Integrating New Tools in Your Workflows Within Minutes In

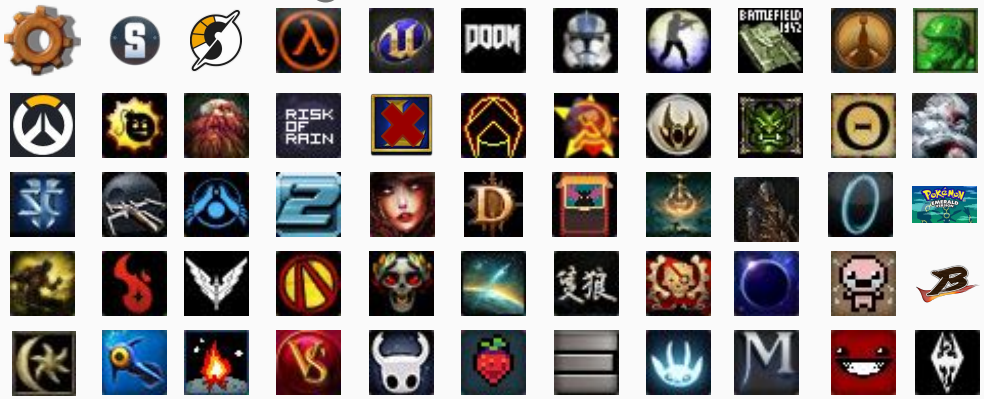
MISP
Threat Sharing

Sami Mokaddem

Sami Mokaddem

- Working at circl since 2016
- Part of the MISP-Project team
- Event graph viewer editor #3063

  Merged **adulau** merged 27 commits into `MISP:2.4` from `mokaddem:ref_graph` on 23 Mar 2018
- Love video games



And so many more…

Disc


THE TRAINING INSTANCE
38
FIRST-CTI25 WORKSHOP PARTICIPANTS
imgflip.com

Instructions

Go to

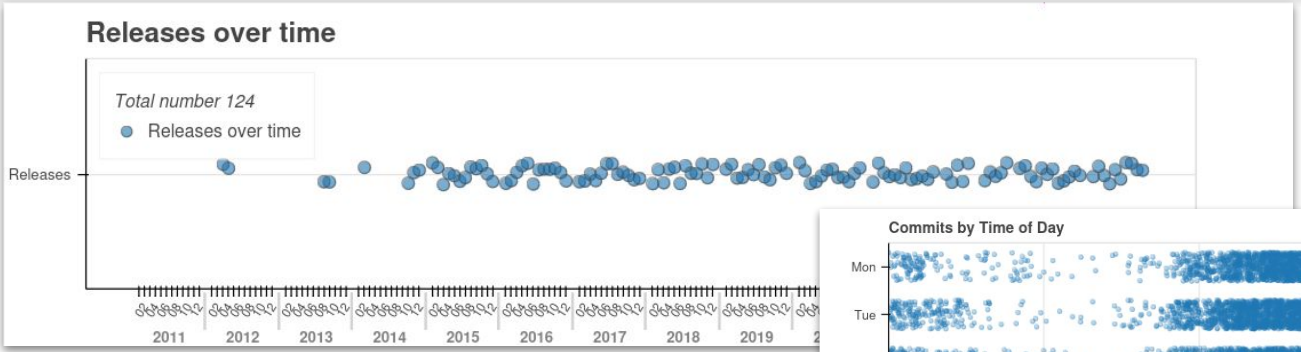
www.menti.com

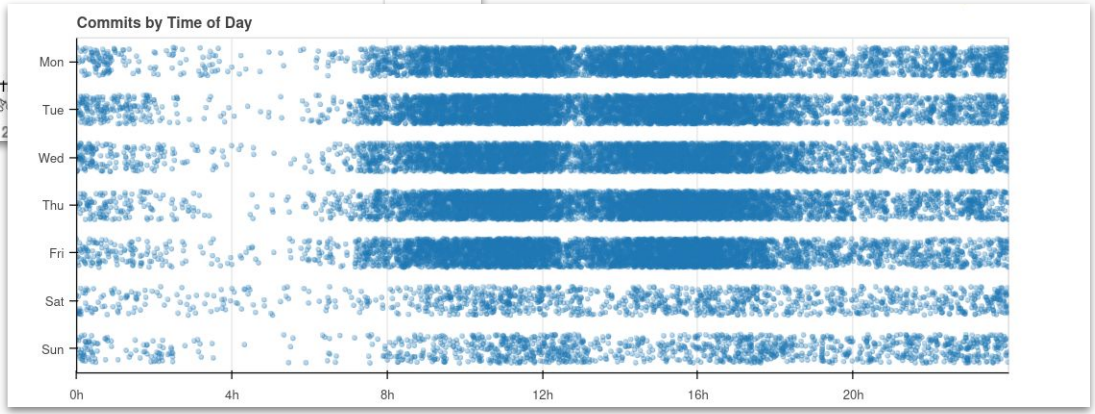
Enter the code

6263 9572

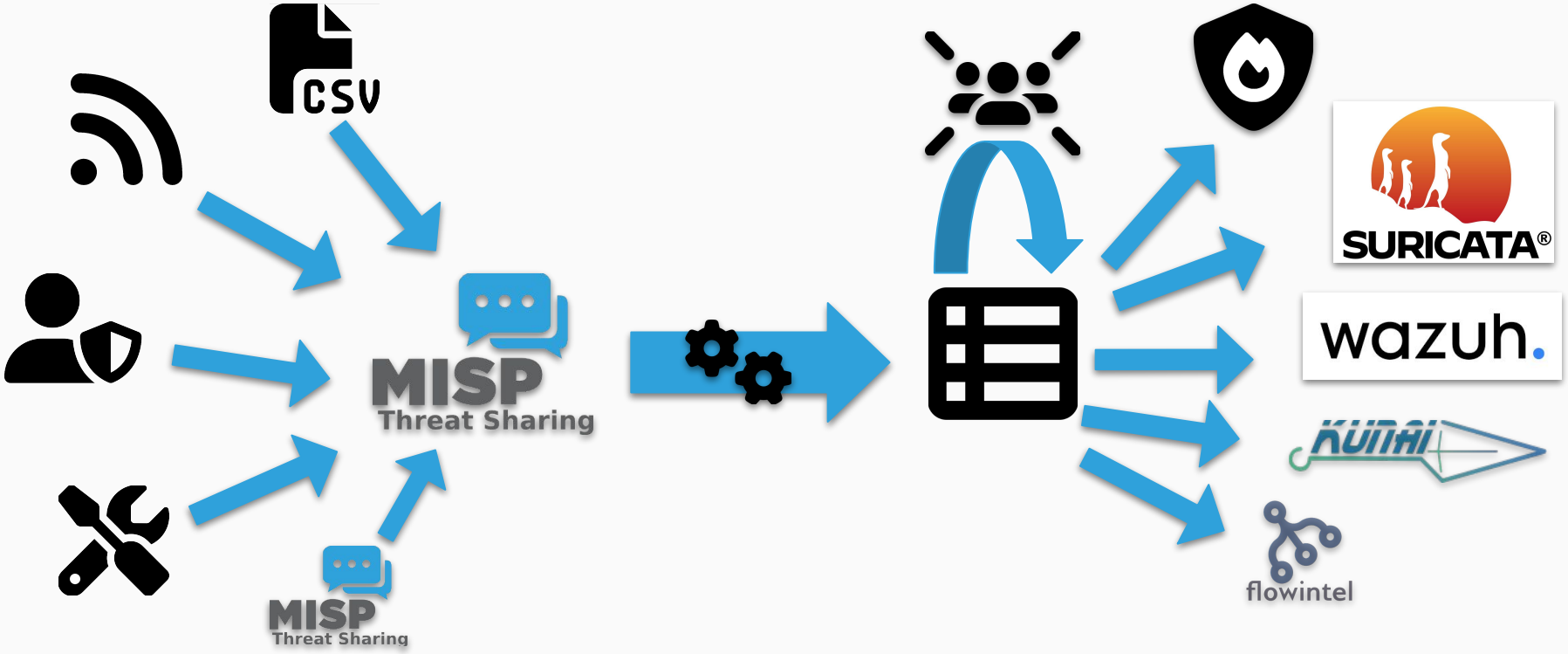
Or use QR code

Threat Intelligence Sharing Platform - TISP





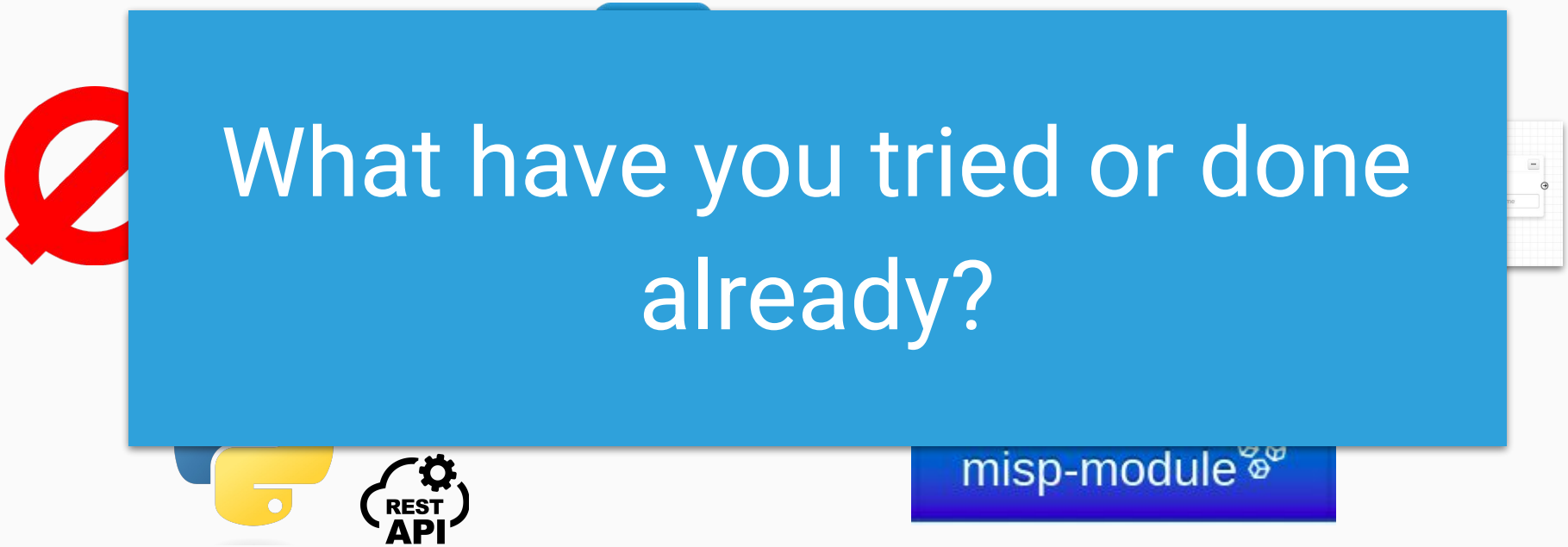
MISP? What can I use it for?



MISP Community & Information Sharing

Are you running your own MISP instance?

MISP Automation Ecosystem



Agenda

- MISP API & PyMISP

  Overview + Exercises: **~45min**

- MISP PubSub channels

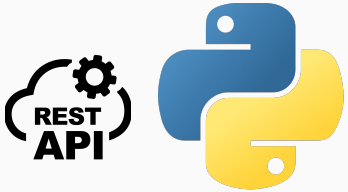
  Quick overview: **~5min**

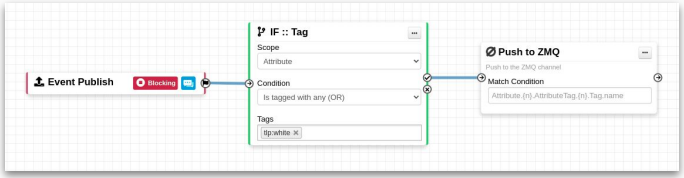
- MISP Module system

  HowTo Live coding: **~30min**

- MISP Workflow

  Overview + Exercise: **~1h30**





Training Document

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FIRST-CTI 2025 -...
Agenda
Training Materials

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FIRST-CTI 2025 - MISP Automation Workshop

- **Dates**:
  - April 21st 2025
- **Access this document**: https://tinyurl.com/firstcti25-misp

Training Instance

MISP training instance: https://training.misp-community.org

```
username: admin[01-100]@admin.main.test
          (example: admin06@admin.main.test, admin42@admin.main.test)
password: firstcti_automation.[01-100].
```

MISP API: REST API & PyMISP

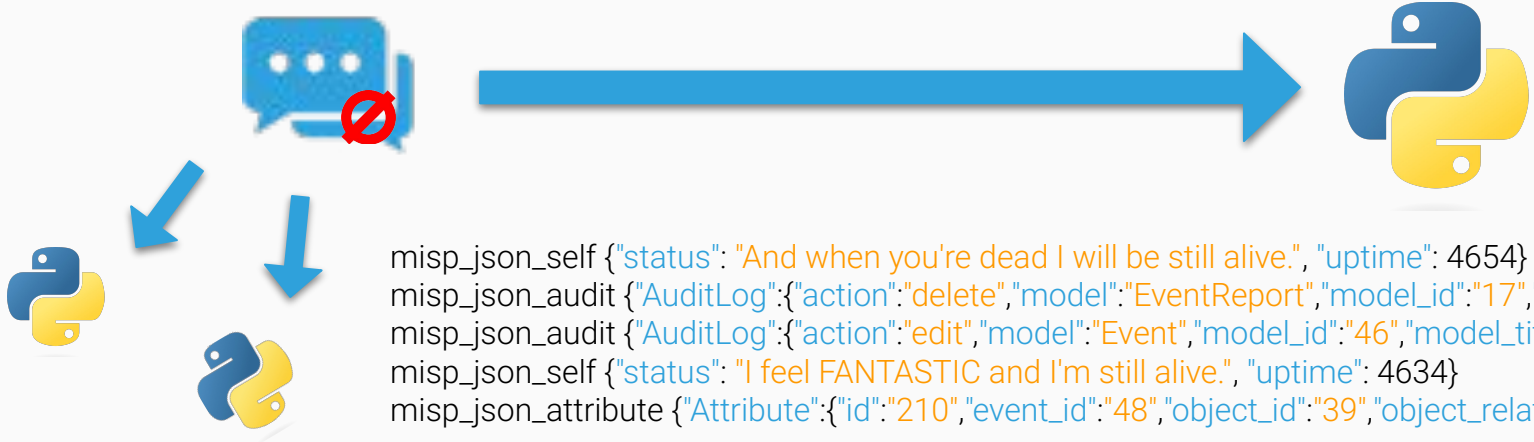
1. The .json trick
2. Generate an API key
3. RestClient overview + OpenAPI
4. MISP API Overview notebooks[1]
5. PyMISP Overview notebook[2]

1. https://github.com/MISP/misp-training/blob/main/a.7-rest-API/Training%20-%20Using%20the%20API%20in%20MISP.ipynb
2. https://github.com/MISP/PyMISP/blob/main/docs/tutorial/FullOverview.ipynb

MISP API Exercises

MISP ZMQ & Kafka support

- ZeroMQ is a fast, server-free messaging library



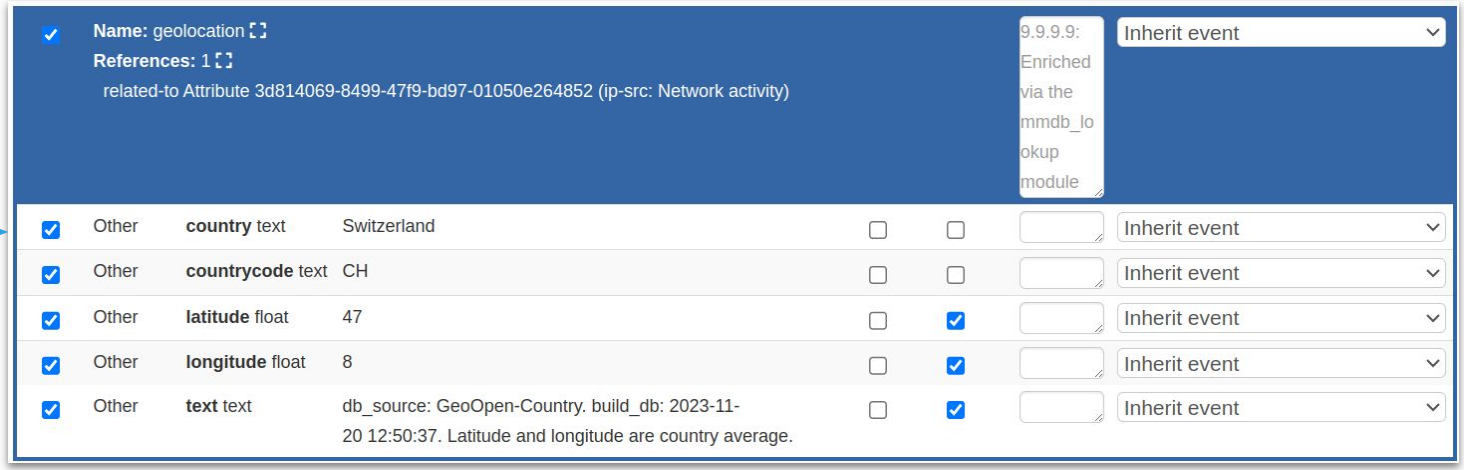
misp_json_self {"status": "And when you're dead I will be still alive.", "uptime": 4654}
misp_json_audit {"AuditLog":{"action":"delete","model":"EventReport","model_id":"17","model_title":"bar", …
misp_json_audit {"AuditLog":{"action":"edit","model":"Event","model_id":"46","model_title":"Test workflow …
misp_json_self {"status": "I feel FANTASTIC and I'm still alive.", "uptime": 4634}
misp_json_attribute {"Attribute":{"id":"210","event_id":"48","object_id":"39","object_relation":
…

```
$ vim MISP/tools/misp-zmq/sub_blueprint.py
```

misp-module

Category	Type	Value
Network activity	ip-src	9.9.9.9

give_me_geolocation.py



misp-module

```
root@sami-T14:/home/sami/git/misp-modules/misp_modules/modules/expansion# ls
abuseipdb.py                    extract_url_components.py       malwarebazaar.py                sophoslabs_intelix.py
apiosintds.py                   farsight_passivedns.py          mcafee_insights_enrich.py       sourcecache.py
apivoid.py                      geoip_asn.py                    mmdb_lookup.py                  stairwell.py
assemblyline_query.py           geoip_city.py                   module_misp_standard.py.skeleton stix2_pattern_syntax_validator.py
assemblyline_submit.py          geoip_country.py                module.py.skeleton              threatcrowd.py
backscatter_io.py               google_safe_browsing.py         mwdb.py                         threatfox.py
btc_scam_check.py               google_search.py                ocr_enrich.py                   threatminer.py
btc_steroids.py                 google_threat_intelligence.py   ods_enrich.py                   triage_submit.py
censys_enrich.py                greynoise.py                    odt_enrich.py                   trustar_enrich.py
circl_passivedns.py             hashdd.py                       onyphe_full.py                  urlhaus.py
circl_passivessl.py             hashlookup.py                   onyphe.py                       urlscan.py
clamav.py                       hibp.py                         otx.py                          variotdbs.py
cluster25_expand.py             html_to_markdown.py             passive_ssh.py                  virustotal_public.py
convert_markdown_to_pdf.py      hyasinsight.py                  passivetotal.py                 virustotal.py
countrycode.py                  __init__.py                     pdf_enrich.py                   virustotal_upload.py
cpe.py                          intel471.py                     pptx_enrich.py                  vmray_submit.py
crowdsec.py                     intelmq_eventdb.py.experimental __pycache__                     vmware_nsx.py
crowdstrike_falcon.py           ip2locationio.py                qintel_qsentry.py               vulndb.py
cuckoo_submit.py                ipasn.py                        qrcode.py                       vulnerability_lookup.py
custom_custom.py                ipinfo.py                       _ransomcoindb                   _vulnerability_parser
cve_advanced.py                 ipqs_fraud_and_risk_scoring.py  ransomcoindb.py                 vulners.py
cve.py                          iprep.py                        rbl.py                          vysion.py
cytomic_orion.py                jinja_template_rendering.py     recordedfuture.py               whoisfreaks.py
dbl_spamhaus.py                 joesandbox_query.py             reversedns.py                   whois.py
_dnsdb_query                    joesandbox_submit.py            securitytrails.py               wiki.py
dns.py                          lastline_query.py               shodan.py                       xforceexchange.py
docx_enrich.py                  lastline_submit.py              sigma_queries.py                xlsx_enrich.py
domaintools.py                  macaddress_io.py                sigma_syntax_validator.py       yara_query.py
eql.py                          macvendors.py                   sigmf_expand.py                 yara_syntax_validator.py
eupi.py                         malshare_upload.py              socialscan.py                   yeti.py
root@sami-T14:/home/sami/git/misp-modules/misp_modules/modules/expansion# ls | wc
    120     120    1926
root@sami-T14:/home/sami/git/misp-modules/misp_modules/modules/expansion#
```

MISP Workflow

Triggers

List the available triggers that can be listened to by workflows.
Missing a trigger? Feel free to open a Github issue!
Documentation and concepts

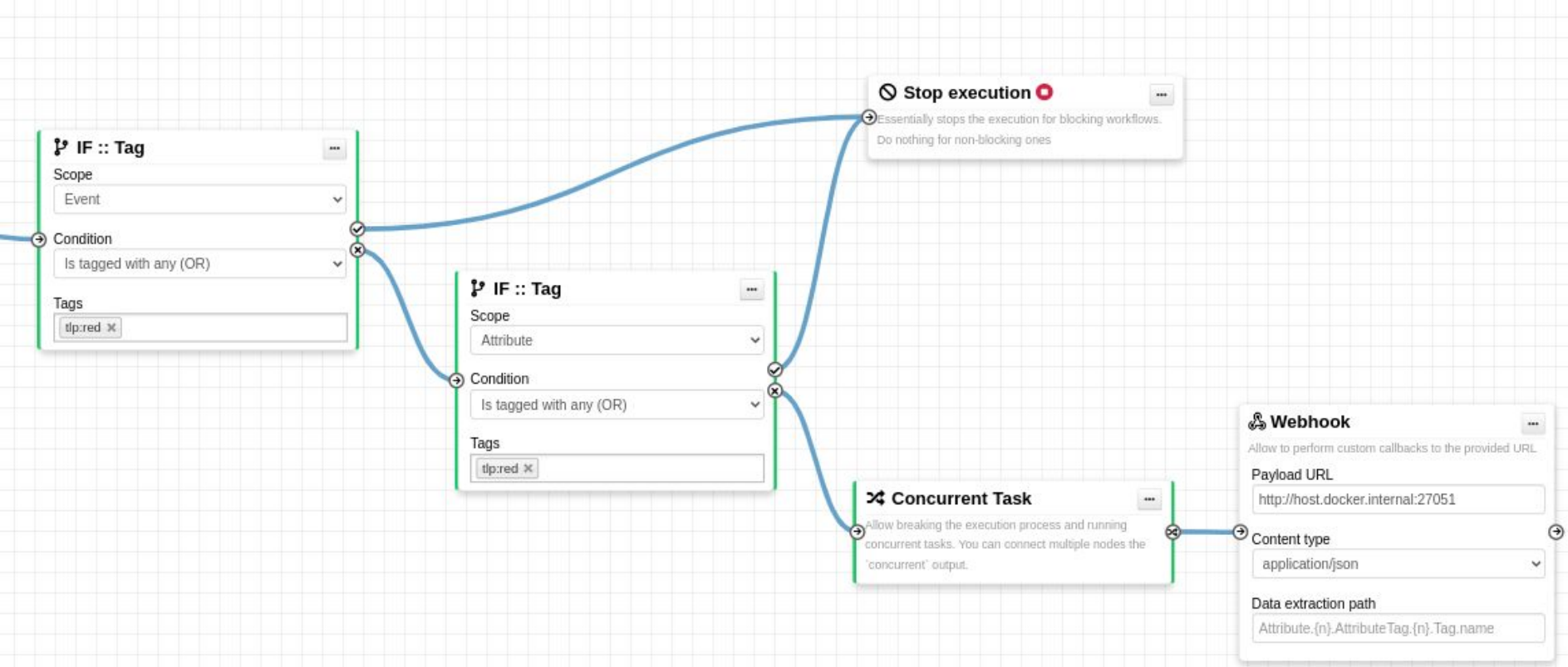
« previous | next »

All | attribute | event | event-report | log | object | others | post | shadow-attribute | sighting | tag | user | Blocking | Enabled | Disabled

Trigger name	Scope	Trigger overhead	Description	Run counter	Blocking Workflow	MISP Core format	Workflow ID	Last Update	Debug enabled	Enabled	Actions
Attribute After Save	attribute	high	This trigger is called after an Attribute has been saved in the database	6075	×	✓	11	2024-10-18 09:03:37	☐	✓	
Enrichment Before Query	others	low	This trigger is called just before a query against the enrichment service is done		✓	✓				×	
Event After Save	event	high	This trigger is called after an Event or any of its elements has been saved in the database	2	×	✓	8	2024-10-07 10:18:53	☐	×	
Event After Save New	event	low	This trigger is called after a new Event has been saved in the database		×	✓				×	
Event After Save New From Pull	event	low	This trigger is called after a new Event has been saved in the database from a PULL operation. This trigger executes in place of `event-after-save-new`	0	×	✓	2	2024-06-13 11:54:07	☐	×	
Event Before Save	event	high	This trigger is called before an Event or any of its elements is about to be saved in the database		✓	✓				×	
Event Publish	event	low	This trigger is called just before a MISP Event starts the publishing process	50	✓	✓	1	2024-10-07 13:31:02	☐	✓	
Event Report After Save	event-report	low	This trigger is called after an Event Report has been saved in the database	30	×	✓	5	2024-10-04 09:04:54	☐	×	
Log After Save	log	high	This trigger is called after a Log event has been saved in the database	0	×	×	4	2024-07-18 09:02:02	☐	×	
Object After Save	object	high	This trigger is called after an Object has been saved in the database	3	×	✓	12	2024-10-17 08:45:34	☐	×	
Post After Save	post	low	This trigger is called after a Post has been saved in the database		×	×				×	
Shadow Attribute After Save	shadow-attribute	medium	This trigger is called just after a Shadow Attribute has been saved in the database	25	×	✓	7	2024-10-07 13:34:04	☐	×	
Shadow Attribute Before Save	shadow-attribute	medium	This trigger is called just before a Shadow Attribute is saved in the database	0	✓	✓	6	2024-10-04 09:40:03	☐	×	
Sighting After Save	sighting	medium	This trigger is called when a sighting has been saved	0	×	✓	3	2024-06-18 14:51:10	☐	✓	
Tag Attached After Save	tag	high	This trigger is called just after a Tag has been attached to an Event or an Attribute.	3547	×	✓	9	2024-10-18 09:01:11	☐	✓	
User After Save	user	low	This trigger is called after a user has been saved in the database	0	×	×	10	2024-10-07 13:38:26	☐	×	
User Before Save	user	low	This trigger is called just before a user is save in the database		✓	×				×	

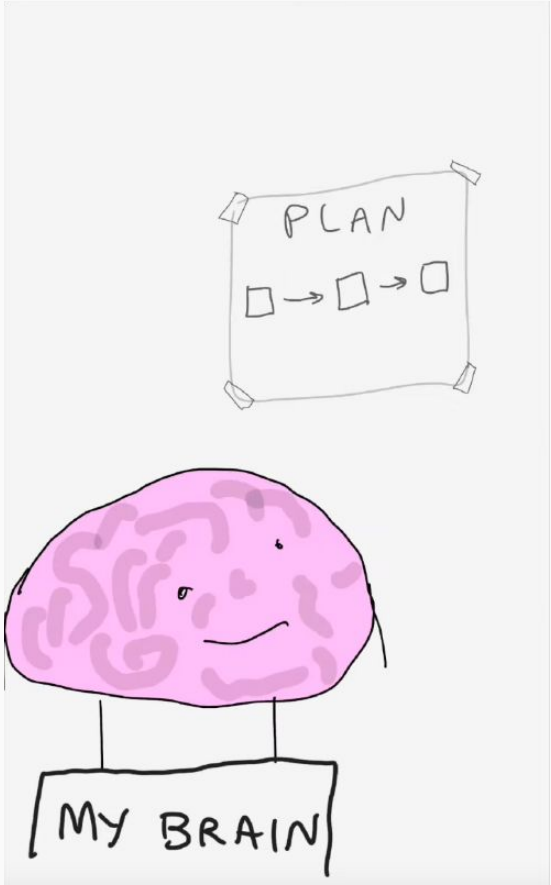
Page 1 of 1, showing 1 records out of 17 total, starting on record 1, ending on 17

MISP Workflow



Let’s combine both a Workflow & a MISP module

The plan



- We have an `.onion` address
  - We want to get more info about it ➔ **enrichment**

A. **Write the enrichment `onion_lookup.py`**

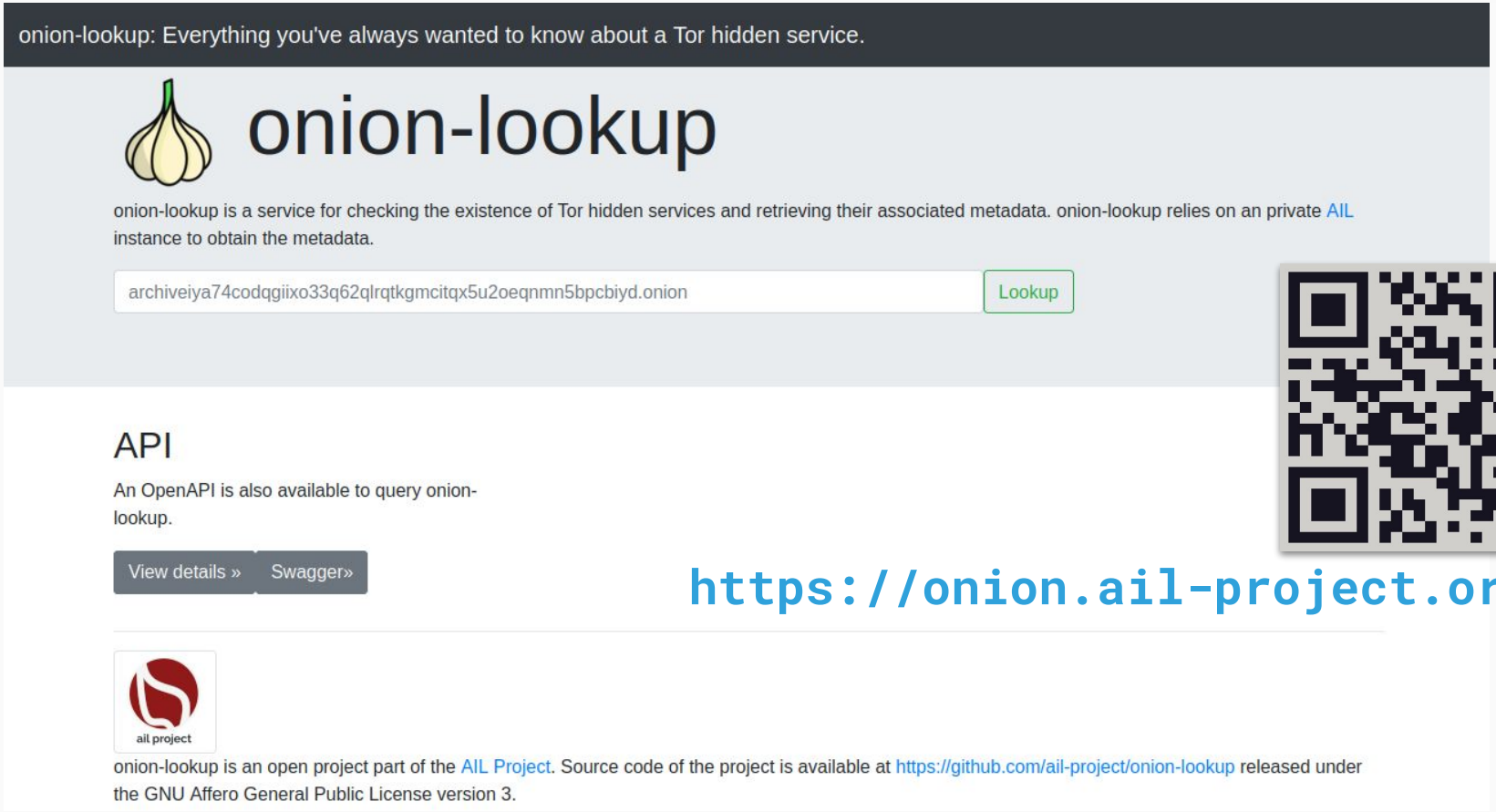
- We have a way to get more info
  - We want to automate that step ➔ **workflow**

B. **Design a workflow to automate the process**

1. Restrict sharing if `.onion` contains unwanted content
2. For specific tags warn users on chat application / create a case

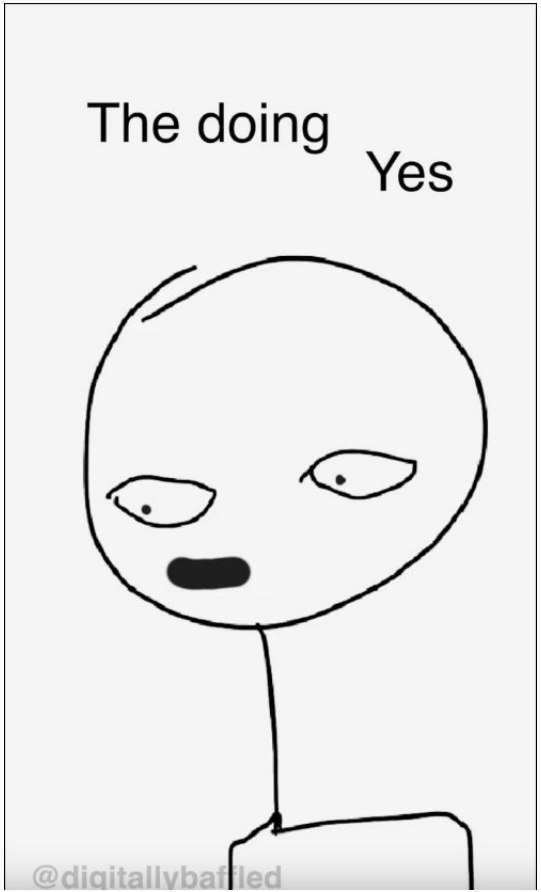
A. Write the enrichment module `tor_lookup.py`

Getting information about an .onion



https://onion.ail-project.org/

A. **Write the enrichment** `tor_lookup.py`



- STEP 1: Duplicate the pre-made module skeleton

```
$ cp module_misp_standard.py.skeleton \
    tor_lookup.py
```

- STEP 2: Modify `tor-lookup.py`

```
$ emacs tor_lookup.py
```

- STEP 3: Restart misp-module

- STEP 4: Test it

A. **Write the enrichment** `tor_lookup.py`

Enrichment Results

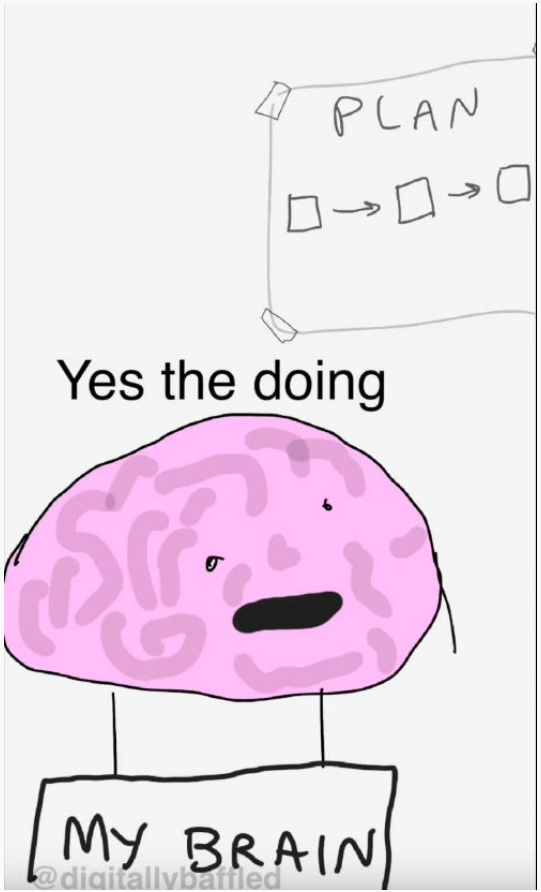
Below you can see the attributes and objects that are to be created from the results of the enrichment module.

Event ID	146
Event UUID	0cfec2c2-b455-477b-a80e-0d6b9a8e7cdc
Event creator org	CIRCL
# of resolved Attributes	16 (1 object)
# of resolved Reports	

Import	Category	Type	Value	Tags	IDS	Disable Correlation	Comment	Distribution
☑	**Name:** tor-hiddenservice **References:** 1						custom-comment2	Inherit event
☑	Network activity	**address** onion-address	archiveiya74codqgiixo33q62qlrqtkgmcitqx5u2oeqnmn5bpcbiyd.onion	base64 onion credit-card	☑	☐		Inherit event
☑	Other	**first-seen** datetime	2023-04-26T00:00:00		☐	☑		Inherit event
☑	Other	**last-seen** datetime	2025-04-10T00:00:00		☐	☑		Inherit event
☑	Other	**language** text	ja		☐	☑		Inherit event
☑	Other	**language** text	en		☐	☑		Inherit event
☑	Other	**title** text	Google Maps		☐	☑		Inherit event
☑	Other	**title** text	Webpage archive		☐	☑		Inherit event
☑	Other	**title** text	Rt: Effective Reproduction Number		☐	☑		Inherit event
☑	Other	**title** text	http://twitter.com/burg*: Page not found / Twitter		☐	☑		Inherit event
☑	Other	**title** text	http://twitter.com/burg*: Burger King (@BurgerKing) / Twitter		☐	☑		Inherit event
☑	Other	**title** text	microsoft.com subdomains		☐	☑		Inherit event
☑	Other	**title** text	microsoft.com: Microsoft – офіційна домашня сторінка		☐	☑		Inherit event
☑	Other	**title** text	microsoft.com: Microsoft – Cloud, Computers, Apps & Gaming		☐	☑		Inherit event
☑	Other	**title** text	http://twitter.com/burgerking: Burger King (@BurgerKing) / Twitter		☐	☑		Inherit event
☑	Other	**title** text	archiveiya74codqgiixo33q62qlrqtkgmcitqx5u2oeqnmn5bpcbiyd.onion		☐	☑		Inherit event
☑	Network activity	onion-address	archiveiya74codqgiixo33q62qlrqtkgmcitqx5u2oeqnmn5bpcbiyd.onion	base64 onion credit-card	☑	☐	custom comment	Inherit event

B. Design a workflow to automate the process

B. Design a workflow to automate the process



1. Restrict sharing if `.onion` contains unwanted content
   - Decision based on the tag

```
dark-web:topic="pornography-child-exploitation"
```

2. For specific tags warn users on chat application / create a case

```
infoleak:automatic-detection="credit-card"
```

1. Restrict sharing if `.onion` contains unwanted content

Workflow that: **automatically adjusts** attribute's distribution to Your Org Only

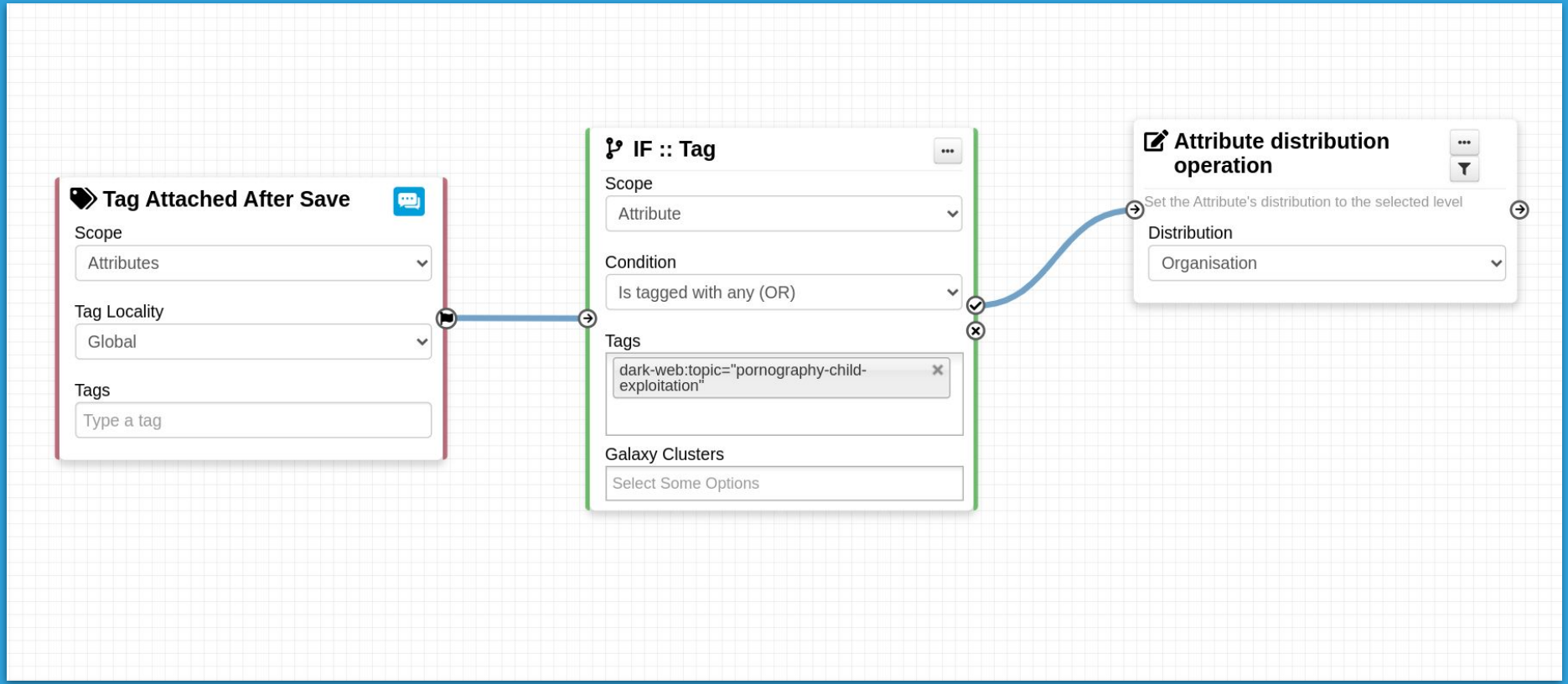
When `dark-web:topic="pornography-child-exploitation"` is attached.

WHEN tag is attached to attribute
IF tag equals `dark-web:topic="pornography-child-exploitation"`
SET attribute(s) distribution to Your Org Only

MISP Threat Sharing

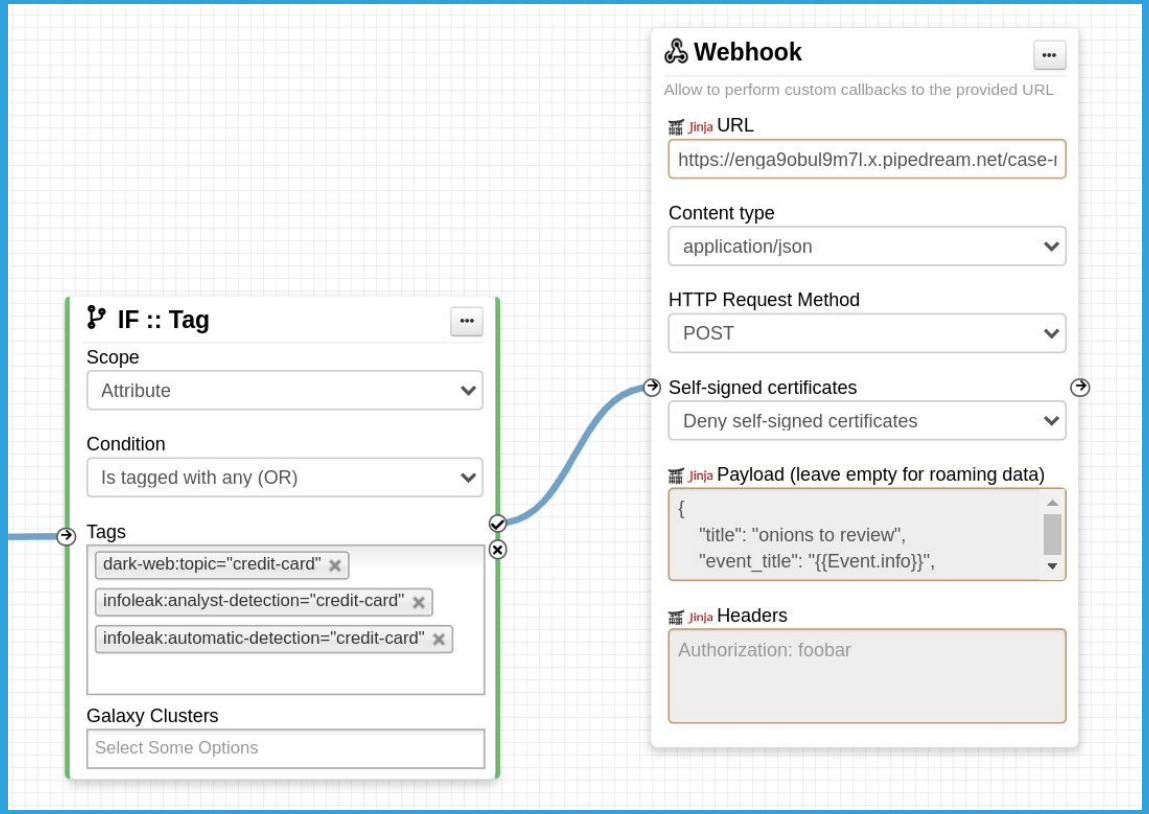
Workflow Fundamentals

1. Restrict sharing if `.onion` contains unwanted content



3. For specific tags warn users on chat application / create a case

infoleak:automatic-detection="credit-card"

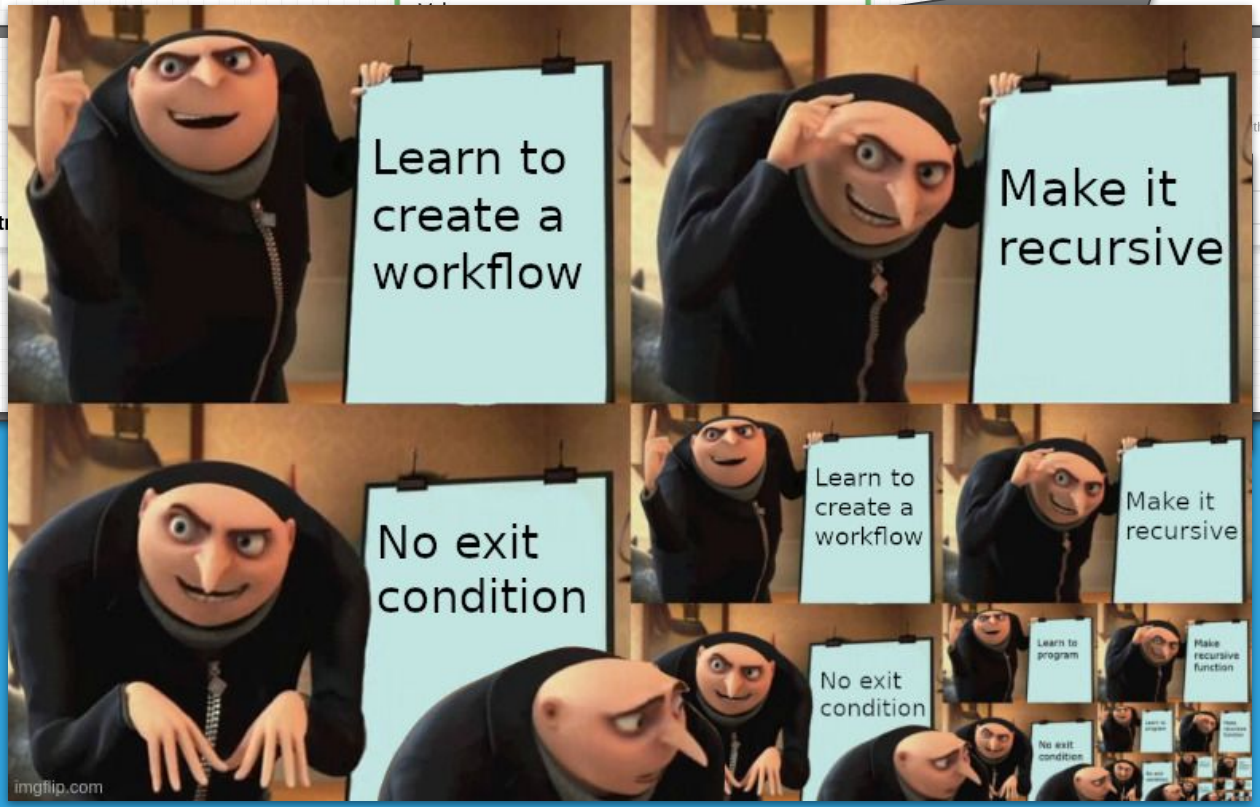


2. Automatically enrich any `.onion` when they enter the tool

This is left as an exercise for the reader. 😉

RUN enrichment `onion_lookup.py`

Workflow Hands-on Exercises


IF :: Generic
Enrich Event
Learn to create a workflow
Make it recursive
No exit condition
Learn to create a workflow
Make it recursive
No exit condition
Learn to program
Make recursive function
imgflip.com

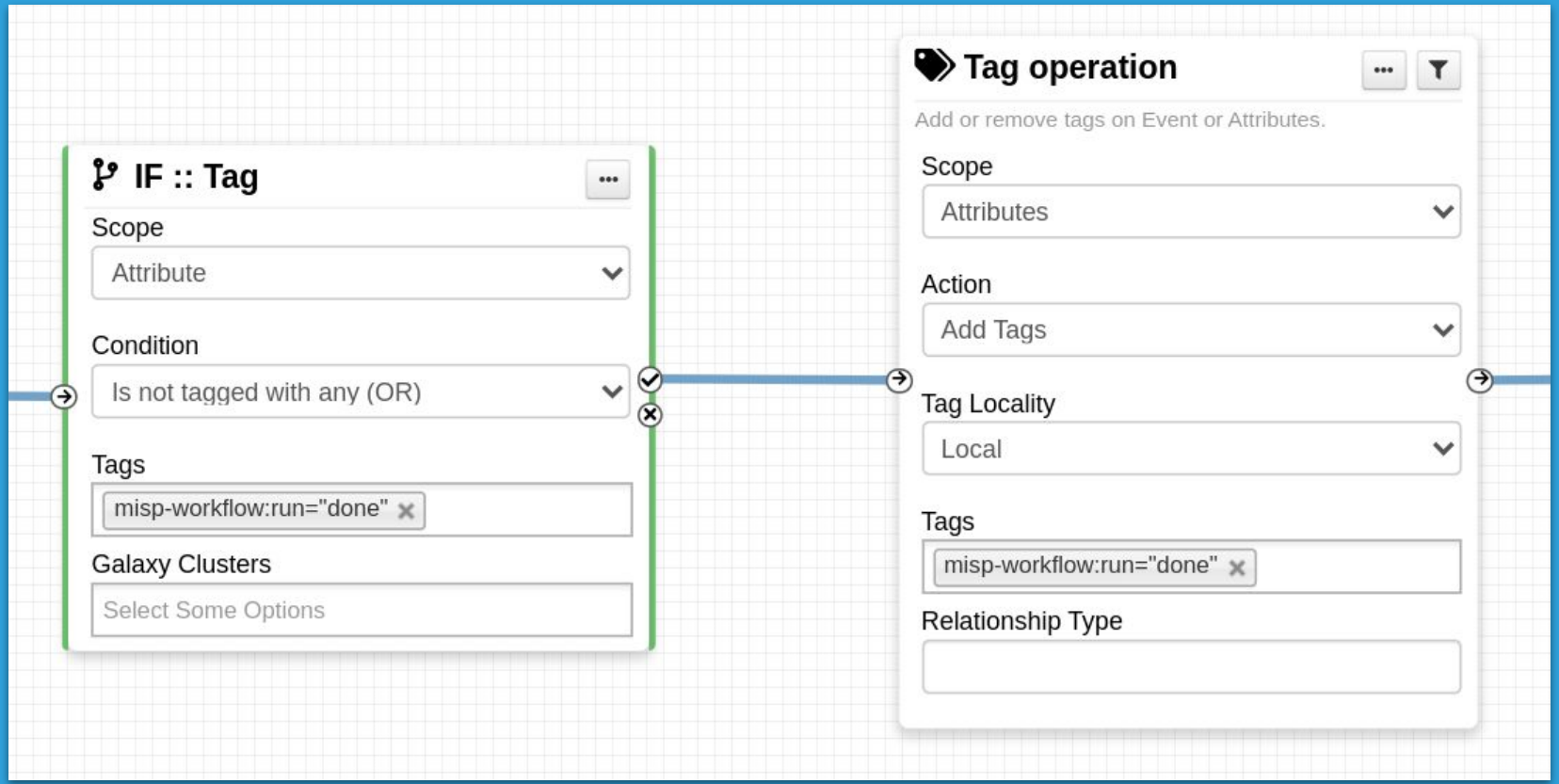
How to solve that recursion?

1. Enforce the workflow **to run only once on the same Attribute**
   - Usage of **local tags** to indicate if it was run or not

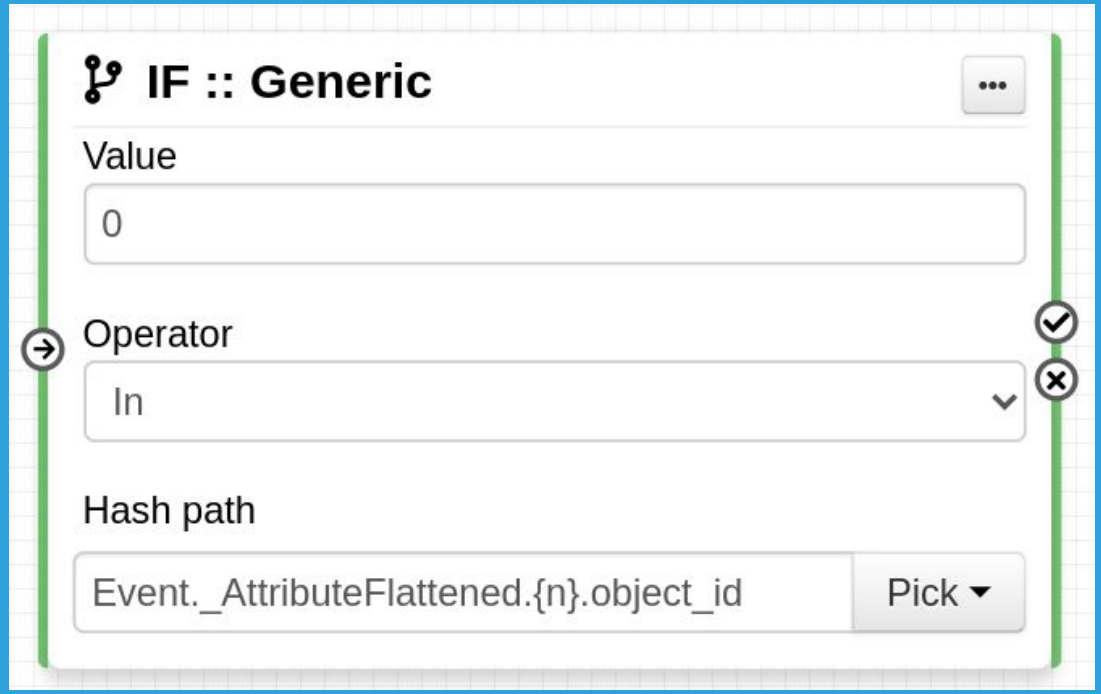
2. Prevent the workflow **from running on newly created Attributes**
   - Only run the workflow on:
     - Attribute, **not Object's Attribute**
       - Will not work if an analyst creates an `.onion` Object
     - Attribute not having the comment "`created via enrichment`"
       - Requires `onion-lookup.py` to add a comment
       - Requires the workflow to add the comment to new Attributes
     - Attribute not having a dedicated tag
       - Same data modification as above.

Not ideal, but let use that for now

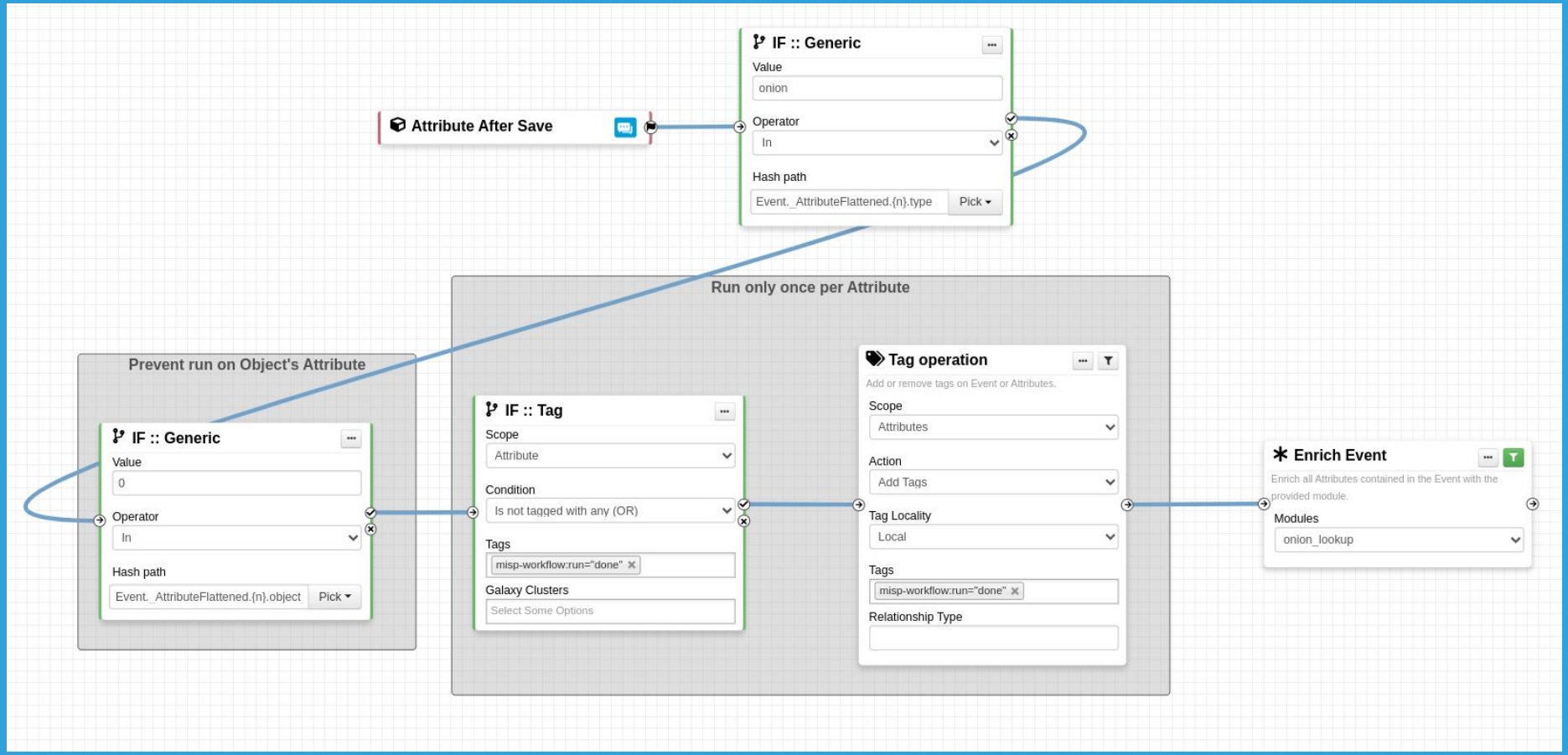
1. Enforce the workflow to run only once on the same Attribute



2. Prevent the workflow from running on new Attributes



Putting it all together



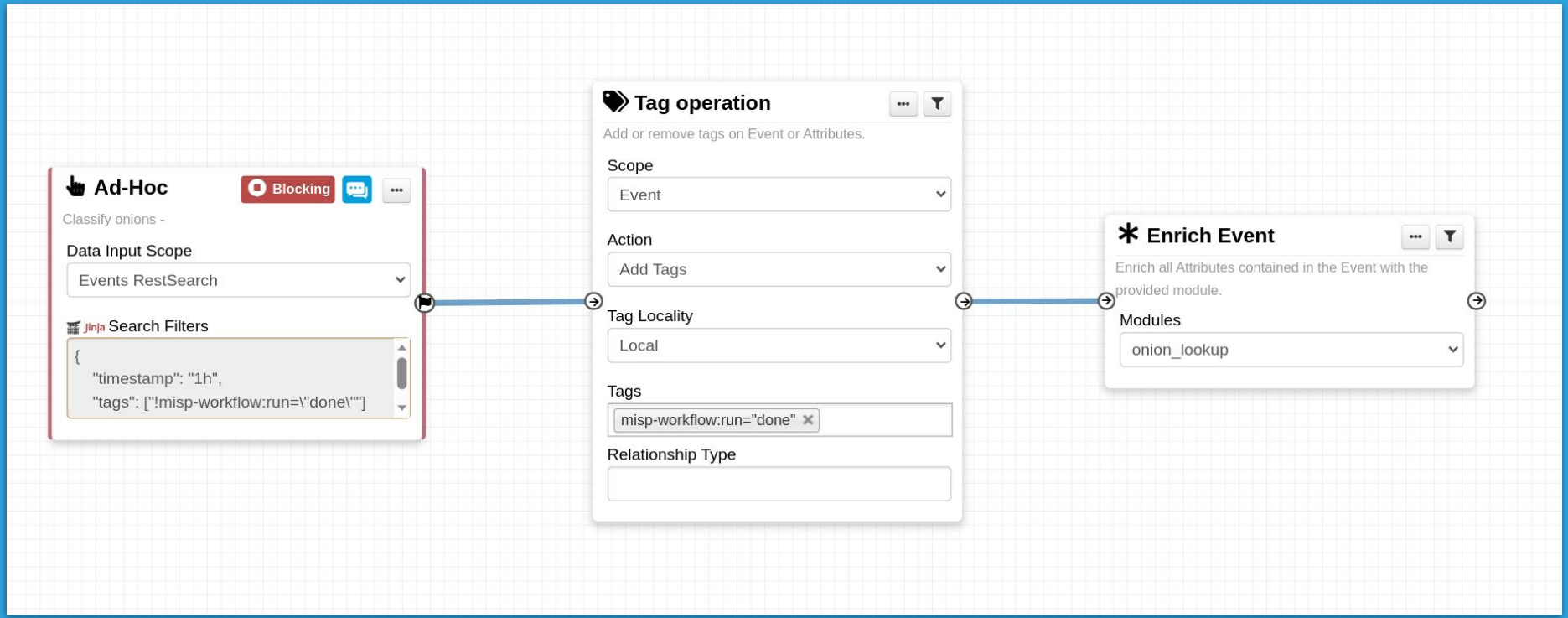
The way forward - Improvements & Better recursion handling

1. Show warning that this workflow **might cause a recursion**

2. **Triggerless workflows** - Executed manually
   - Manually by an analyst (similar to publishing)
   - *Manually* by another workflow

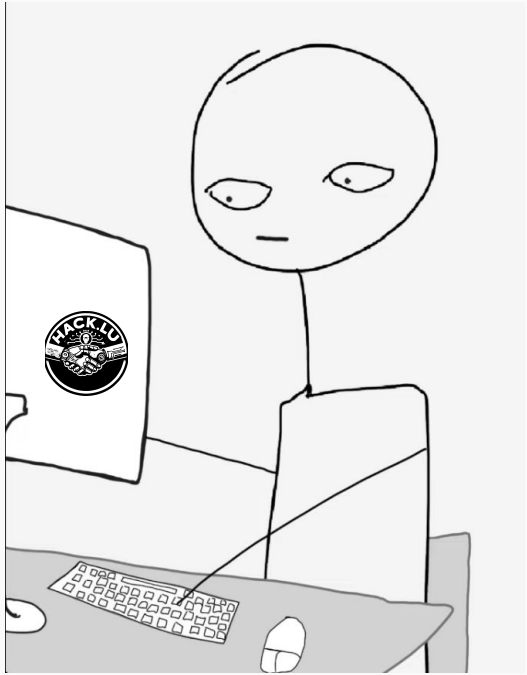
3. **Scheduled workflows** - Time-based
   - Need to define how to feed data into the workflow (e.g. newly modified events

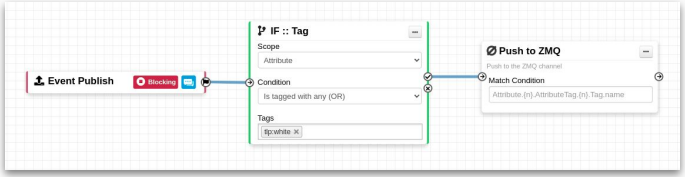
Let’s see what an “Ad-Hoc” scheduled workflow looks like



Thank you!

misp-module





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- “Doing the plan” from Digitally Baffled - https://www.youtube.com/watch?v=xImh4aGe3ok

Conclusion

API Hands-on exercises