

# Information Sharing and Taxonomies

## Practical Classification of Threat Indicators using MISF



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# Quick MISP introduction

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- MISP<sup>1</sup> is an IOC and threat indicators sharing software.
- MISP has **many functionalities** e.g. flexible sharing groups, automatic correlation, free-text import helper, event distribution and collaboration.
- CIRCL operates multiple MISP instances with a significant user base (around 300 organizations with 700 users).
- After some years of trial-and-error, we share in this presentation a specific **new MISP feature introduced in 2.4 called taxonomies**.

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<sup>1</sup><https://github.com/MISP/MISP>

# Sharing Difficulties

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- Legal restriction
  - "Our legal framework doesn't allow us to share information."
  - "Risk of information leak is too high and it's too risky for our organization or partners."
- Practical restriction
  - "We don't have information to share."
  - "We don't have time to process or contribute indicators."
  - "Our model of classification doesn't fit your model."
  - "Tools for sharing information are tied to a specific format, we use a different one."

# From Tagging to Flexible Taxonomies

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## OSINT - Cyberthreats BlackEnergy2

Event ID	2910
Uuid	568e7167-4e00-4654-b5f8-4b23950d210f
Org	<a href="#">CIRCL</a>
Owner org	<a href="#">CIRCL</a>
Contributors	
Email	alexandre.dulaunoy@circl.lu
Tags	<b>tlp:white</b> x <b>Type:OSINT</b> x +
Date	2016-01-07
Threat Level	Medium

- Tagging is a simple way to attach a classification to an event.
- In the early version of MISP, tagging was local to an instance.
- After evaluating different solutions of classification, we build a new scheme using the concept of machine tags.

## Machine Tags

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- Triple tag or machine tag was introduced in 2004 to extend geotagging on images.

admiralty-scale:source-reliability="c"

namespace                      predicate                      value

- A machine tag is just a tag expressed in way that allows systems to parse and interpret it.
- Still have a human-readable version:
  - admiralty-scale:Source Reliability="Fairly reliable"

# MISP Taxonomies

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- Taxonomies are implemented in a simple JSON format.
- Anyone can create their own taxonomy or reuse an existing one.
- The taxonomies are in an independent git repository<sup>2</sup>.
- These can be freely reused and integrated in other threat intel tools.

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<sup>2</sup><https://www.github.com/MISP/misp-taxonomies/>

## Existing Taxonomies

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- NATO - **Admiralty Scale**
- CIRCL Taxonomy - **Schemes of Classification in Incident Response and Detection**
- eCSIRT and IntelMQ incident classification
- EUCI **EU classified information marking**
- Information Security Marking Metadata from DNI (Director of National Intelligence - US)
- NATO Classification Marking
- OSINT **Open Source Intelligence - Classification**
- TLP - **Traffic Light Protocol**
- Vocabulary for Event Recording and Incident Sharing - **VERIS**

## Want to write your own taxonomy? 1/2

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```
1 {
2   "namespace": "admiralty-scale",
3   "description": "The Admiralty Scale (also called the NATO
4     System) is used to rank the reliability of a source and
5     the credibility of an information.",
6   "version": 1,
7   "predicates": [
8     {
9       "value": "source-reliability",
10      "expanded": "Source Reliability"
11    },
12    {
13      "value": "information-credibility",
14      "expanded": "Information Credibility"
15    }
16  ],
17  ...

```



## Want to write your own taxonomy? 2/2

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```
1 {  
2   "values": [  
3     {  
4       "predicate": "source-reliability",  
5       "entry": [  
6         {  
7           "value": "a",  
8           "expanded": "Completely reliable"  
9         }  
10    ],  
11  ]  
12 }
```

- Publishing your taxonomy is as easy as a simple git pull request on [misp-taxonomies](https://github.com/MISP/misp-taxonomies)<sup>3</sup>.

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<sup>3</sup><https://github.com/MISP/misp-taxonomies>

## How are taxonomies integrated in MISP?

10	✘	TO:HIDE		2	 
9	✘	TODO		8	 
11	✘	TODO:VT-ENRICHMENT		9	 
1	✔	Type:OSINT		932	 
18	✔	admiralty-scale:information-credibility="1"	admiralty-scale	0	 
19	✔	admiralty-scale:information-credibility="2"	admiralty-scale	1	 
20	✔	admiralty-scale:information-credibility="3"	admiralty-scale	3	 
21	✔	admiralty-scale:information-credibility="4"	admiralty-scale	0	 
22	✔	admiralty-scale:information-credibility="5"	admiralty-scale	1	 
23	✔	admiralty-scale:information-credibility="6"	admiralty-scale	2	 

- MISP administrator can just import (or even cherry pick) the namespace or predicates they want to use as tag.
- Tags can be exported to other instances.
- Tags are also accessible via the MISP REST API.

# Filtering the distribution of events among MISP instances

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- Applying rules for distribution based on tags:

### Set push rules

<b>Allowed Tags</b> tip:white	Available Tags Type:OSINT tip:green tip:amber tip:ex:chr admiralty-scale:informatic	<b>Blocked Tags</b> circl:topic="finance"
<b>Allowed Organisations</b> CIRCL	Available Organisations ADMIN	<b>Blocked Organisations</b>

## Other use cases using MISP taxonomies

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- Tags can be used to set events for further processing by external tools (e.g. VirusTotal auto-expansion using Viper).
- Ensuring a classification manager classifies the events before release (e.g. release of information from air-gapped/classified networks).
- Enriching IDS export with tags to fit your NIDS deployment.

## Future functionalities related to MISP taxonomies

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- Sighting support (thanks to NCSC-NL) will be integrated in MISP allowing to auto expire IOC based on user detection.
- Adjusting taxonomies (adding/removing tags) based on their score or visibility via sighting.
- Simple taxonomy editors to help non-technical users to create their taxonomies.
- More public taxonomies to be included.

## Q&A

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- <https://github.com/MISP/MISP>
- <https://github.com/MISP/misp-taxonomies>
- [info@circl.lu](mailto:info@circl.lu) (if you want to join one of the MISP community operated by CIRCL)
- PGP key fingerprint: CA57 2205 C002 4E06 BA70 BE89 EAAD  
CFFC 22BD 4CD5