Best Practices in Threat Intelligence

Gather, document, analyse and contextualise in-

CIRCL / Team MISP Project

MISP Project
https://www.misp-project.org/

13th ENISA-EC3 Workshop

2024-10-02

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Gather, document, analyse and contextualise in-
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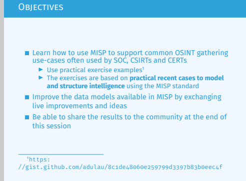
Objectives

- Learn how to use MISP to support common OSINT gathering use-cases often used by SOC, CSIRTs and CERTs
  - Use practical exercise examples[1]
  - The exercises are based on **practical recent cases to model and structure intelligence** using the MISP standard
- Improve the data models available in MISP by exchanging live improvements and ideas
- Be able to share the results to the community at the end of this session

[1] https://gist.github.com/adulau/8c1de48060e259799d3397b83b0eec4f



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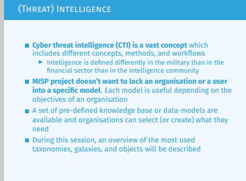
(Threat) Intelligence

- **Cyber threat intelligence (CTI) is a vast concept** which includes different concepts, methods, and workflows
    - Intelligence is defined differently in the military than in the financial sector than in the intelligence community
- **MISP project doesn't want to lock an organisation or a user into a specific model**. Each model is useful depending on the objectives of an organisation
- A set of pre-defined knowledge base or data-models are available and organisations can select (or create) what they need
- During this session, an overview of the most used taxonomies, galaxies, and objects will be described



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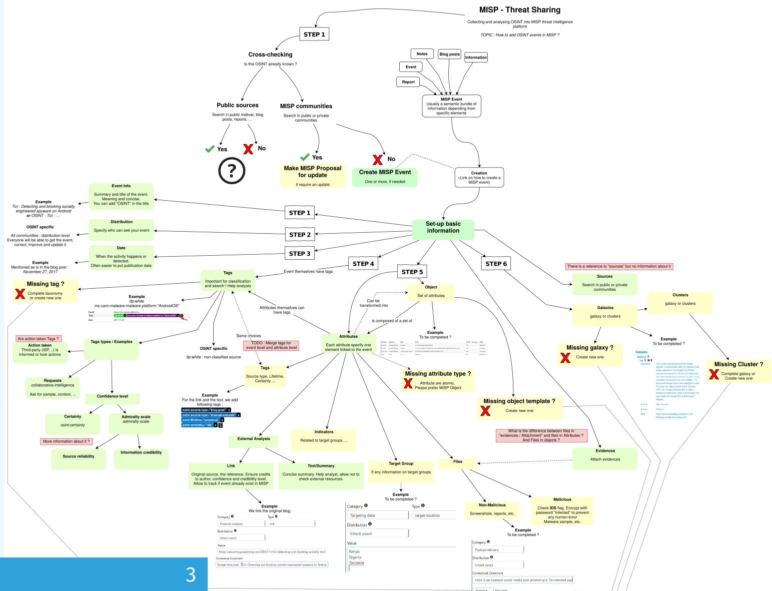
Overall process of collecting and analysing OSINT



MISP - Threat Sharing

Collecting and analysing OSINT into MISP threat intelligence platform

TOPIC : How to add OSINT events in MISP ?

STEP 1
Cross-checking
Is this OSINT already known ?
Public sources
Search in public indexer, blog posts, reports, ...
MISP communities
Search in public or private communities
✓ Yes
✗ No
?
✓ Yes
Make MISP Proposal for update
If require an update
✗ No
Create MISP Event
One or more, if needed
Notes
Blog posts
Information
Event
Report
MISP Event
Usually a semantic bundle of information depending from specific elements
Creation
<Link on how to create a MISP event)
Set-up basic information
STEP 1
Event Info
Summary and title of the event. Meaning and concise. You can add "OSINT" in the title
Example
Tizi : Detecting and blocking socially engineered spyware on Android or OSINT - Tizi : ...
STEP 2
Distribution
Specify who can see your event
OSINT specific
All communities : distribution level Everyone will be able to get the event, correct, improve and update it
STEP 3
Date
When the activity happens or detected. Often easier to put publication date
Example
Mentioned as is in the blog post : November 27, 2017
STEP 4
Event themselves have tags
Tags
Important for classification and search ! Help analysts
Missing tag ?
✗ Complete taxonomy or create new one
Example
tlp:white
ms-caro-malware:malware-platform:"AndroidOS"
Attributes themselves can have tags
Are action taken Tags ?
Action taken
Third-party (ISP, ...) is informed or took actions
Tags types / Examples
Requests
collaborative-intelligence
Ask for sample, context, ...
Confidence level
Certainty
osint:certainty
Admiralty scale
admiralty-scale
More information about it ?
Source reliability
Information credibility
OSINT specific
tlp:white : non-classified source
Same choices
TODO : Merge tags for event level and attribute level
Tags
Source type, Lifetime, Certainty ...
Example
For the link and the text, we add following tags :
osint:source-type="blog-post"
osint:source-type="manual-analysis"
osint:lifetime="perpetual"
osint:certainty="100"
STEP 5
Object
Set of attributes
Can be transformed into
is composed of a set of
Attributes
Each attribute specify one element linked to the event
Example
To be completed ?
Missing attribute type ?
✗ Attribute are atomic. Please prefer MISP Object
Missing object template ?
✗ Create new one
External Analysis
Indicators
Related to target groups, ...
Link
Original source, the reference. Ensure credits to author, confidence and credibility level. Allow to track if event already exist in MISP
Text/Summary
Concise summary. Help analyst, allow not to check external resources.
Target Group
If any information on target groups
Files
Evidences
Attach evidences
What is the difference between files in "evidences / Attachment" and files in Attributes ? And Files in objects ?
Non-Malicious
Screenshots, reports, etc.
Malicious
Check IDS flag. Encrypt with password "infected" to prevent any human-error Malware sample, etc.
STEP 6
There is a reference to "sources" but no information about it
Sources
Search in public or private communities
Galaxies
galaxy or clusters
Clusters
galaxy or clusters
Missing galaxy ?
✗ Create new one
Missing Cluster ?
✗ Complete galaxy or Create new one
Example
To be completed ?
Galaxies
Android

Example
We link the original blog

Category: External analysis
Type: link
Distribution: Inherit event
Value: https://security.googleblog.com/2017/11/tizi-detecting-and-blocking-socially.html
Contextual Comment: Google blog post - Tizi: Detecting and blocking socially engineered spyware on Androi

Example
To be completed ?

Category: Targeting data
Type: target-location
Distribution: Inherit event
Value:
Kenya
Nigeria
Tanzania

Example
To be completed ?

Category: Payload delivery
Distribution: Inherit event
Contextual Comment: Here is an example social media post promoting a Tizi-infected app

2024-10-02

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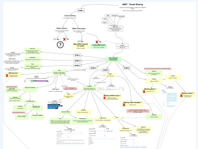
└Overall process of collecting and analysing OSINT



Meta information and contextualisation 1/2

- Quality of indicators/attributes are important but **tagging and classification are also critical to ensure actionable information**
- Organizing intelligence is done in MISP by using tags, which often originate from MISP taxonomy libraries
- The scope can be classification (*tlp, PAP*), type (*osint, type, veris*), state (*workflow*), collaboration (*collaborative-intelligence*), or many other fields
- MISP taxonomy documentation is readily available[2]
- **Review existing practices of tagging in your sharing community, reuse practices, and improve context**

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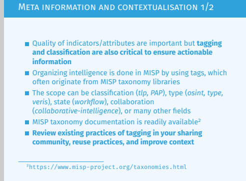

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Meta information and contextualisation 2/2

- **When information cannot be expressed in triple tags format** (*namespace:predicate=value*), MISP use Galaxies
- **Galaxies** contain a huge set of common libraries[3] such as threat actors, malicious tools, tactics, target information, mitigations, and more
- When tagging or adding a Galaxy cluster, tagging at the event level is for the whole event (including attributes and objects). Tagging at the attribute level is for a more specific context

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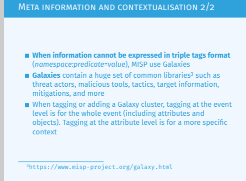

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Estimative Probability

- **Words of Estimative Probability**[4] propose clear wording while estimating probability of occurence from an event
- A MISP taxonomy called **estimative-language**[5] proposes an applied model to tag information in accordance with the concepts of Estimative Probability

[4] https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/sherman-kent-and-the-board-of-national-estimates-collected-essa
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2024-10-02

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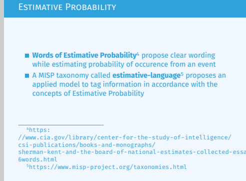

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Reliability, credibility, and confidence

- The **Admiralty Scale**[6] (also called the **NATO System**) is used to rank the reliability of a source and the credibility of information
- A MISP taxonomy called admiralty-scale[7] is available
- US DoD **JP 2-0, Joint Intelligence**[8] includes an appendix to express confidence in analytic judgments
- A MISP predicate in estimative-language called confidence-in-analytic-judgment[9] is available

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[8] http://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp2_0.pdf, page 114

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2024-10-02

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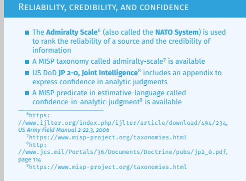

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Adding attributes/objects to an event

- If the information is a **single atomic element**, using a single attribute is preferred
  - Choosing an attribute type is critical as this defines the automation/export rule (e.g. *url* versus *link* or ip-src/ip-dst?)
  - Enabling the IDS (automation) flag is also important, but *when you are in doubt*, don't set the IDS flag
- If the information is **composite** (ip/port, filename/hash, bank account/BIC), using an object is strongly recommended

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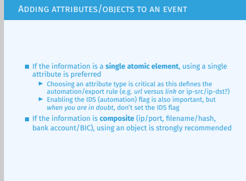

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How to select the right object?

There are more than 150 MISP object[10] templates.
As an example, at CIRCL, we regularly use the following object templates *file*, *microblog*, *domain-ip*, *ip-port*, *coin-address*, *virustotal-report*, *paste*, *person*, *ail-leak*, *pe*, *pe-section*, *registry-key*.

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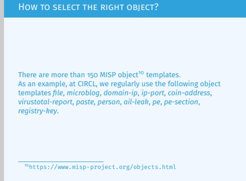

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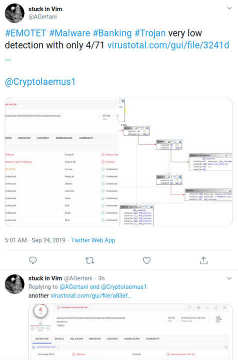
MICROBLOG OBJECT

Use case

A series of OSINT tweets from a security researcher. To structure the thread, the information, and keep a history.



stuck in Vim
@AGertani

#EMOTET #Malware #Banking #Trojan very low detection with only 4/71 virustotal.com/gui/file/3241d
…

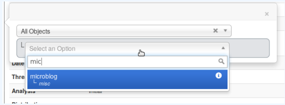
@Cryptolaemus1

5:01 AM · Sep 24, 2019 · Twitter Web App

stuck in Vim @AGertani · 3h
Replying to @AGertani and @Cryptolaemus1
another virustotal.com/gui/file/a83ef…

Object to use

The microblog object can be used for Tweets or any microblog post (e.g. Facebook). The object can be linked using *followed-by* to describe a series of post.



All Objects

Select an Option

mic

microblog
└ misc

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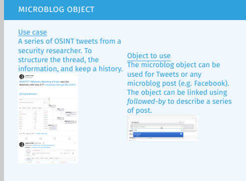
└─microblog object



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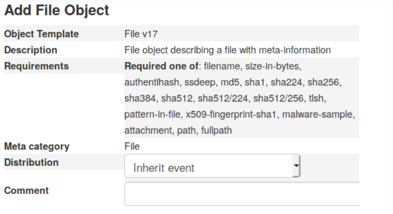
FILE OBJECT

Use case

- A file sample was received by email or extracted from VirusTotal
- A list of file hashes were included in a report
- A hash value was mentioned in a blog post

Object to use

The file object can be used to describe file. It's usual to have partial meta information such as a single hash and a filename.



Add File Object

Object Template	File v17
Description	File object describing a file with meta-information
Requirements	**Required one of**: filename, size-in-bytes, authentihash, ssdeep, md5, sha1, sha224, sha256, sha384, sha512, sha512/224, sha512/256, tlsh, pattern-in-file, x509-fingerprint-sha1, malware-sample, attachment, path, fullpath
Meta category	File
Distribution	Inherit event
Comment	

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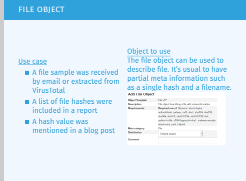
└file object



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