



Improvised Explosive Device Network Analysis



- IED<sup>NA</sup> utilizes network analysis methods to fill gaps in the understanding and visualization of IED networks

***Typical network analysis of illicit networks focuses on the human participants***

- In the case of IED networks these would be emplacements, financiers, bomb-makers, etc.
- This is problematic because the intelligence relied upon (HUMINT, SIGINT) is frequently incomplete and/or inaccurate because it is subject to deception efforts
- Typical intelligence sources are also much more demanding from the perspective of time
  - HUMINT sources need to be vetted
  - SIGINT sources need to be translated
  - Multiple sources are needed to be valuable for the end-user



**A typical map of IED “atmospherics”**

- How useful is this?
- How can I “attack the network?”

- IED<sup>NA</sup> focuses on the physical components of the individual IEDs and what these components can tell/show us about the IED network(s)
- To enable this analysis, we built a mobile IED INTEL collection application that allows for real-time on-scene data collection that:
  - Structures Collected IED data
  - Automatically generates IED incident report(s)
  - Reduces operating burden on EOD Technicians
  - Allows for rapid Tactical Level Intel feedback of IED operating environment
  - Allows C-IED forces to isolate targets of interest and develop network attack strategies





AT&T 9:58 AM 64%

**Lighthouse** Cancel **MASTER EOD OP-INTEL** Save

Sync

Settings

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04/17/2012

**INCIDENT(S) BEING REPORTED**

IED

SECONDARY IED

TERTIARY IED

PBA | POST BLAST ANALYSIS

IDF | INDIRECT FIRE

CACHE

Select

EXPLOSIVE ORDNANCE DISPOSAL MOBILE UNIT TWO

PLATOON TWO TWO ONE | PLT 221

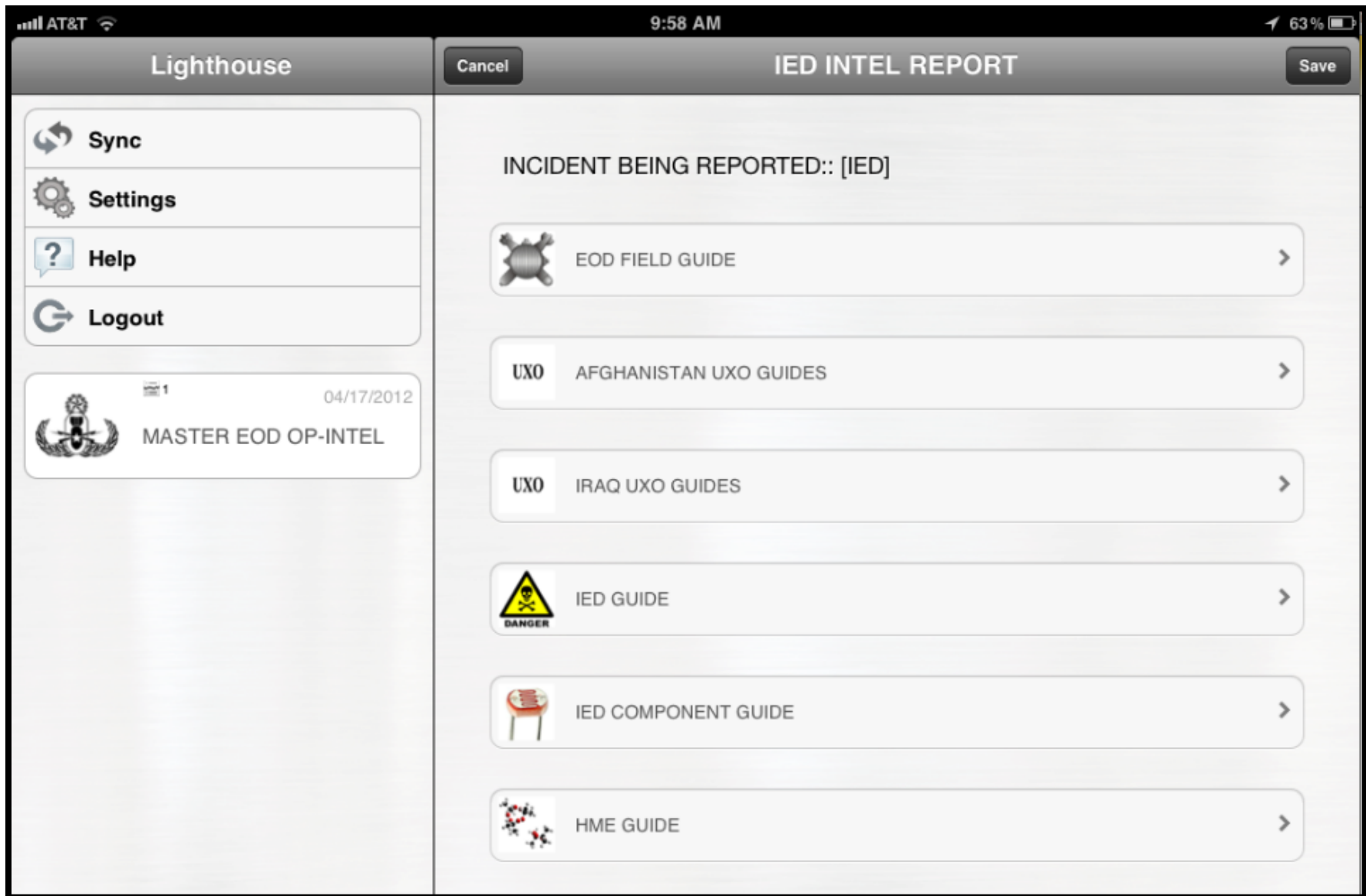
\*1 | Select the type of incident to which your EOD team is responding.

You may select more than one option, or return to this page and add incident as your EOD response develops.

Example: If you encounter a Secondary IED during 5s & 25s, return to page and simply select (add) "Secondary IED."

INCIDENT(S) BEING REPORTED

Done





AT&T 10:45 AM 54%

Lighthouse

Cancel IED INTEL REPORT Save

Sync

Settings

Help

Logout

1 04/17/2012  
MASTER EOD OP-INTEL

IED | TYPE BY FUNCTION

RCIED >

RCIED | TYPE BY FUNCTION

CELL PHONE >

RCIED | CELL PHONE BRAND

Nokia >

RCIED | CELL MODEL NUMBER

M1-26X >

RCIED | S.I.M. CARD RECOVERY

Yes >



ID	S349
INCIDENT BEING REPORTED:	IED
GRID   MGRS OF INCIDENT EX: 38SMC0123456789	18TWK8167895900
IED   ROUTE NAME	PENNSYLVANIA
RESOURCES THREATENED   TARGETED	C.F. PERSONNEL
IED   LOCATION	ROADSIDE HIDDEN   MSR (MAIN SUPPLY ROUTE)
VICTIM C.R.E.W. SYSTEM	PYTHON
VICTIM C.R.E.W. STATUS	ON DURING ATTACK/DISCOVERY
EOD C.R.E.W. SYSTEM	PYTHON
IMPACT ON UNIT MANEUVER(S)   MISSION(S)	ASR CLOSURE
IED   TYPE BY FUNCTION	VOIED
VOIED   TYPE BY FUNCTION	CRUSH SWITCH
VOIED   CRUSH SWITCH METHOD OF EMPLOYMENT	SURFACE LAID [ACROSS ROAD]
VOIED   CRUSH SWITCH MATERIAL	MCPS
VOIED   CRUSH SWITCH LENGTH	50 FT
EOD APPROACH	ROBOTIC
EOD ROBOTICS EMPLOYED	TALON
IED   EXPLOSIVE COMPONENTS	MORTAR
IED   MORTAR TYPE BY FUNCTION	(HE) HIGH EXPLOSIVE
IED   MORTAR SIZE(S)	160mm
IED   MORTAR FUZE(S)	NONE   NOSE-WELL PRIMED W/EXPLOSIVES
IED   MORTAR NOMENCLATURE	F852
IED   MORTAR COUNTRY OF ORIGIN	RUSSIAN
IED   MORTAR QUANTITY	2
IED   MORTARS DAISY-CHAINED?	Yes
IED   SWITCH TYPE BY FUNCTION	PRESSURE
IED   INITIATOR - DETONATOR	COMMERCIAL BLASTING CAP, DETONATING CORD
IED   BLASTING CAP TYPE BY FUNCTION	ELECTRIC
IED   BLASTING CAP LENGTH	65mm
IED   BLASTING CAP CRIMP INTEL	3 Ring Compression
IED   BLASTING CAP LEAD WIRE INTEL	RED   GREEN
IED   DET-CORD COLOR	RED
IED   POWER SOURCE	9-VOLT BATTERY
IED   POWER SOURCE BRAND [i.e. Duracel, Camellion, etc.]	ENERGIZER
EOD R.S.P.	B.I.P



IED PHOTO INTEL | 1



IED PHOTO 2 DETAILS

RECOVERED SLIDE SWITCH



IED PHOTO INTEL | 2

IED PHOTO 3 DETAILS

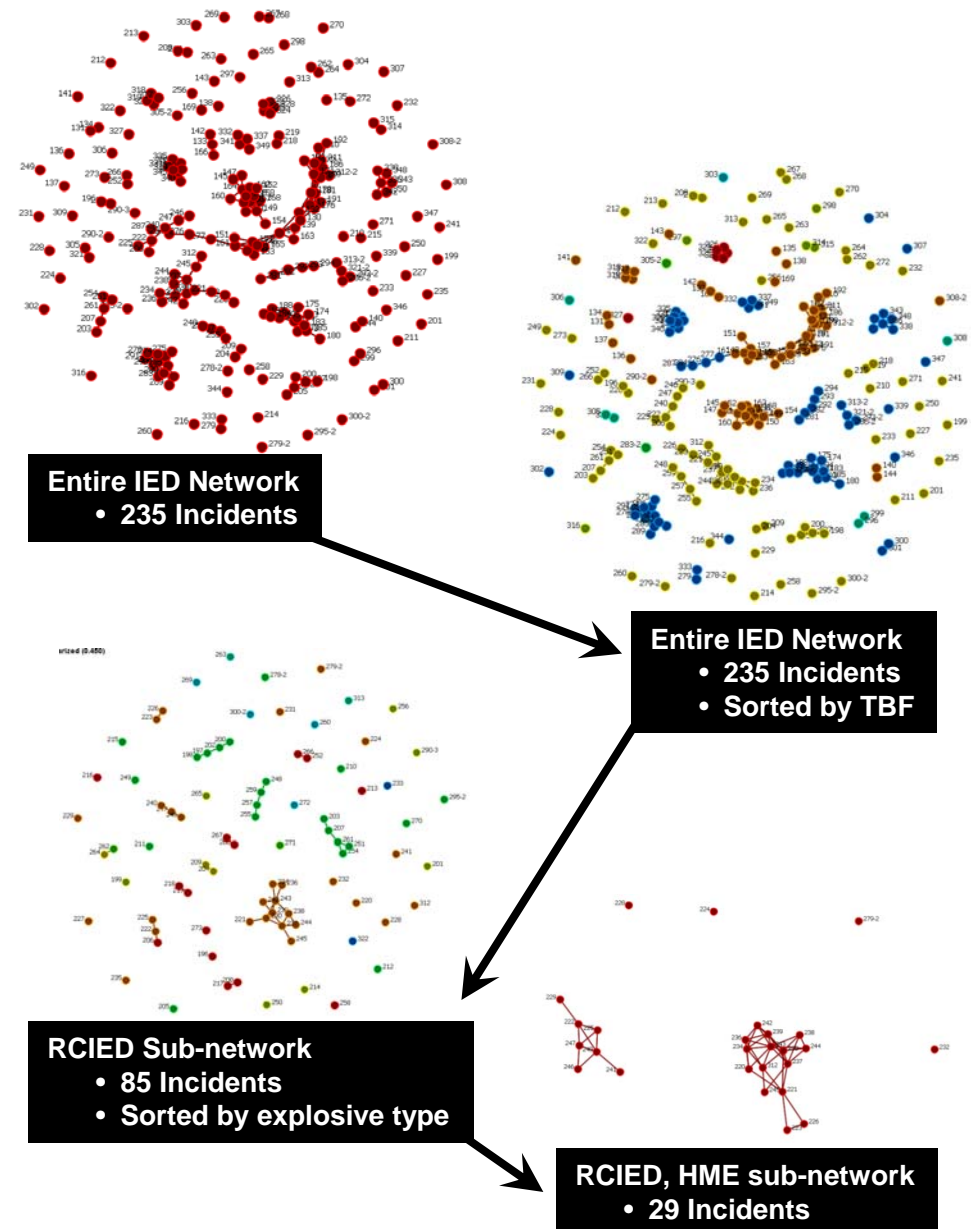
RECOVERED PLASTIC COATED COMMAND WIRE



IED PHOTO INTEL | 3

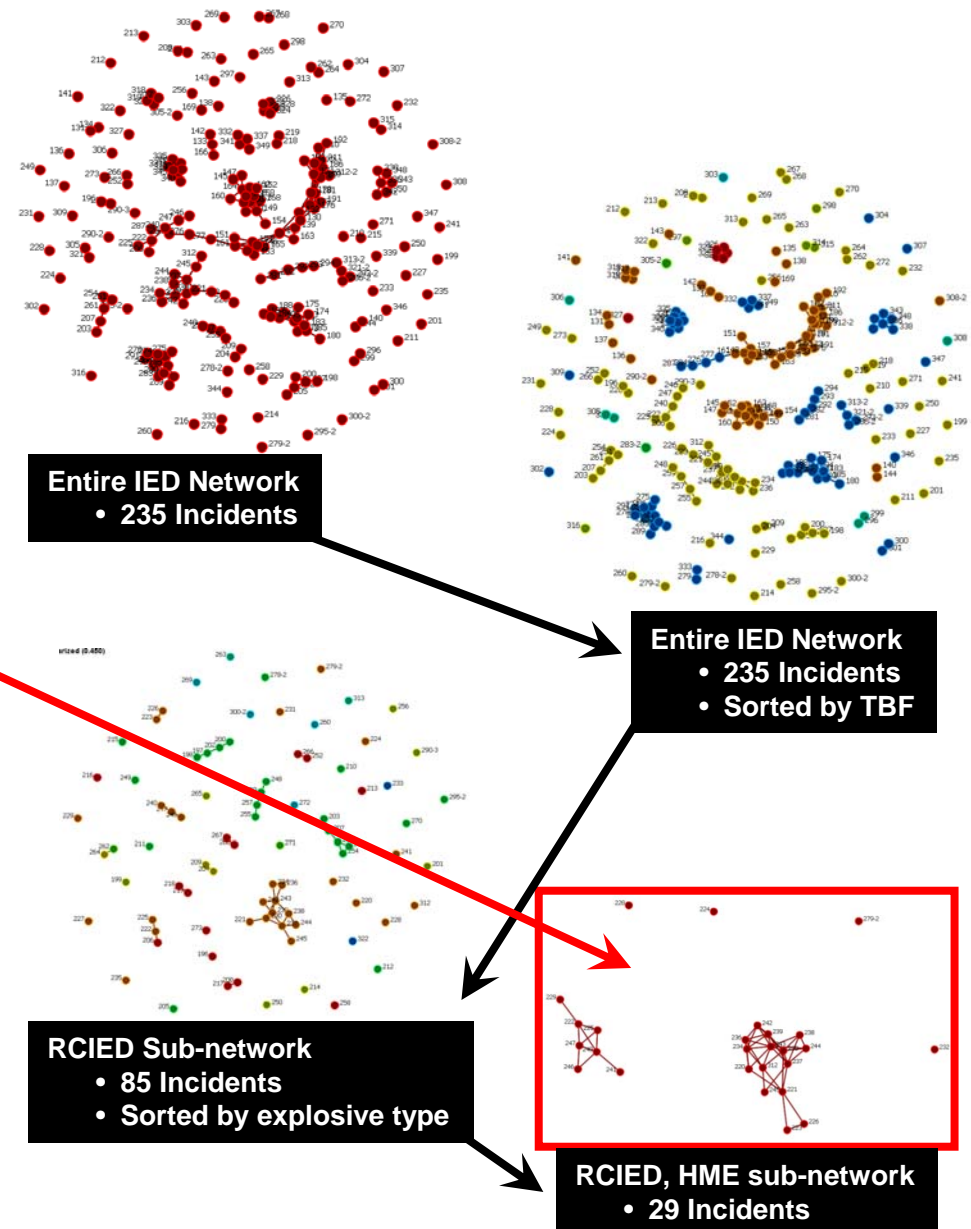


- By taking a two-pronged approach to analyzing IED component data
  1. Improving on-scene collection capability that **structures** the data in a way that is easily imported into network analysis tools
  2. Applying **component level** analysis
- We can gain a much better ability to fill gaps in the knowledge of IED networks that are otherwise left empty
  - IEDNA makes it possible for an analyst to
    - More clearly define the specific network of interest
    - Identify likely bomb-making cells / individuals
    - Increase the value of HUMINT and SIGINT reporting
    - Increase the chances for justification of Direct Action on bomb-making groups and individuals
    - Zero in on more specific geographic areas of interest
    - Justify ISR collections requests **empirically**
    - Track and link together IED components and events across regional and national boundaries
  - In a drastically faster Processing, Exploitation, Dissemination cycle
    - In **minutes or hours** vice weeks and months



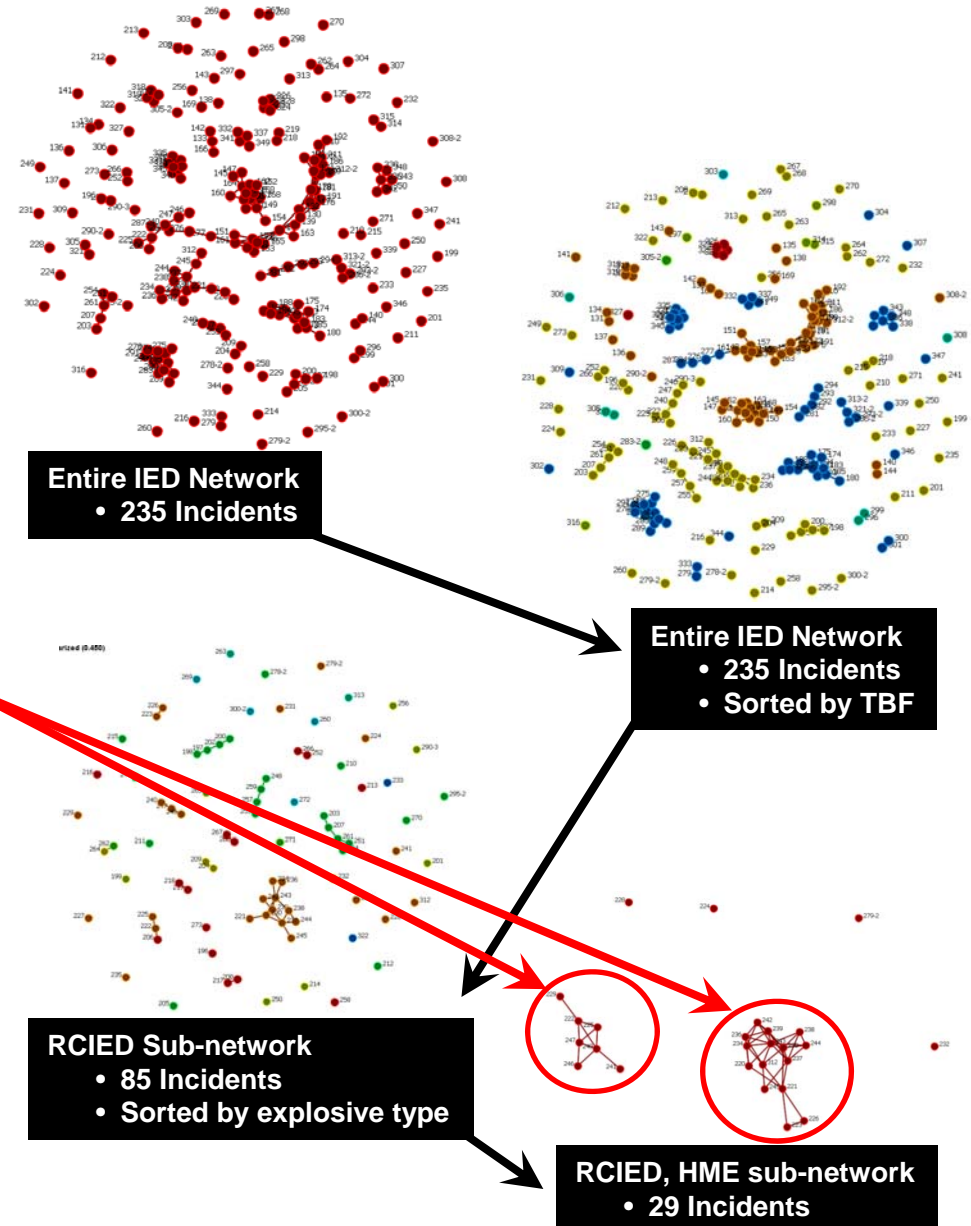


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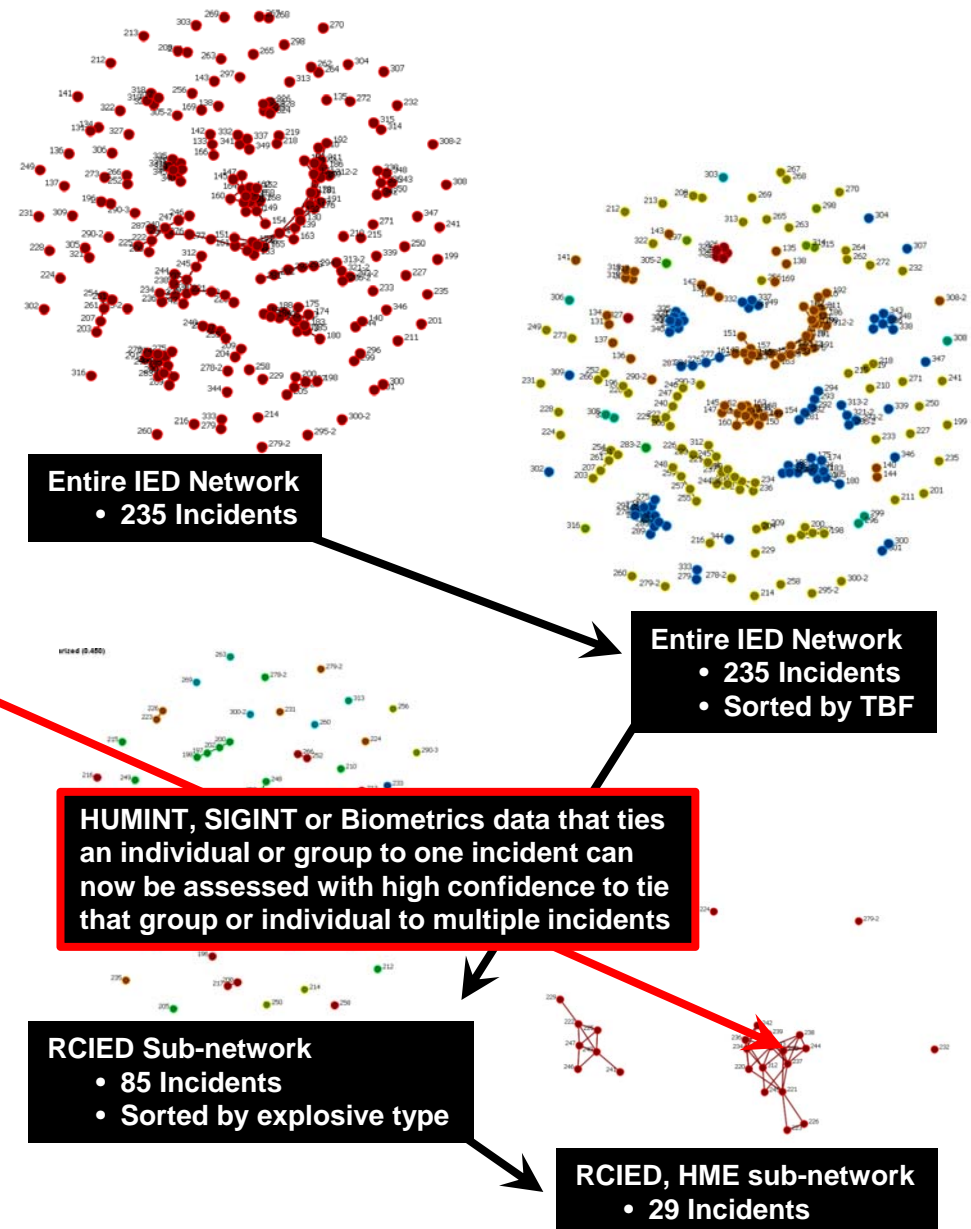


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## RCIED, HME sub-network

- Geo-located
- Maintaining links



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**New RCIED, HME sub-network areas of interest**

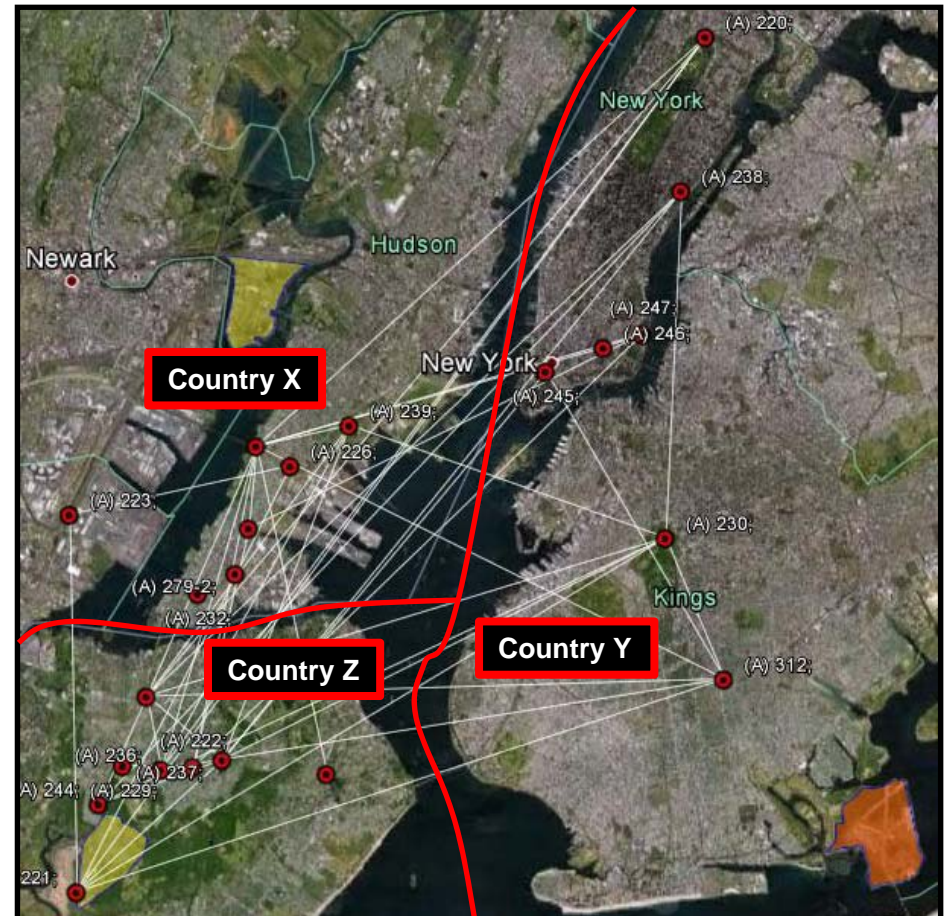
- Reduces focus from 187 square miles to two 9 square mile areas

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- Bottom Line / Big Picture
  - IEDNA is **not** a silver bullet
    - There will never be one
  - It **does** fill a gap in knowledge by properly utilizing data that is already being collected
    - These techniques are proven and validated, and are therefore powerful tools that give commanders more options in the F3EA cycle:
      - Empirically justify Collections Emphasis Requests
      - Satisfy legal justifications for Direct Action
      - Identify supply chain similarities within IED networks and sub-networks



- Bottom Line / Big Picture (continued)
  - It also allows an analyst to quickly sort through massive datasets that currently entail hundreds of hours of analyst legwork
    - By quickly sorting through the IED component variables, an analyst can zero in on a sub-network of interest
    - Including isolating for specific components that may be moving across regional and national boundaries
  - Again, EOD techs are already **required** to collect this type of data
    - Our application allows them to collect it in a way that structures the data and reduces the reporting burden
    - Not taking advantage of the intelligence in a **timely** manner is a **failure**

# Points of Contact

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