Reference Incident Classification Taxonomy
Task Force Status and Way Forward

JANUARY 2018
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Acknowledgements
- Members of Reference incident classification taxonomy task force (See Annex A)

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# Reference Incident Classification Taxonomy

January 2018

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1 Introduction

Over the past years there have been several discussions around the topic of security incident classification taxonomies. A number of initiatives even resulted in new or modified taxonomies, such as the ‘Common Taxonomy for (LE) Law Enforcement and CSIRTs’, which was set up to simplify CSIRT and LEA cooperation. This taxonomy resulted from collaboration initiatives such as the annual ENISA/EC3 Workshop which involved CSIRTs, LEAs, ENISA, and EC3. Other examples include the eCSIRT.net taxonomy which was developed in 2003, and the eCSIRT.net mkVI taxonomy which is an adaptation of the original eCSIRT.net taxonomy.

Creating a taxonomy is not a simple task. When dealing with topics like security incidents, there can be different ways in which to classify incidents, and it is not always easy or possible to determine which the best or correct classification is. Organisations defining a taxonomy are usually driven by different needs, and since different CSIRTs have different expectations, teams often end up developing their own incident classifications for internal use. In fact, the ‘Common Taxonomy for LE and CSIRTs’ is itself an adaptation of the CERT.PT taxonomy, which is itself an adaptation of the eCSIRT.net mkVI taxonomy. One main advantage of the Common Taxonomy for LE and CSIRTs for its use in the context of law enforcement is that it has been extended to also include a mapping of the incident classifications with a legal framework. Similarly, there have been a number of taxonomies that are in essence a branch or modification of another.

As the need for information exchange, and incident reporting increases, not to mention an increase in the use of automation in incident response, it is becoming evident that there is a need for common ground. This common ground would assist incident handlers dealing with technical incidents on a daily basis to deal with the abovementioned needs. Moreover, it could assist policy decision makers by offering a single reference point for discussing and drafting relevant policies such as the EU cyber security strategy and The Directive on security of network and information systems (NIS Directive). Following a discussion amongst the CSIRT community during the 51st TF-CSIRT meeting (15 May 2017 in The Hague, Netherlands), it was concluded that there is an urgent need for a taxonomy list and name everyone could rely on and refer to. This is where the Reference Incident Classification Taxonomy Task Force comes into play.

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2 http://www.ecsirt.net/cec/service/documents/wp4-clearinghouse-policy-v12.html#HEAD6
3 https://www.trusted-introducer.org/Incident-Classification-Taxonomy.pdf
4 https://www.cnsc.gov.pt/certpt/
5 https://github.com/MISP/misp-taxonomies
6 https://tf-csirt.org/tf-csirt/meetings/51st-meeting/
2 Background

2.1 Past work on Taxonomies

ENISA has recently published two reports related to Incident Taxonomies:

- ENISA Report: Information sharing and common taxonomies between CSIRTs and Law Enforcement (Dec 2015)
- ENISA Report: A good practice guide of using taxonomies in incident prevention and detection (Dec 2016)

In the first report, the main objective was to enhance cooperation both between the Member States (MS) of the EU and between related Network and Information Security (NIS) communities. It aimed at collecting and presenting information on projects facilitating information sharing between Member States CSIRTs and Law Enforcement. It also aimed at investigating which information can be shared between CSIRTs and Law Enforcement and how this can be achieved technically and organisationally. The following are some of the relevant proposals provided in this report:

- (to select) A taxonomy for the exchange of information based on desk research and based on the approval of the majority of the community.
- (to define) An update model for the taxonomy, to answer new requirements that could arise from the CSIRTs and the LEAs.
- (to develop) A roadmap for the implementation of the taxonomy in the exchange of information across CSIRTs and LEAs and the potential use of a sharing mechanism.

As an outcome of the report, a taxonomy was chosen as the best fitted to act as the nexus between LEAs and CSIRTs communities.

In the second report, the main objective was to provide relevant good practices in terms of taxonomies for incident detection and prevention for the CSIRT community. Additionally, it also provides conclusions and recommendations based on the qualitative assessment of taxonomies within the current taxonomy landscape on improvements that can be made on current taxonomies, such as what fields can be extended or added to existing taxonomies. Among the conclusions were the following:

- A centralised repository for hosting all relevant taxonomies along with their versions should be set up by ENISA.
- A small set of common taxonomies for specific use cases should be agreed upon by CSIRTs at the EU level.
- An “Other” or “Unknown”, “Tag” field should be used by the owners of taxonomies as an indicator to revise taxonomies, if there is an increase in that category with incidents or events of the same type.
- A roadmap towards standardised exchange formats in the CSIRTs community should be established at the EU level by the CSIRTs Network.
2.2 Trigger for Task Force

During the “51st TF-CSIRT meeting” (15 May 2017 in The Hague, Netherlands), members of the CSIRT community discussed the following points (amongst others):

- **There are two prominent taxonomies in the CSIRT community:** “Common Taxonomy for Law Enforcement and CSIRTS”, and “eCSIRT.net mkVI”.
- MISP\(^7\) caters for “Common Taxonomy for Law Enforcement and CSIRTS”, while IntelMQ caters for the general categories.
- 11 categories are fixed, whilst the incident types (2nd column) is usually customised differently by teams.
- This topic cannot be decided by TF-CSIRT alone, it has to be coordinated with EC3, standardization would be a solution.
- **The general conclusion – There is the need for a taxonomy list and name everyone could rely on and refer to.**
- ENISA will set up a Task Force in this regard.

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\(^7\) **MISP** – Malware Information Sharing Platform - Open Source Threat Intelligence Platform & Open Standards for Threat Information Sharing
3 Task Force

3.1 Aim and Objectives
As mentioned in the 51st TF-CSIRT meeting, “there is the need for a taxonomy list and name everyone could rely on and refer to”. As the need for information exchange, and incident reporting increases, not to mention an increase in the use of automation in incident response, it is becoming evident that there is need for some common ground. This common ground would assist incident handlers dealing with technical incidents on a daily basis to deal with the abovementioned needs. The aim of this task force is to enable the CSIRT community in reaching a consensus on a reference taxonomy. It should be noted that details such as identifying suitable sharing mechanisms are outside of the current scope. The objectives of the task force are the following:

- Develop Reference Document (Classifications, incident types or examples, and definition) using eCSIRT.net as a starting point.
- Define and develop an Update and Versioning Mechanism
- Host reference document
- Organise regular physical meetings with the stakeholders
- In the 2nd phase broader working group with non-European teams (FIRST) to achieve global consensus on incident reference taxonomy

3.1.1 Upcoming Tasks
The next meeting will be during the “53rd TF-CSIRT meeting” *(5-7 February 2018 co-located with FIRST in Hamburg, Germany)*. Below are some of the tasks that need to be addressed by the task force.

- Decide on two elemental points
  - Use eCSIRT.net as starting point
  - Decide whether to focus on Incident Type or incident Example in the second column
- Review and consolidate Incident Classifications and definitions in the reference taxonomy (starting with eCSIRT.net)
- Define update workflow and Versioning Mechanism
- Decide about who will be Hosting online reference taxonomy (ENISA/Dedicated site, etc.)
- Propose way forward, e.g.: to meet periodically
- Decide on name (reference taxonomy/eCSIRT.net/other...)

3.2 First Task Force Meeting
Following the 51st TF-CSIRT meeting, a call for expression of interest for participation in the Reference Incident Classification Taxonomy Task Force was sent out via the TF-CSIRT mailing list, and the first task force meeting was set up back to back with the 52nd TF-CSIRT meeting (See Current Members below). Below are some of the discussion points and conclusions from this meeting:

- Different CSIRTs use their own taxonomy, or modified version of an existing eCSIRT.net taxonomy. A reference taxonomy will help us find a middle ground, even though CSIRTs will have their own implementation.

*https://first.org/events/symposium/hamburg2018/*
Reference Document (Classifications, types (and decision on their importance), and definition))

Update and Versioning Mechanism.

We need to decide on the hosting of the reference document.

Following the upcoming meeting during TF-CSIRT in Hamburg, the reference taxonomy should be presented to other organisations such as FIRST and ITF.

There are differences in incident classification between CSIRTs and LEAs. However, they do go hand in hand and it is important to proceed accordingly.

Fortunately, there are members that are both in the Reference Taxonomy task force, and the Taxonomy Governance Group of the CSIRT-LEA taxonomy which can ensure a harmonious evolution of the “Reference CSIRT incident Taxonomy” and the “Common Taxonomy for Law Enforcement and CSIRTs”

- Mapping between the reference taxonomy and “Common Taxonomy for Law Enforcement and CSIRTs” is important
- Consider including “Common Taxonomy for Law Enforcement and CSIRTs” with link to legal framework as an annex.

It is important to define the objectives and outputs for the reference taxonomy (eg: statistics, information sharing and automation).

Scope and Motivation

- Taxonomy for CSIRT technical incidents
- To ensure that CSIRTs are speaking the same language.
- To facilitate sharing across CSIRTs.
- To facilitate the harmonization of statistics between the CSIRT community.
- To facilitate translation between different taxonomies, without disruption or need for major overhaul.
- Could be useful mapping within the context of NIS directive

The eCSIRT.net taxonomy seems to be a good starting point as a reference taxonomy.

To discuss formal name of the new reference incident classification taxonomy.

3.3 Current Members

It is important that amongst the members of the task force are members of CSIRT teams, the Common Taxonomy Governance Group (including representatives from ENISA and EC3), tool developers (MISP/InteLMQ...), and taxonomy owners (owner of eCSIRT.net). A mailing list has been set up in order to facilitate communication between the task force members.

See Annex A for the current list of participants.

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9 FIRST - the global Forum of Incident Response and Security Teams
4 Reference Incident Classification Taxonomy

To give a better understanding of how a reference taxonomy can benefit the community, we demonstrate a high level mapping of 4 taxonomies: eCSIRT.net (reference taxonomy), Common Taxonomy for LE and CSIRTs, and two CSIRT provided taxonomies (CIRCL.LU and CERT.LV).

4.1 Starting Point – ecsirt.net taxonomy

The main action item following the first task force meeting was to determine whether the eCSIRT.net taxonomy was a suitable candidate as a starting point for the reference taxonomy. The official latest version is the eCSIRT.net mkVI:

<table>
<thead>
<tr>
<th>INCIDENT CLASSIFICATION</th>
<th>INCIDENT EXAMPLES</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abusive Content</td>
<td>Spam</td>
<td>or &quot;Unsolicited Bulk Email&quot;, this means that the recipient has not granted verifiable permission for the message to be sent and that the message is sent as part of a larger collection of messages, all having a functionally comparable content</td>
</tr>
<tr>
<td></td>
<td>Harmful Speech</td>
<td>Discreditation or discrimination of somebody (e.g. cyber stalking, racism and threats against one or more individuals)</td>
</tr>
<tr>
<td></td>
<td>Child/Sexual/Violence/...</td>
<td>Child pornography, glorification of violence, ...</td>
</tr>
<tr>
<td>Malicious Code</td>
<td>Virus</td>
<td>Software that is intentionally included or inserted in a system for a harmful purpose. A user interaction is normally necessary to activate the code.</td>
</tr>
<tr>
<td></td>
<td>Worm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trojan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spyware</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dialler</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rootkit</td>
<td></td>
</tr>
<tr>
<td>Information Gathering</td>
<td>Scanning</td>
<td>Attacks that send requests to a system to discover weak points. This includes also some kind of testing processes to gather information about hosts, services and accounts. Examples: fingerd, DNS querying, ICMP, SMTP (EXPN, RCPT, ...), port scanning.</td>
</tr>
<tr>
<td></td>
<td>Sniffing</td>
<td>Observing and recording of network traffic (wiretapping).</td>
</tr>
<tr>
<td></td>
<td>Social engineering</td>
<td>Gathering information from a human being in a non-technical way (e.g. lies, tricks, bribes, or threats).</td>
</tr>
<tr>
<td>Intrusion Attempts</td>
<td>Exploiting known vulnerabilities</td>
<td>An attempt to compromise a system or to disrupt any service by exploiting vulnerabilities with a standardised identifier such as CVE name (e.g. buffer overflow, backdoor, cross site scripting, etc.).</td>
</tr>
<tr>
<td></td>
<td>Login attempts</td>
<td>Multiple login attempts (Guessing / cracking of passwords, brute force).</td>
</tr>
<tr>
<td></td>
<td>New attack signature</td>
<td>An attempt using an unknown exploit.</td>
</tr>
<tr>
<td>Intrusions</td>
<td>Privileged account compromise</td>
<td>A successful compromise of a system or application (service). This can have been caused remotely by a known or new vulnerability, but also by an unauthorized local access. Also includes being part of a botnet.</td>
</tr>
<tr>
<td></td>
<td>Unprivileged account compromise</td>
<td></td>
</tr>
</tbody>
</table>
Application compromise

Bot

DoS
DDoS
Sabotage
Outage (no malice)

Unauthorised access to information

Unauthorised modification of information

Unauthorized use of resources

Copyright

Masquerade

Phishing

Open for abuse

All incidents which do not fit in one of the given categories should be put into this class.

Mean for testing

Mean for testing

Table 1: eCSIRT.net mkVI

This is not necessarily an ideal taxonomy. However, it has many factors which make it very useful. In particular, the main categories seem to be very practical and universal. Even though the taxonomy was developed many years ago (and has gone over a number of adaptations), the main categories are still current and can easily be used today. The same cannot be said about the subcategories which can sometimes lead to problems with how to classify an incident. For example, it is not particularly useful any more to make a distinction between DoS attacks and DDoS attacks or to determine what is a ‘privileged account compromise’, ‘unprivileged account compromise’ or ‘application compromise’. In practice, subcategories became a part of the description rather than a concrete schema for classification. Nowadays it is really difficult to determine if a particular malware is a virus, worm, Trojan, spyware or a dialler. The functionality of malware changes and the honest approach is to classify it all as ‘malicious code’.

The eCSIRT.net classification is highly recommended. Despite some defects, it is still quite useful and good. Many European CSIRTs use it, which will give teams the opportunity to team up with others later and be able to compare and merge statistics.
4.2 Sources

During the 51st TF-CSIRT meeting, one of the main conclusions was that there is the need for a taxonomy list and name everyone could rely on and refer to. When one considers the eCSIRT.net taxonomy, there currently exist different sources where the taxonomy is hosted:

**Trusted Introducer (Official document):**
- https://www.trusted-introducer.org/Incident-Classification-Taxonomy.pdf

**ENISA’s page:**

**MISP documentation and Github page:**
- http://www.misp-project.org/taxonomies.html#_ecsirt
- https://www.misp-project.org/taxonomies.pdf

**IntelMQ:**
4.3 Correlation between Reference Taxonomy and Common Taxonomy for LE and CSIRTs

An advantage of the Reference Taxonomy is its tight correlation with the Common Taxonomy for LE and CSIRTs, which is itself an adaptation of the CERT.PT taxonomy, which is an adaptation of the eCSIRT.net mkVI. Here we will see a high level mapping of eCSIRT.net to the Common Taxonomy for Law Enforcement and CSIRTs.

<table>
<thead>
<tr>
<th>REFERENCE TAXONOMY (ECSIRT.NET)</th>
<th>COMMON TAXONOMY FOR LE AND CSIRTS</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abusive Content</td>
<td>Abusive Content</td>
<td></td>
</tr>
<tr>
<td>Malicious Code</td>
<td>Malware</td>
<td></td>
</tr>
<tr>
<td>Information Gathering</td>
<td>Information Gathering</td>
<td></td>
</tr>
<tr>
<td>Intrusion Attempts</td>
<td>Intrusion Attempts</td>
<td></td>
</tr>
<tr>
<td>Intrusion</td>
<td>Intrusion</td>
<td></td>
</tr>
<tr>
<td>Availability</td>
<td>Availability</td>
<td></td>
</tr>
<tr>
<td>Information Content Security</td>
<td>Information Security</td>
<td></td>
</tr>
<tr>
<td>Fraud</td>
<td>Fraud</td>
<td></td>
</tr>
<tr>
<td>Vulnerable</td>
<td></td>
<td>Not relevant to LEA</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
<td>Not relevant to LEA</td>
</tr>
<tr>
<td>Test</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 2: Reference taxonomy vs Common Taxonomy for LE and CSIRTs*

Table 3 shows a very close correlation between the Reference Taxonomy, and the Common Taxonomy for LE and CSIRTs with regards to the main categories (first column). In fact, there is almost a one-to-one mapping of the existing categories in both taxonomies. However, this is not the case for the incident type and examples (second column).

---

10 The term ‘Reference taxonomy’ will be used to refer to the eCSIRT.net
<table>
<thead>
<tr>
<th>REFERENCE TAXONOMY INCIDENT CLASSIFICATION (1ST COLUMN)</th>
<th>INCIDENT EXAMPLES (2ND COLUMN)</th>
<th>INCIDENT TYPE (2ND COLUMN)</th>
<th>COMMON TAXONOMY FOR LE AND CSIRTS INCIDENT CLASSIFICATION (1ST COLUMN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abusive Content</td>
<td>Spam</td>
<td>SPAM</td>
<td>Abusive Content</td>
</tr>
<tr>
<td>Malicious Code</td>
<td>Harmful Speech</td>
<td>Copyright</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Child/Sexual/Violence/...</td>
<td>Child Sexual Exploitation, racism and incitement to violence</td>
<td></td>
</tr>
<tr>
<td>Information Gathering</td>
<td>Virus</td>
<td>Infection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Worm</td>
<td>Distribution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trojan</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spyware</td>
<td>C&amp;C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dialler</td>
<td>Undetermined</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rootkit</td>
<td>Malicious Connection</td>
<td></td>
</tr>
<tr>
<td>Intrusion Attempts</td>
<td>Scanning</td>
<td>Exploitation of vulnerability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sniffing</td>
<td>Login attempt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrusions</td>
<td>Exploiting known vulnerabilities</td>
<td>(Successful) Exploitation of vulnerability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Login attempts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>New attack signature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrusions</td>
<td>Privileged account compromise</td>
<td>Compromising an account</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unprivileged account compromise</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Application compromise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrusions</td>
<td>Bot</td>
<td>DoS/DDoS</td>
<td></td>
</tr>
<tr>
<td>Availability</td>
<td>DoS</td>
<td>Sabotage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DDoS</td>
<td>Unauthorised access</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sabotage</td>
<td>Unauthorised modification/deletion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outage (no malice)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Content Security</td>
<td>Unauthorised access to information</td>
<td>Misuse or unauthorised use of resources</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unauthorised modification of info</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraud</td>
<td>Unauthorized use of resources</td>
<td>False representation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Copyright</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Masquerade</td>
<td>Unlisted incident</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phishing</td>
<td>Undetermined incident</td>
<td></td>
</tr>
<tr>
<td>Vulnerable</td>
<td>Open for abuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test</td>
<td>Meant for testing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Detailed Reference taxonomy vs Common Taxonomy for LE and CSIRTs

Consider the side-by-side comparison above. It outlines the differences in the “Incident Example” in the Reference Taxonomy, and “Incident Type” in the Common Taxonomy for LE and CSIRTs. Moreover, the Common Taxonomy for LE and CSIRTs also includes a third column which includes the link to the legal framework. This is not always directly relevant to the CSIRT community, however, it could very be useful especially when cooperating with law enforcement. The mapping between these two taxonomies could
help to identify factors that could lead to the update or inclusion of new incident types. Consider for example the incident types for the malware category of both the Reference Taxonomy, and Common taxonomy for LE and CSIRTs. There are significant differences between the two, where the Reference Taxonomy focuses more on the technical specification of the malware type, and the Common taxonomy for LE and CSIRTs distinguishes between infection and distribution. This does not seem to be considered in the Reference Taxonomy. The task force could use these kinds of differences to determine whether or not such incident types should be added to the reference taxonomy.

### Example Table

<table>
<thead>
<tr>
<th>REFERENCE TAXONOMY INCIDENT CLASSIFICATION (1ST COLUMN)</th>
<th>INCIDENT EXAMPLES (2ND COLUMN)</th>
<th>INCIDENT TYPE (2ND COLUMN)</th>
<th>COMMON TAXONOMY FOR LEA AND CSIRT INCIDENT CLASSIFICATION (1ST COLUMN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malicious Code</td>
<td>Virus</td>
<td>Infection</td>
<td>Malware</td>
</tr>
<tr>
<td></td>
<td>Worm</td>
<td>Distribution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trojan</td>
<td>C&amp;C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spyware</td>
<td>Undetermined</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dialler</td>
<td>Malicious Connection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rootkit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 4.4 Mapping other Taxonomies

As mentioned earlier, the Reference taxonomy contains a very practical and universal high level categorisation. Below are examples of existing taxonomies (CERT.LV\(^\text{11}\), and CIRCL.LU\(^\text{12}\)), demonstrating how most of their high level categories map into one or more categories from the Reference Taxonomy. In the case of CERT.LV, there is a clear one-to-one mapping with all (except testing) of the high level categories. However, the mapping between CIRCL.LU and Reference Taxonomy is not as direct.

\(^\text{11}\) https://cert.lv/en/incidents  
\(^\text{12}\) https://github.com/MISP/misp-taxonomies/blob/master/circl/machinetag.json
### 4.5 Pivot Mapping

Given the tight correlation between the Reference Taxonomy and a number of other taxonomies such as the Common Taxonomy for LE and CSIRTs, a mapping from a particular taxonomy to the Reference Taxonomy, automatically generates a mapping between that taxonomy and other previously mapped taxonomies. Consider the following example of how CIRCL.LU taxonomy can be mapped to the Common Taxonomy for LE and CSIRTs and the CERT.LV taxonomy by pivoting from one taxonomy to another.
Notice that since both the Common Taxonomy for LE and CSIRTs, and CERT.LV Taxonomy have been mapped onto the Reference Taxonomy, this provides a clear mapping between the Common Taxonomy for LE and CSIRTs and the CERT.LV taxonomy, as well as any other taxonomy that would have already been mapped to the Reference Taxonomy. This mapping can be extremely useful for cross-CSIRT collaboration, as well as CSIRT-LEA collaboration by enabling CSIRTs to use the Common Taxonomy for LE and CSIRTs.

4.6 MISP mapping

MISP developers have provided a mapping of existing taxonomies.

- https://github.com/MISP/misp-taxonomies/blob/master/mapping/mapping.json

The MISP mapping taxonomy allows for the mapping of a single classification into a series of machine-tag synonyms. The implemented approach for mapping is similar to the one described above, whereby a
A number of categories are used as a central reference point and each of these points are mapped to categories in other known taxonomies.

![Diagram](image-url)

**Figure 2: JSON values of MISP mapping taxonomy**

Figure 2 shows how the taxonomies are mapped in the MISP taxonomy document.
5. Conclusion

While still in its infancy, the reference taxonomy task force is off to a good start. The members seem eager and willing to contribute, and make use of the resulting reference taxonomy. The outcome of the upcoming meetings will determine the success of this initiative. In these meetings, the task force plans to:

- Decide on two elemental points
  - Confirm eCSIRT.net as starting point
  - Decide whether to focus on Incident Type or incident Example in the second column
- Review and consolidate Incident Classifications and definitions in the reference taxonomy (starting with eCSIRT.net)
- Define update workflow and Versioning Mechanism
- Decide about who will be hosting online reference taxonomy (ENISA/Dedicated site, etc.)
- Propose way forward, e.g.: to meet periodically
- Decide on name (reference taxonomy/eCSIRT.net/other...)
Annex A: Reference Incident Classification Taxonomy Member List

- Sebastien Schmitt (Gemalto)
- Jan Kopriva (ALEF-CSIRT)
- Toomas Lepik (Tallinn University)
- Sven Gabriel (EGI-CSIRT)
- Kris Caron (KBC Group CERT)
- Silvio Oertli (SWITCH CERT)
- Vladimir Bobor (Telia CERT)
- Bilgehan Turan (EATM-CERT)
- Vasileios Friligos (EATM-CERT)
- David Alfós (CaixaBank)
- Marcolla, Sara Veronica (EC3)
- Azofra Martínez, Álvaro (EC3)
- Baiba Kaskina (CERT.LV/TF-CSIRT)
- Pavel Kácha (CESNET)
- Thomas Schreck (Siemens)
- L. Aaron Kaplan (CERT.AT)
- Michael Hamm (CIRCL.lu)
- Jean Paul Weber (GOVCERT.LU)
- MANA Patrick (Eurocontrol)
- Johannes Clos (BSI/CERT-Bund)
- Jonsson Robert (CERT-SE)
- Gorazd Božič (SI-CERT)
- Francisco Jesus Monserrat Coll. (IRIS-CERT)
- Klaus-Peter Kossakowski (DFN-CERT)
- Francesco Canestrelli (Open Systems)
- Rossella Mattioli (ENISA)
- Yonas Leguesse (ENISA)
- Andrea Dufkova (ENISA)
- Theodoros Nikolakopoulos (ENISA)
- Don Stikvoort (S-CURE)
- Alexandre Dulaunoy (CIRCL.lu)
- Lionel Ferette (CERT.be)
- Otmar Lendl (CERT.AT)
- Thomas Hungenberg (CERT-Bund)
- Sebastian Wagner (CERT.AT)
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