STIX & The Cyber Asset Concept
Why you should use the (abstracted) Asset concept in CTI

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In CTI you want to know (collect/aggregate/correlate) and share Who, What, When, Where, How, Why.

Assuming that at some abstracted level:
A Cyber Asset (that could be an “Agent”, or “Actor”, or “Party”, or “Group of”) is always:
  • An Organization (e.g.: a country, an enterprise, a company, etc.)
  • A Person
  • An Automaton (or an IT-Asset, e.g.: system, network, database, software, website…)
  • A Physical object (e.g.: a building, a lock, a device, etc.)

Who
Some concepts/objects/constructs in the current CTI Information Model cover the Who:

  Threat_Actor ("malicious actors or adversaries")
  Ref. https://stixproject.github.io/data-model/1.2/ta/ThreatActorType/
  Expressed as an Identity
  Ref. https://stixproject.github.io/data-model/1.2/stixCommon/IdentityType/

Why are we using the version 3.0 of the OASIS CIQ-PIL schema for structured characterization of Identities?
Because I asked for it some years ago. Why? To be compatible with the Asset Identification specification (NISTIR7693) http://scap.nist.gov/specifications/ai/

Question: could a Threat_Actor always be characterized (or abstracted) as one (or a group of)?:
  • An Organization (e.g.: a country, an enterprise, a company, etc.)
  • A Person
  • An Automaton (or an IT-Asset, e.g.: system, network, database, software, website…)
  • A Physical object (e.g.: a building, a door, a lock, a device, etc.)
**AffectedAsset**

https://stixproject.github.io/data-model/1.2/incident/AffectedAssetType/

Could the enumeration here https://stixproject.github.io/data-model/1.2/stixVocabs/AssetTypeVocab-1.0/ be abstracted to:

- An **Organization** (e.g.: a country, an enterprise, a company, etc.)
- A Person
- An Automaton (or an IT-Asset, e.g.: *system, network, database, software, website...*
- A Physical object (e.g.: a building, a door, a lock, a device, etc.)

**Exploit_Target** “vulnerabilities or weaknesses in *software, systems, networks* or configurations that are targeted for exploitation by the TTP of a ThreatActor”

https://stixproject.github.io/data-model/1.2/et/ExploitTargetType/

Question: is an Exploit_Target always related to:

- An Automaton (or an IT-Asset, e.g.: *system, network, database, software, website...*)

Question: if Exploit_Target was abstracted to a concept of Target, or Victim; could it be characterized (or abstracted) as one (or a group of)?:

- An **Organization** (e.g.: a country, an enterprise, a company, etc.)
- A Person
- An Automaton (or an IT-Asset, e.g.: *system, network, database, software, website...*)
- A Physical object (e.g.: a building, a door, a lock, a device, etc.)

In this case, Question: could an Exploit_Target could be both What and Who?

**Incident**

https://stixproject.github.io/data-model/1.2/incident/IncidentType/

“Incidents are discrete instances of Indicators affecting an **organization** along with information discovered or decided during an incident response investigation. They consist of data such as time-related information, **parties** involved, **assets** affected, impact assessment, related Indicators, related Observables, leveraged TTP, **attributed** Threat Actors, intended effects, nature of compromise, response Course of Action requested, response Course of Action taken, confidence in characterization, handling guidance, **source** of the Incident information, log of actions taken, etc.”

Question: is an Incident always involving one or more (group(s) of)?:

- An **Organization** (e.g.: a country, an enterprise, a company, etc.)
- A Person
- An Automaton (or an IT-Asset, e.g.: *system, network, database, software, website...*)
- A Physical object (e.g.: a building, a door, a lock, a device, etc.)

**Course of Action (COA)**

https://stixproject.github.io/data-model/1.2/coa/CourseOfActionType/

Question: is an COA always involving one or more (group(s) of)?:

- An **Organization** (e.g.: a country, an enterprise, a company, etc.)
- A Person
• An Automaton (or an IT-Asset, e.g.: system, network, database, software, website...)
• A Physical object (e.g.: a building, a door, a lock, a device, etc.)
Questions

From a storage point of view...
Is there a real need to store multiple times (duplicates) basics information (identification) regarding one Organization or a Person?

(NB: yes information can change and evolve other time, but GUIDs should be Global and Universal)

Could an Organization, or a Person, or an IT-Asset (e.g. a website) be one Threat_Actor for an Organization one day, and an Exploit_Target/Victim for another Organization the same day at the same time?

Could an Organization, or a Person, or an IT-Asset (e.g. a website) be “good/trusted” for an Organization one day and considered a Threat_Actor another day?

Could the Trust concept be applied (and change other time) on:
  • An Organization (e.g.: a country, an enterprise, a company, etc.)
  • A Person
  • An Automaton (or an IT-Asset, e.g.: system, network, database, software, website...)
  • A Physical object (e.g.: a building, a door, a lock, a device, etc.)
To something else?

Could a Threat_Actor’s AssociatedActor be also a Threat_Actor (a Responder, a Victim...)?
Issues in the current CTI Information/Data Model

Not intended to be exhaustive, and main scope limited to the Asset concept.

InformationSource vs Identity

Example Incident: https://stixproject.github.io/data-model/1.2/incident/IncidentType/

Reporter0..1 InformationSource Type
The Reporter field details information about the reporting source of this Incident.

Responder0..n InformationSource Type
The Responder field is optional and details information about the assigned responder for this Incident.

Coordinator0..n InformationSource Type
The Coordinator field is optional and details information about the assigned coordinator for this Incident.

Victim0..n Identity Type
The Victim field is optional and details information about a victim of this Incident.

Should a Victim “limited to” a Person?
Could a Victim and a Reporter be one of (or a Group of):
• An Organization (e.g.: a country, an enterprise, a company, etc.)
• A Person
• An Automaton (or an IT-Asset, e.g.: system, network, database, software, website...)
• A Physical object (e.g.: a building, a door, a lock, a device, etc.)
Something else?

From a storage point of view (and also from a number of bits other the wire point of view): Could a Reporter be also at some point a Responder, a Coordinator, a Victim, a Threat_Actor...?

Tool

https://stixproject.github.io/data-model/1.2/cyboxCommon/ToolInformationType/
If a Tool is always a Software (one of Asset), could/should it be identified using CPE?

Vendor0..1 string This field contains information identifying the vendor organization for this tool.

From a storage point of view (and also from a number of bits other the wire point of view): Should the Vendor Organization a string here and a construct elsewhere?

Could a Tool be also an AffectedSoftware?
https://stixproject.github.io/data-model/1.2/et/AffectedSoftwareType/

COA vs Activity

https://stixproject.github.io/data-model/1.2/stixCommon/ActivityType/