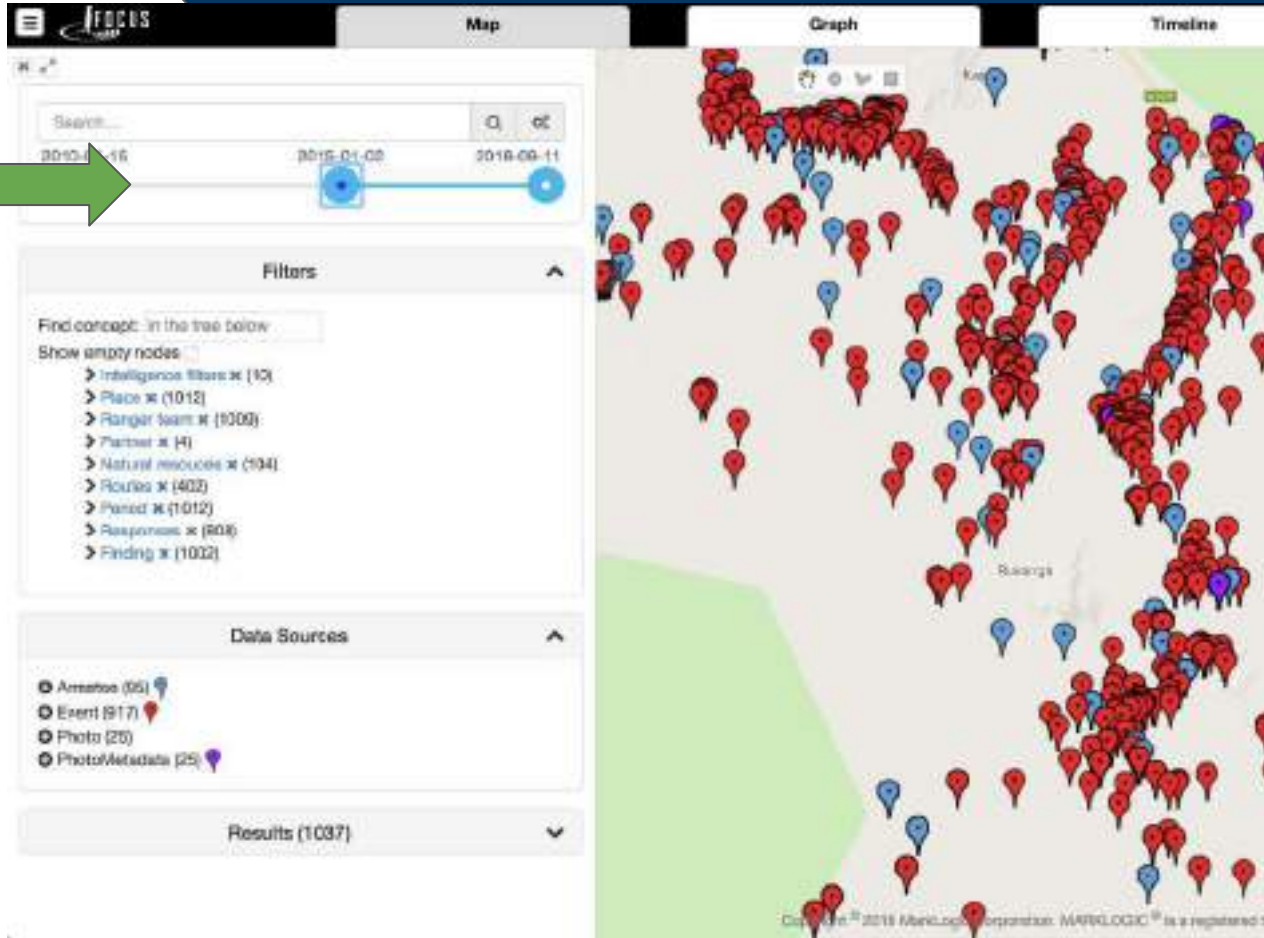
UNLOCK SILO'S 



Powered by



WHEN →



The screenshot displays the FOCUS MAP interface. At the top, there are tabs for 'Map', 'Graph', and 'Timeline'. The 'Map' tab is active, showing a map with numerous red and blue pins. On the left side, there is a search bar with the text '3010-1-16' and a date range from '2015-01-02' to '2018-08-11'. Below the search bar is a 'Filters' section with a tree view of concepts: Intelligence filters (10), Place (1012), Ranger team (1000), Partner (4), Natural resources (104), Places (402), Period (1012), Response (606), and Finding (1002). Below the filters is a 'Data Sources' section with: Amphoto (65), Event (917), Photo (20), and Photo/Metadata (25). At the bottom, there is a 'Results (1037)' section. A green arrow labeled 'WHEN' points to the date range in the search bar.

Powered by



WHAT

Filters ^

Find concept:

Show empty nodes

- > Intelligence filters x (10)
- > Place x (1012)
- > Ranger team x (1009)
- > Partner x (4)
- > Natural resources x (104)
- > Routes x (402)
- > Period x (1012)
- > Responses x (808)
- ▼ Finding x (1002)
 - > Signs x (46)
 - > Recoveries x (936)
 - > Threats x (1)
 - > Person x (95)
 - ▼ Offence (law) x (117)
 - Cattle grazing x (21)
 - Charcoal burning x (49)
 - Mining x (1)
 - Poaching x (46)

OFFENCES

WHAT

Filters

Find concept: Show empty nodes

- › Intelligence filters × (10)
- › Place × (911)
- › Ranger team × (908)
- › Partner × (4)
- › Natural resouces × (104)
- › Routes × (373)
- › Period × (911)
- ▼ Responses × (721)
 - Arrested × (1)
 - Burned × (504)
 - Ambush × (19)
 - Warned × (25)
 - Tracked × (32)
 - De-snared × (117)
 - Destroyed × (386)
- › Finding × (901)

RESPONSES

Semantics powered by

Filters

Find concept:

Show empty nodes

- > Intelligence filters x (10)
- > Place x (911)
- > Ranger team x (908)
- > Partner x (4)
- > Natural resouces x (104)
- > Routes x (373)
- ▼ Period x (911)
 - > Month x (911)
 - ▼ Day x (911)
 - wed x (145)
 - thu x (154)
 - Sat x (110)
 - tue x (139)
 - sun x (90)
 - fri x (158)
 - mon x (115)
- > Responses x (721)
- > Finding x (901)

WHEN

WHAT NOT

Filters

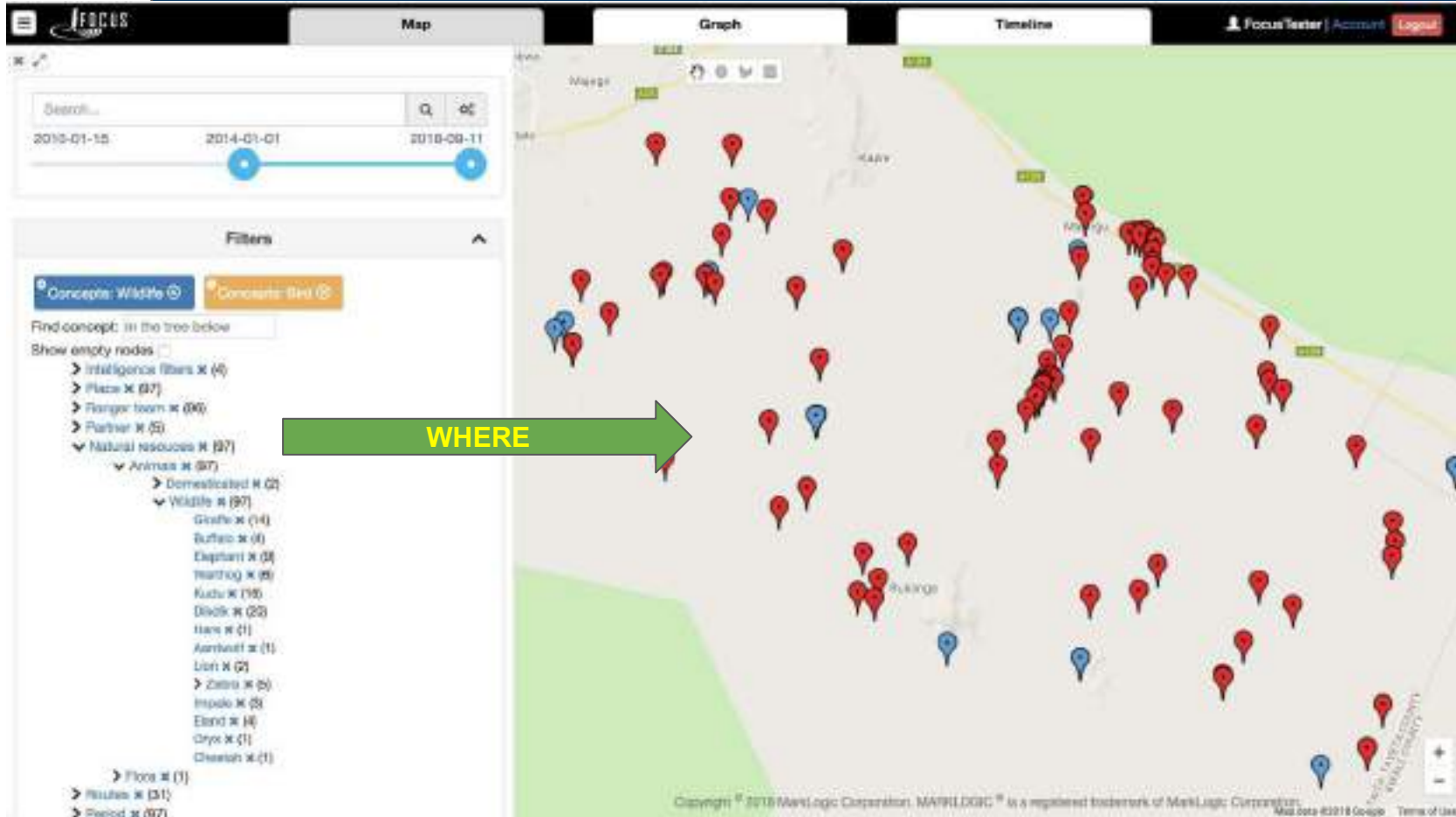
Concepts: Bird


Find concept: in the tree below

Show empty nodes


- > Intelligence filters (10)
- > Place (910)
- > Ranger team (907)
- > Partner (4)
- ▼ Natural resources (103)
 - ▼ Animals (102)
 - > Domesticated (30)
 - ▼ Wildlife (73)
 - Giraffe (14)
 - Buffalo (4)
 - Elephant (6)
 - Kudu (10)
 - Dikdik (14)
 - Aardwolf (1)
 - Lion (2)
 - > Zebra (4)
 - Impala (3)
 - Eland (3)
 - Oryx (1)
 - Cheetah (1)
- > Minerals (1)

WHAT NATURAL RESOURCES




Map
Graph
Timeline
FocusTester | Account [Logout](#)

2010-01-15 2014-01-01 2018-09-11

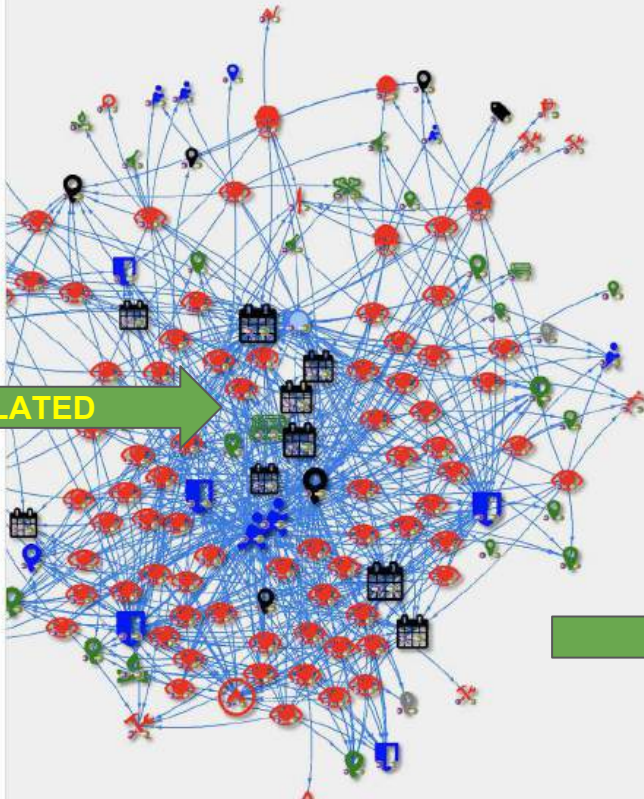



Filters

Find concept:

Show empty nodes


- > Intelligence filters x (10)
- > Place x (1153)
- > Ranger team x (1150)
- > Partner x (9)
- ▼ Natural resources x (148)
 - ▼ Animals x (146)
 - > Domesticated x (50)
 - ▼ Wildlife x (98)
 - Giraffe x (14)
 - Buffalo x (4)
 - Elephant x (9)
 - Warthog x (6)
 - Kudu x (16)
 - Dikdik x (21)
 - Hare x (1)
 - Asrdwolf x (1)
 - Lion x (2)
 - > Zebra x (5)
 - Bird x (1)
 - Impala x (3)
 - Eland x (4)
 - Oryx x (1)
 - Cheetah x (1)
 - > Flora x (2)
 - > Minerals x (1)
 - > Routes x (395)






- Arrestee
- Bicycle
- Bow / Arrow
- Bushmeat
- Camp
- Carcass
- Charcoal
- Charcoaling
- Concept
- Dam
- Domesticated
- Elephant
- Equipment
- Finding
- Firearm
- Flora
- Grazing
- Gunshot


WHAT



 FOCUS
Map
Graph
Timeline
FocusTester | Account [Logout](#)

Search...

2010-01-15 2014-01-01 2018-09-11

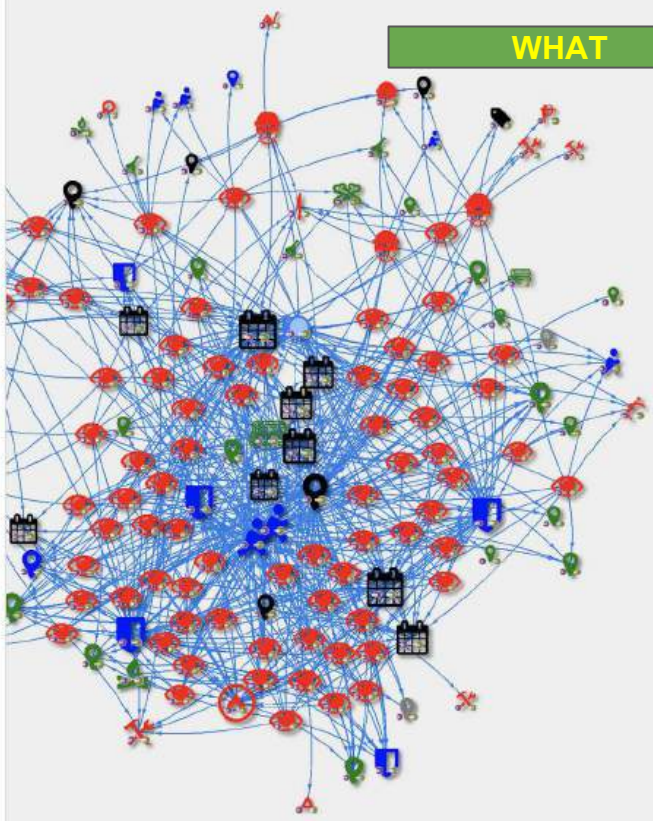


Filters

Find concept: in the tree below

















Show empty nodes

- > Intelligence filters x (10)
- > Place x (1153)
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- ▼ Natural resources x (148)
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 - Kudu x (16)
 - Dikdik x (21)
 - Hare x (1)
 - Asrdwolf x (1)
 - Lion x (2)
 - > Zebra x (5)
 - Bird x (1)
 - Impala x (3)
 - Eland x (4)
 - Oryx x (1)
 - Cheetah x (1)
 - > Flora x (2)
 - > Minerals x (1)
 - > Routes x (395)

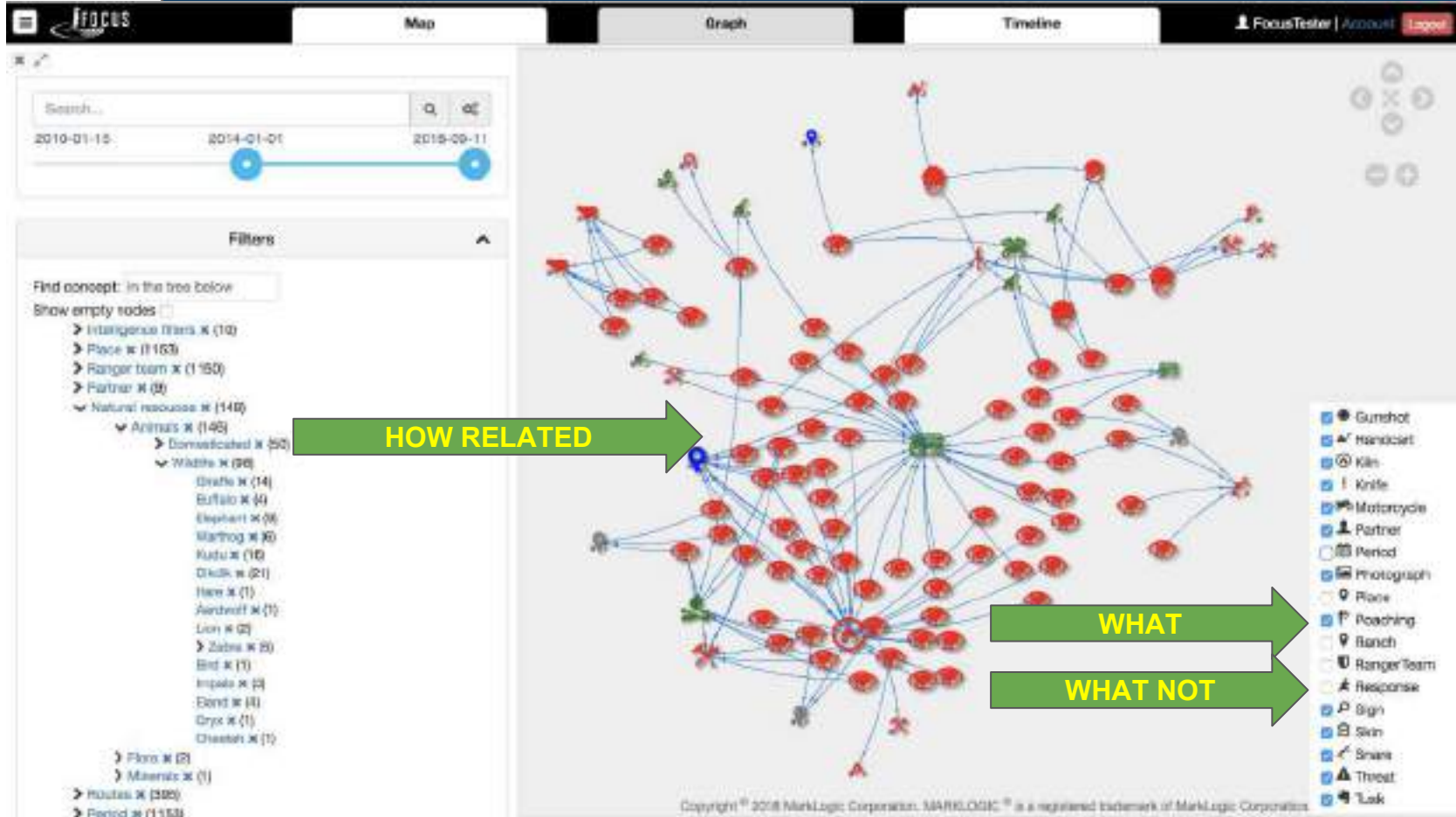


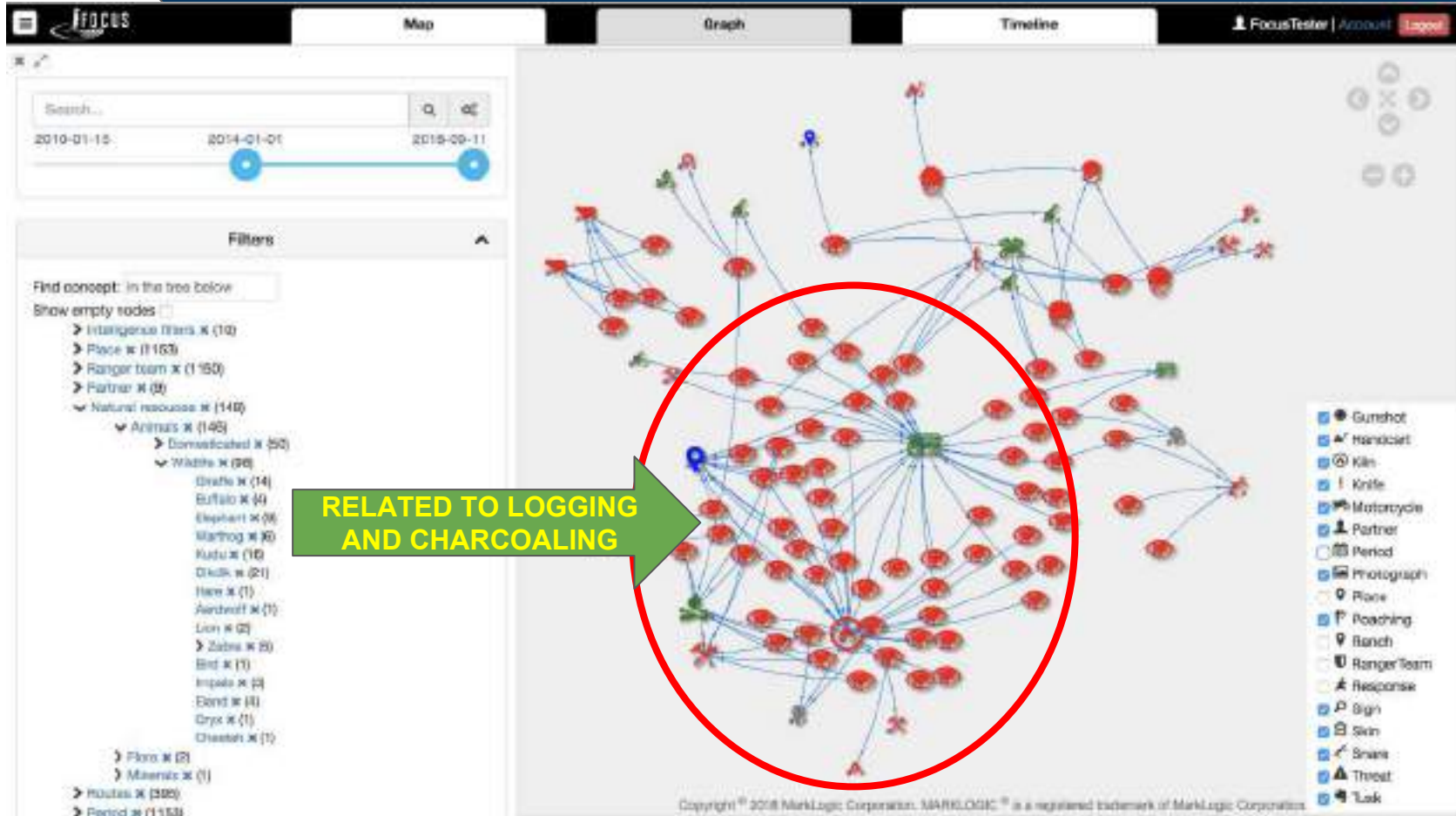
WHAT

→

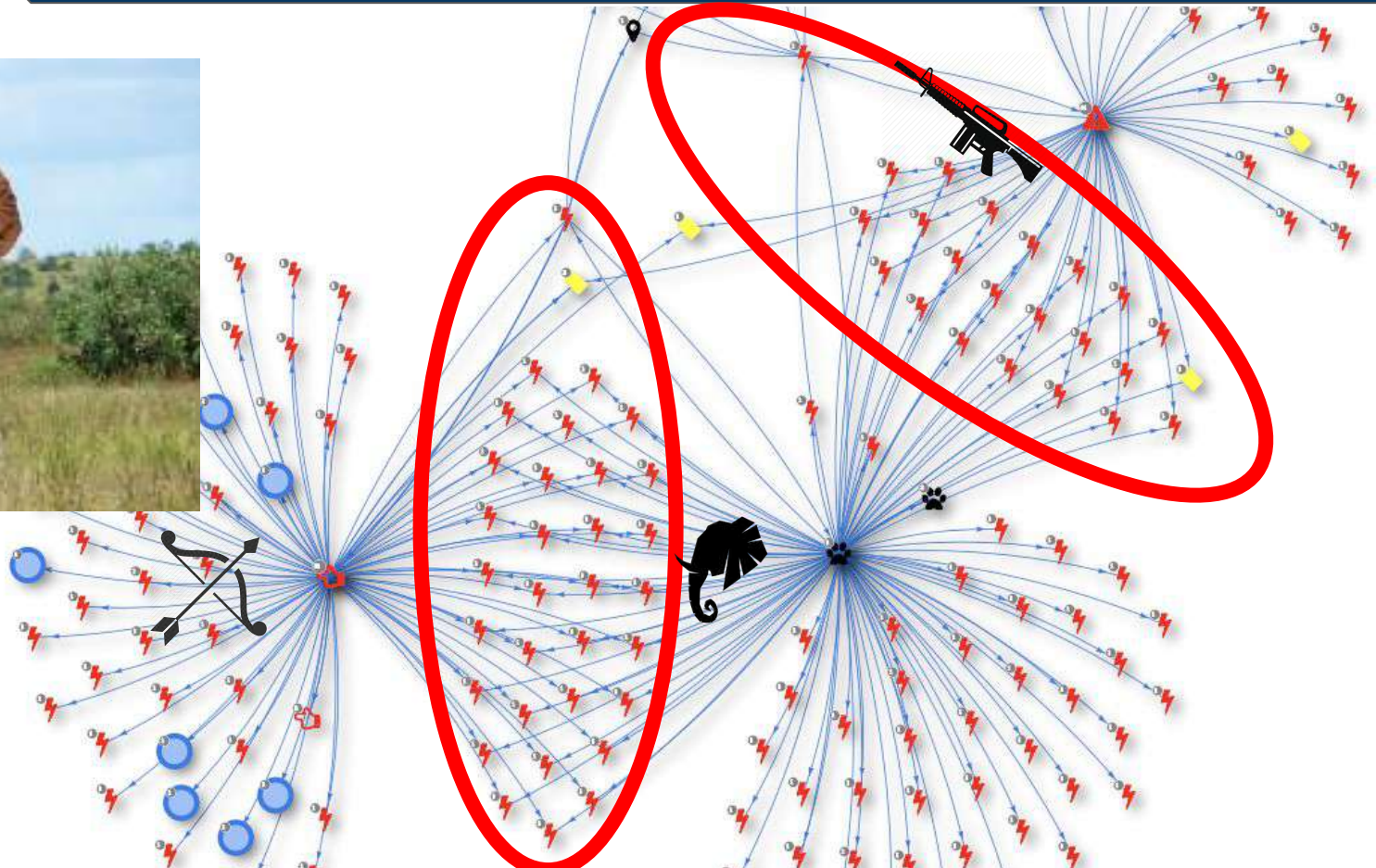
-  Arrestee
-  Bicycle
-  Bow / Arrow
-  Bushmeat
-  Camp
-  Carcass
-  Charcoal
-  Charcoaling
-  Concept
-  Dam
-  Domesticated
-  Elephant
-  Equipment
-  Finding
-  Firearm
-  Flora
- Grazing
- Gunshot

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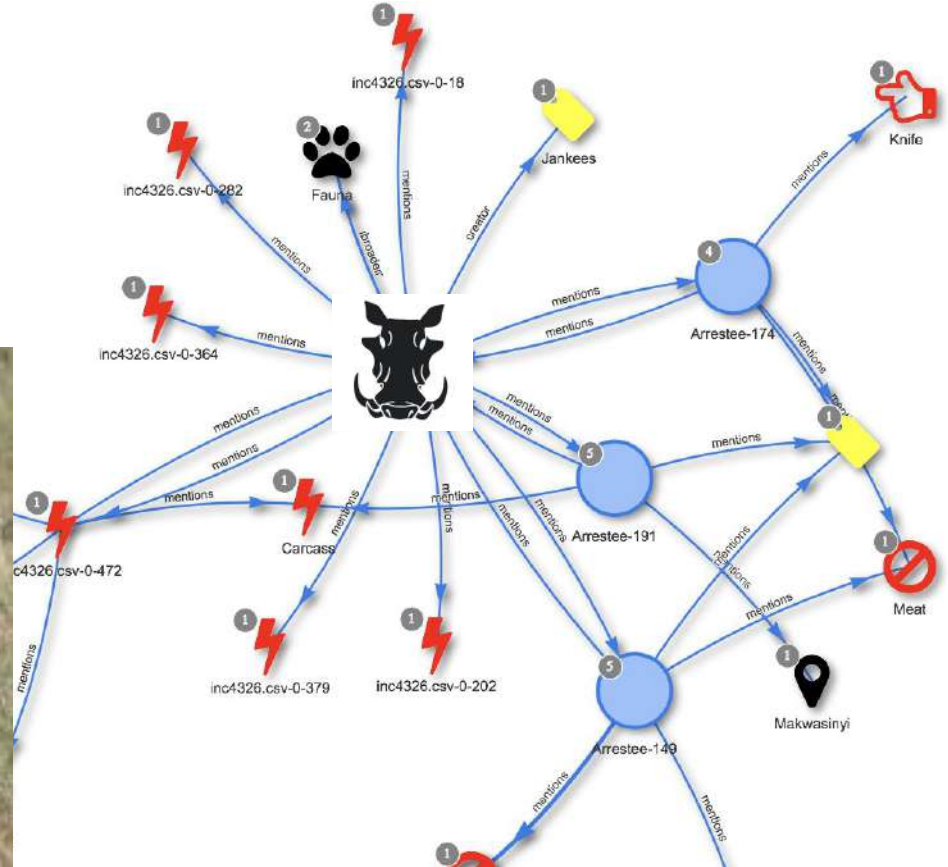




MO: Elephants killed by arrow vs firearms



Warthog kills bycatch of charcoalers?





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That's how we turn wild spaces into safe havens!



01

WORK WITH US

02

FUND OUR WORK

contact@sensingclues.org

