

BITSIGHT

GIA

Graph of Internet Assets

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Agenda

O1 Background

Motivation and conception

O2 GIA Overview

Data sources and graph structure

O3 Asset Suggestions

Example GIA path to finding assets

O4 Suggestion Evaluation

Confidence of entity ownership

O5 GIA in Bitsight Products

Where are the direct impacts of GIA?

01

Background



GIA use-case

Current and planned applications of GIA are for entity asset identification (and mapping)



GIA potential

Graph techniques can be powerful for applications outside of asset mapping (for future research)

GIA Motivation and Conception



Long-standing entity mapping

- Uses single data sources separately
- i.e. whois registration data



“Going dark” problem

- With GDPR comes trend to redact entity info in whois data
- Migration to cloud services removes need to register CIDR blocks



GIA Conception

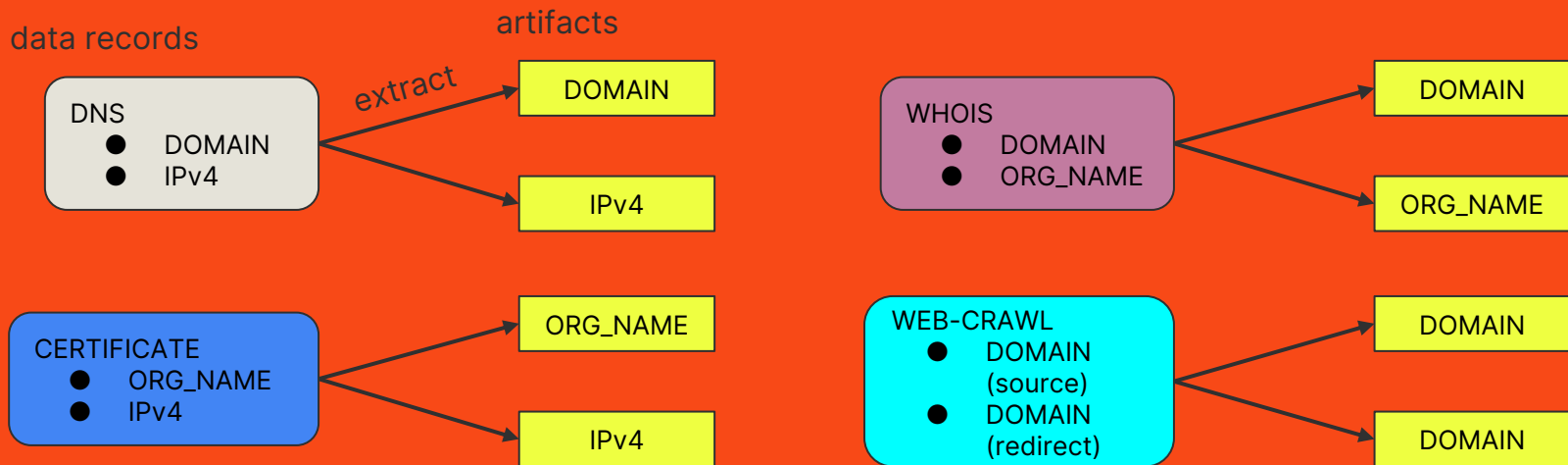
- Connect multiple data sources
- Make multi-faceted asset association inferences

02

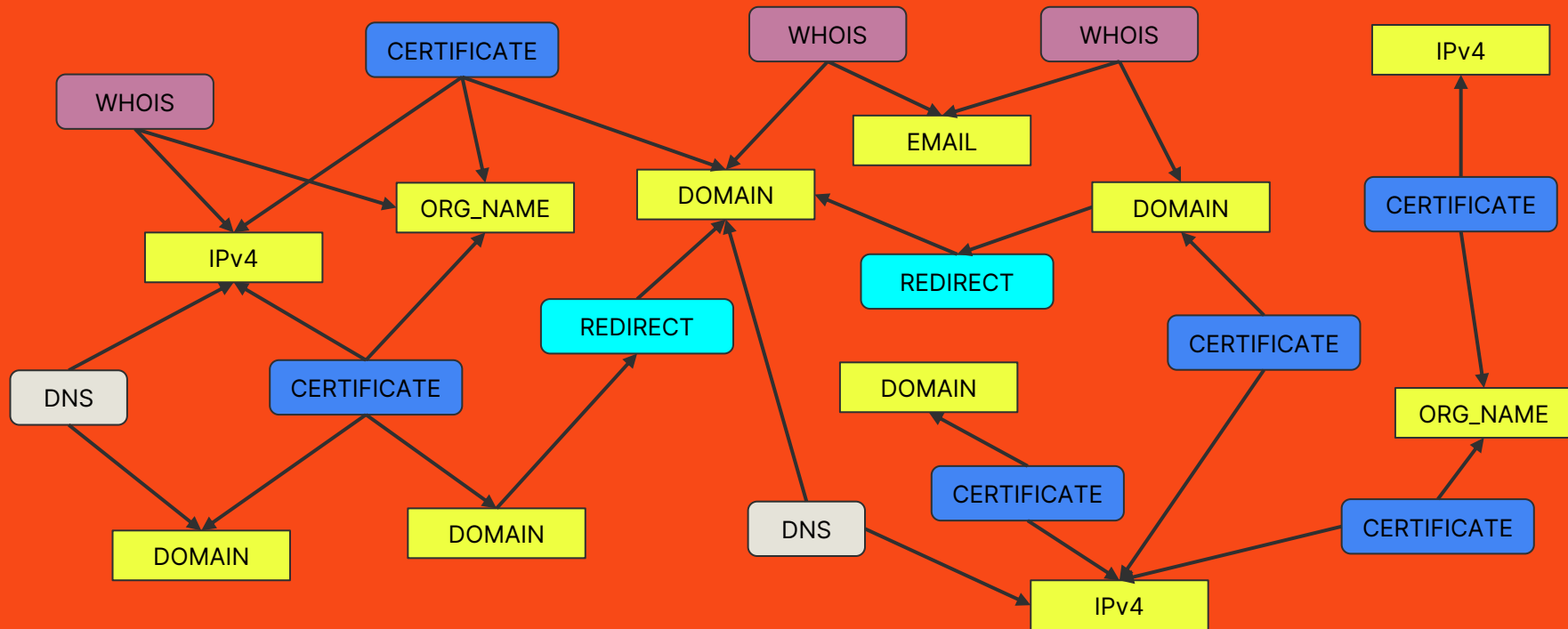
GIA Overview



Example Data Sources



Data Merge \Rightarrow GIA

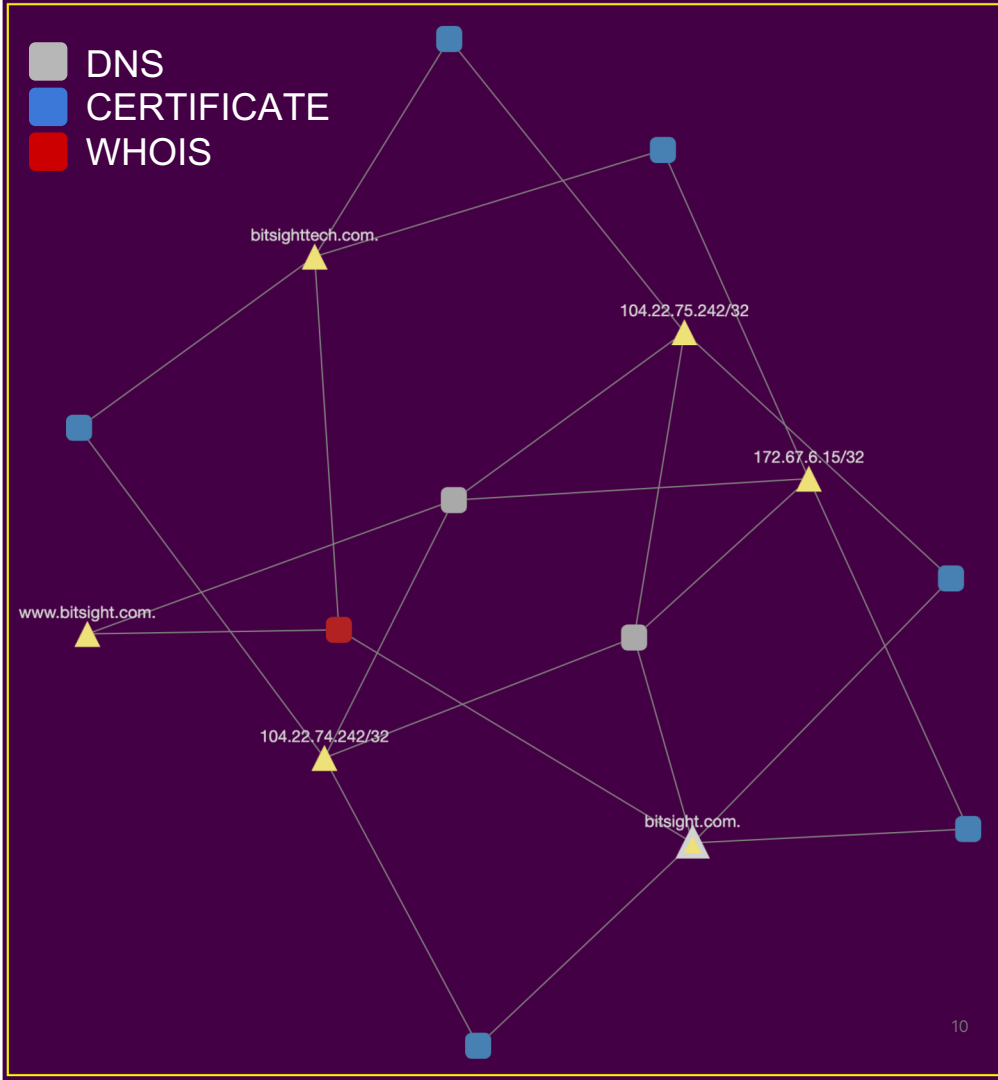


03 Asset Suggestions



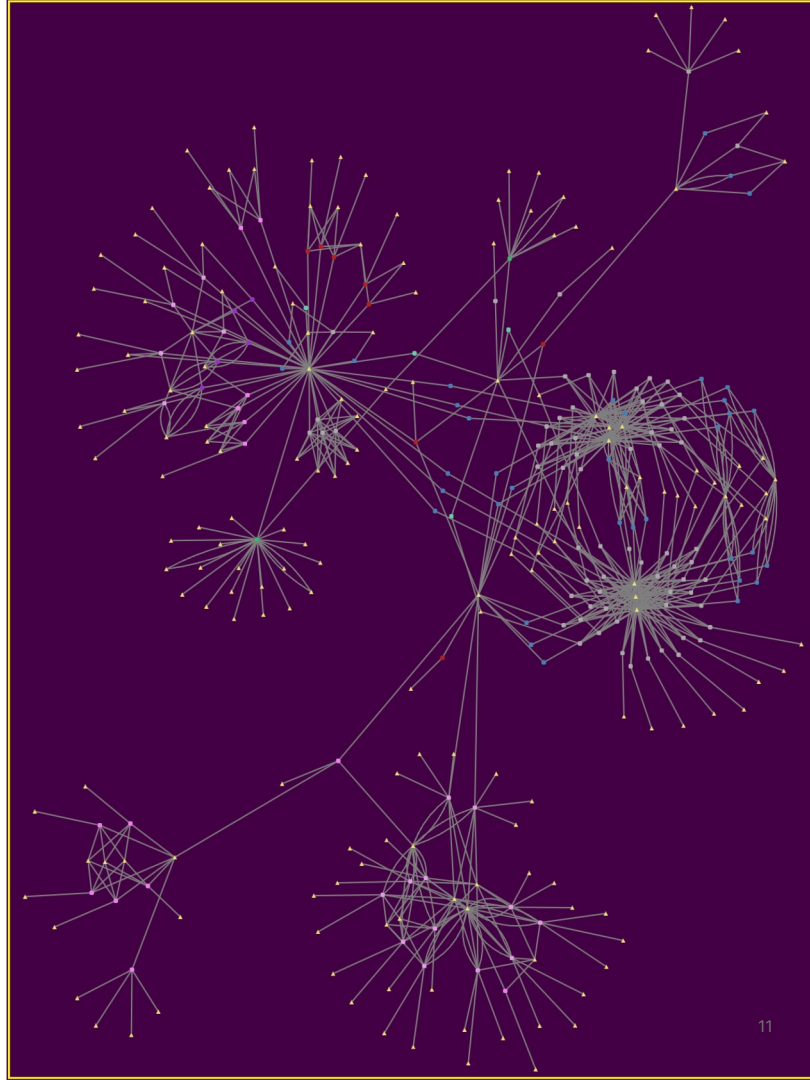
Real Example (simplified w/ detail)

- Possible GIA path to finding assets
- Start with seeds that we know belong
 - bitsight.com
 - www.bitsight.com (same domain)
- Expand out in GIA
- Collect other assets as suggestions
 - bitsighttech.com
 - 104.22.75.242/32
 - 172.67.6.15/32
 - 104.22.74.242/32



Real Example (less simplified)

- Including more connections in the Bitsight graph
- Already pretty complex
- Many connections between assets via multiple data sources
- Our machinery for a single entity uses more than this



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04 Suggestion Evaluation





Suggestion Evaluation

Two ways to get into entity maps



Proprietary rules-based automation



Human curation



Suggestion Evaluation

Two ways to get into entity maps



Proprietary rules-based automation

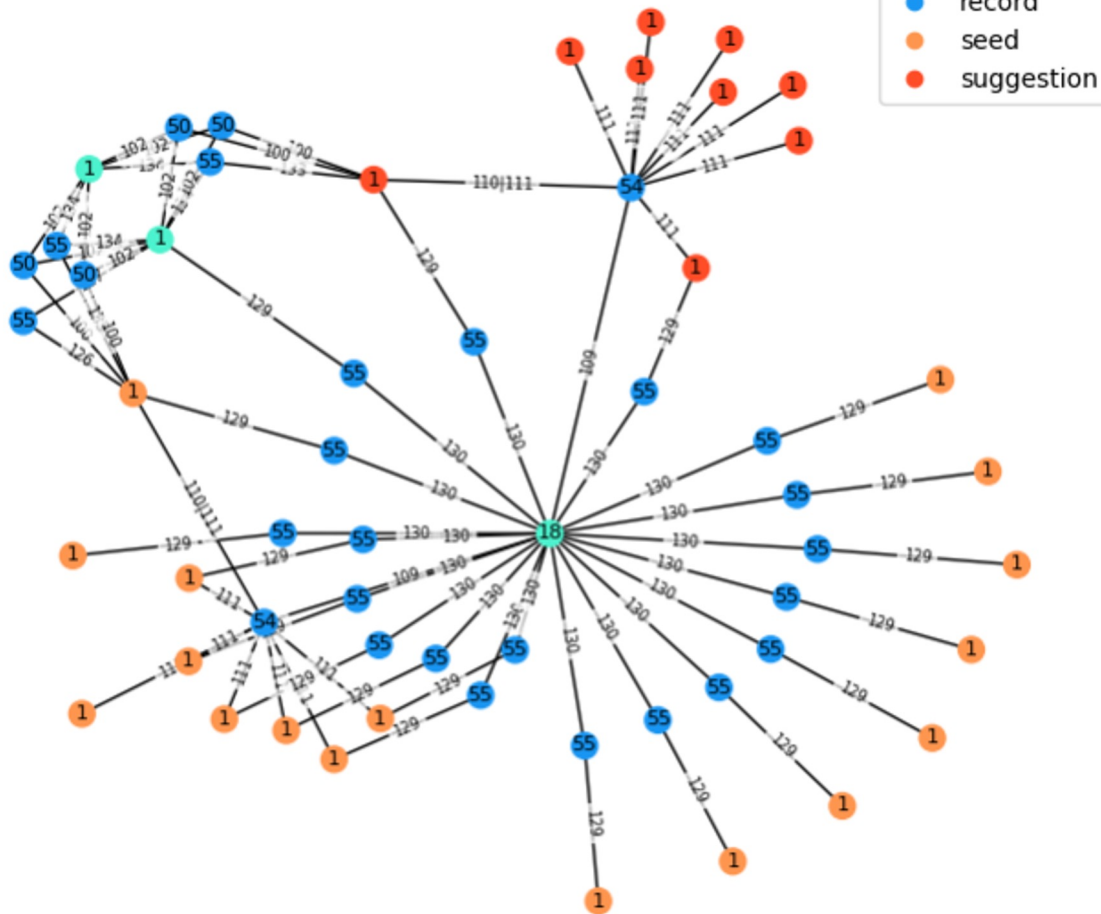


Human curation

**YEARS OF EXPERIENCE
WITH BOTH!**

ML Modeling

- GIA enables ML modeling
 - Assigns confidence of entity ownership to suggested assets
- Graph for a single suggested domain
 - Connections between seeds and suggestion



Modeling Concept

- ML model learns which connections are more indicative of ownership
 - Uses this to assign a confidence value
- Current use case: multiply productivity of human curation on domain asset association
 - More suggestions
 - More accurate suggestions
 - ⇒ Better entity maps



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05 GLA in Bitsight Products



GIA is already enhancing domain asset association in entity maps

GIA Product Roadmap

CIDR association enhancement

Implement ML model to provide CIDR suggestions to human curation

Port rules-based automation to GIA

- Faster automated discovery and whole inventory updates
- Closes lag to 3rd party data

Probable assets feed

- Part of EASM
- Experimenting to generate using ML asset confidences
- Collaborations w/ some customers for PoC devel.

Thank you

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