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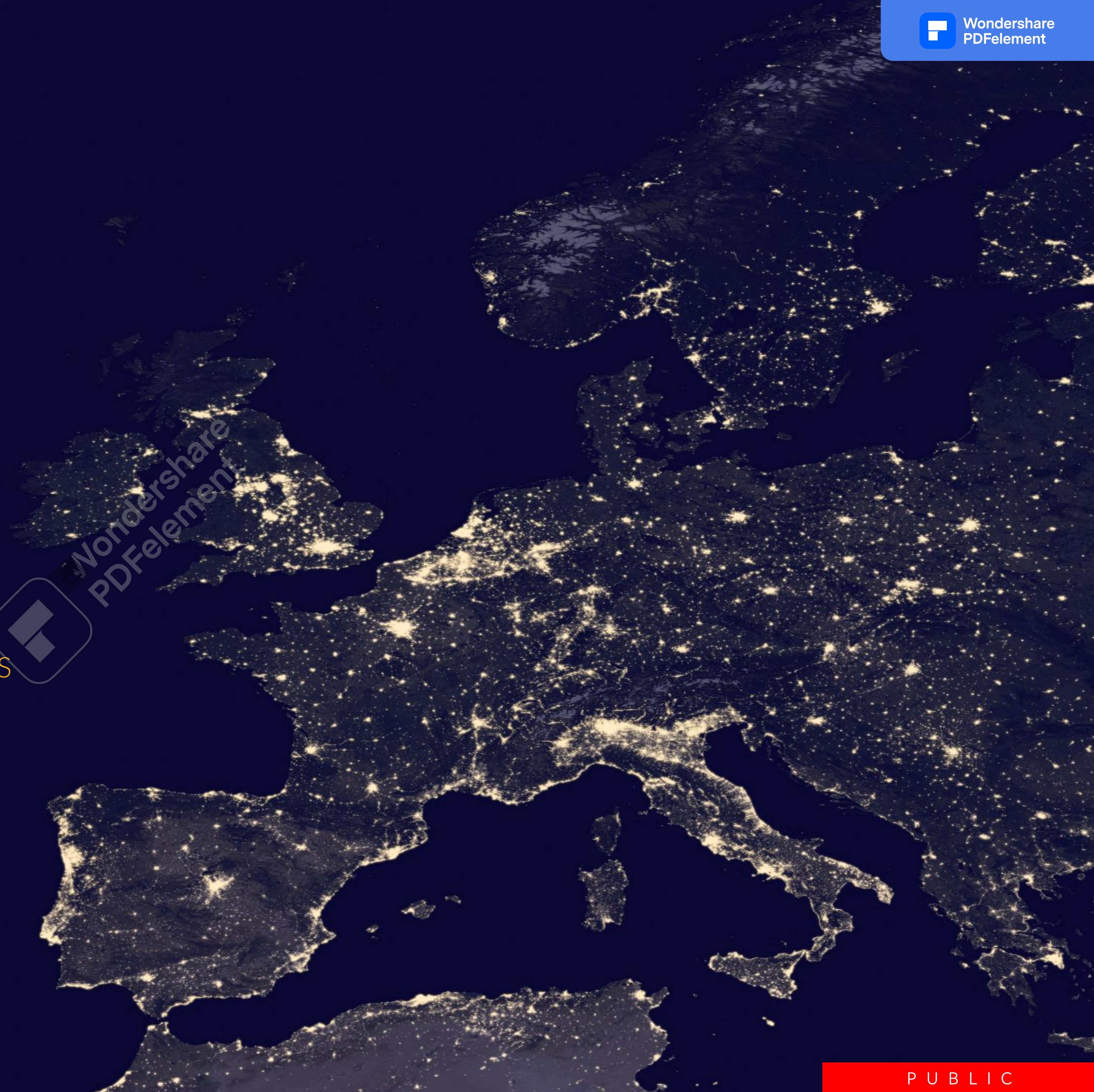
HUNT & HACKETT

OUTSMART YOUR DIGITAL ADVERSARIES



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Automating Incident Response by default

https://www.cbr.com/flintstones-jetsons-same-time-period-theory/

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Francisco

Zawadi

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Our time together

INTERRUPTIONS ALLOWED

IR process

IR Lab

DevOps mindset

Questions

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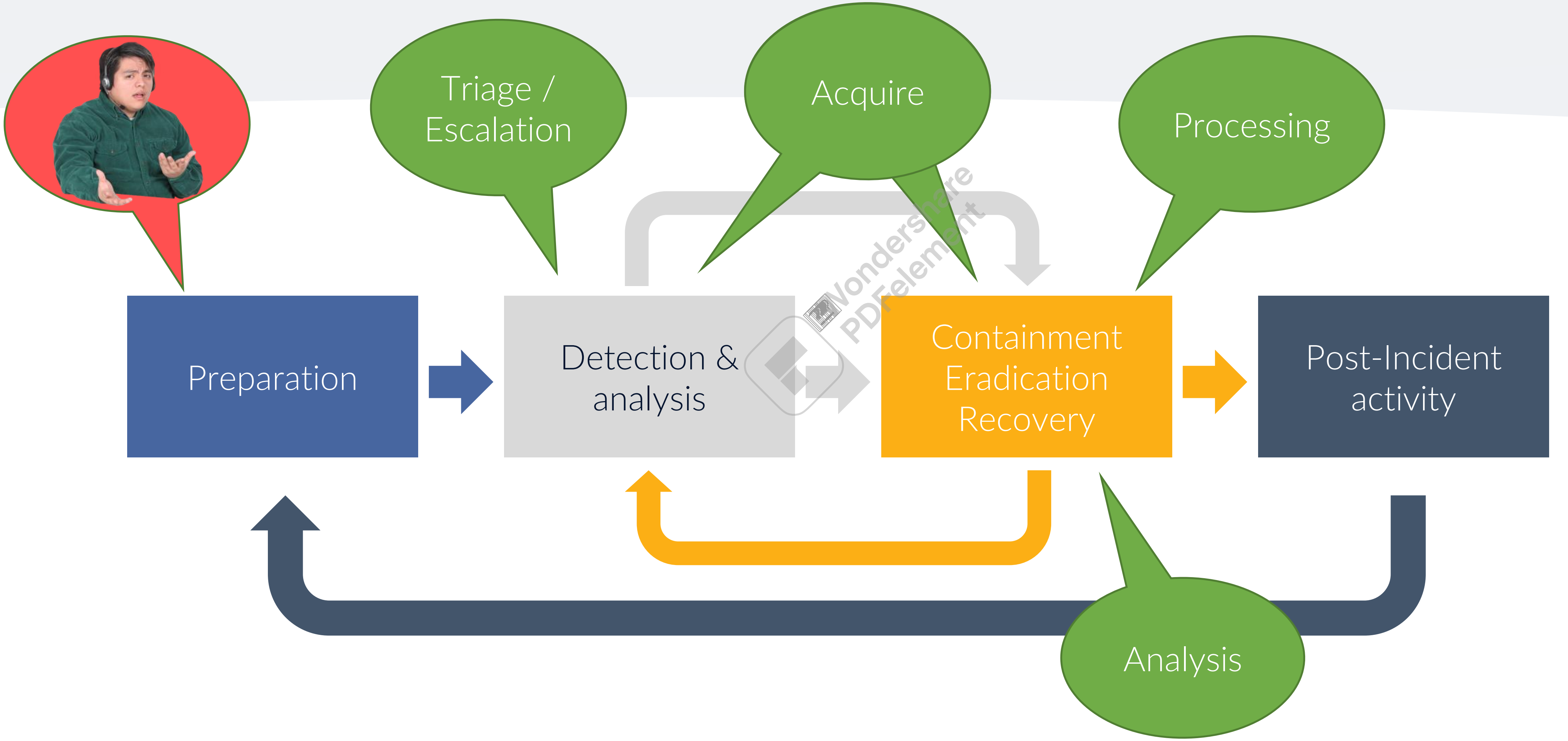
Big picture



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Big Picture

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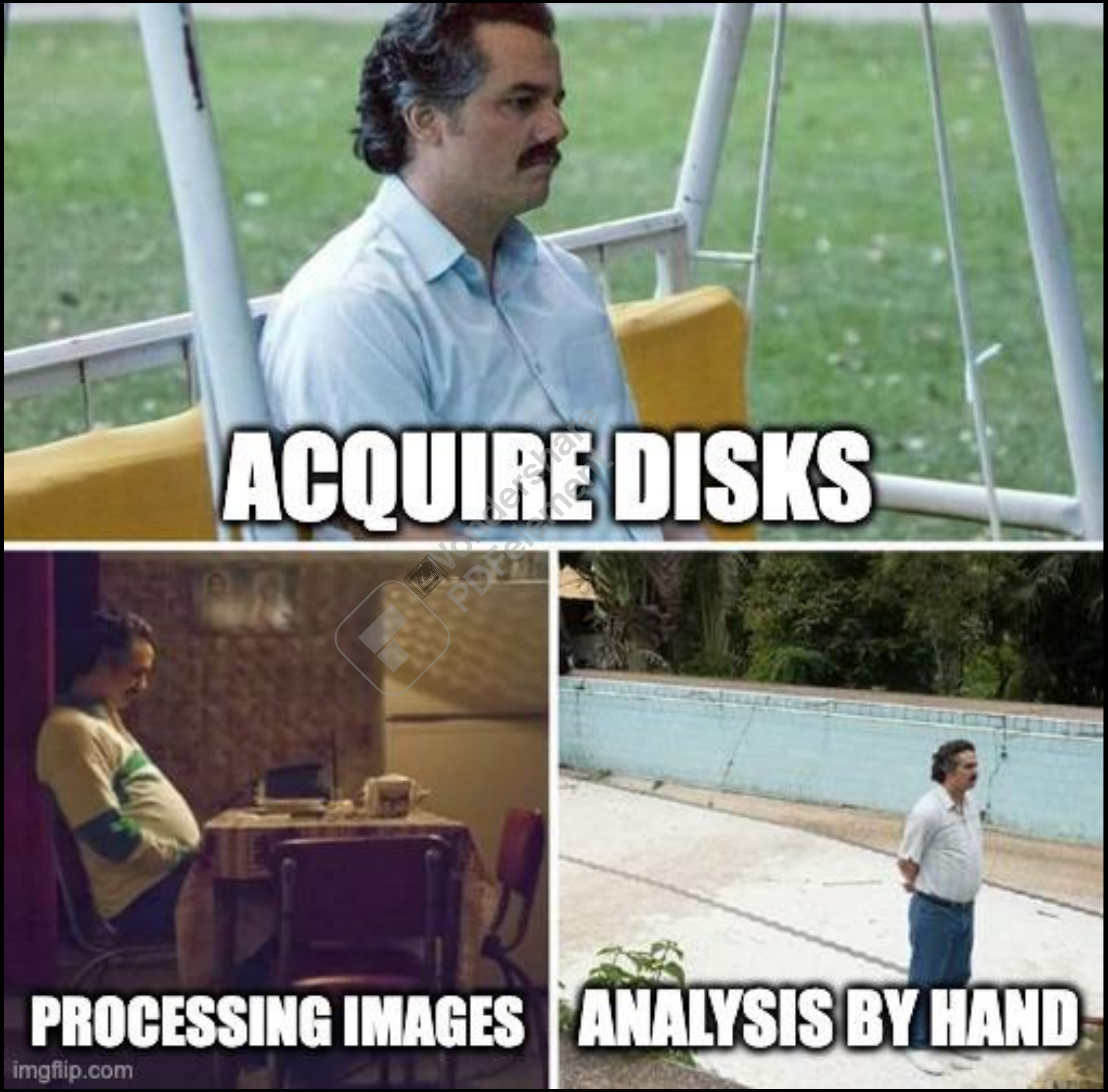

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Photo by Daniel Tausis on Unsplash

Acquire

https://www.lifars.com/2021/05/how-to-acquire-digital-evidence-for-forensic-investigation/

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Acquire

CURRENT STATE

- Not scalable manual collection
- Memory is still a weird ‘thing’ to acquire
- Disks of 1TB+ are the new normal
- Duration of acquisition delays processing
- Chain of evidence mostly for audit purposes

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Acquire

DESIRED STATE

- Scalable acquisition across all targets
  - Forensics packages based on data where most likely forensics artefacts are saved
- Live searches via agents
- Automated & repeatable
- Memory as a ‘normal’ source
- Chain of evidence for improvement purposes

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Acquire

THERE IS NO SILVER BULLET

- What if you need the full disk image after the fact?
- What if the customer changes their opinion and wants to go to court?

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Processing

https://www.mentalfloss.com/article/645658/forensic-science-of-hair-analysis-flawed

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Processing

CURRENT STATE

- Unstructured string based (not always)
- Structured parsing into unstructured formats (not always)
- Slow, error prone, analyst required
- Closed source 'magical' information extraction
  - FTK
  - OpenText EnCase
- Non-repeatable due to intensive note taking required
  - Or grep your command line history
- Exportability & transferability are not easy

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Processing

DESIRED STATE

- Structured parsing into structured formats
- Automated plugin-based processing pipelines
- Fast & scalable, no analyst required
- Transparent & inspectable operations
- Repeatable & deterministic
    - How else can we pinpoint bugs & solve them?
- Multi-source inputs should be a breeze

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Processing

THERE IS NO SILVER BULLET

- What if the automated parsing contains errors?
  - What if the old skool analyst misses the errors?
- How do we even know that we have errors?
- Where are the public datasets?

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Analysis

https://www.kingston.ac.uk/postgraduate/courses/forensic-science-msc/

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Analysis

CURRENT STATE

- Single person focused
- Collaboration difficult
- Based on ‘human’ non-transferable knowledge
- Limited by difficult to extend analysis environment ‘Excel’

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Analysis

DESIRED STATE

- Automated analysis on available data
- Human knowledge should feed into plugins & code
- Collaboration should be the default
    - Including real-time customer access
- Tools should be ‘easily’ extendable
- Findings should be repeatable

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Analysis

THERE IS NO SILVER BULLET

- We still need human, but we should focus them on:
  - Doing the creative part
  - Doing the research part
- How do we prevent humans fully trusting the automated analysis?
- How do we detect, catch & remediate erroneous analysis?
  - Is this any different than applying this for human analysis?

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Open-Source Software Incident Response Automation

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https://connect.redhat.com/en/blog/leading-automation-0

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Incident Response lab

PRINCIPLES

What we want

- Scalability
- Elasticity
- Availability
- Collaboration

What we do not want

- Scale a single system
- Dependent on a single system, disk or network share
- Downtime
- *“Hey can you share that spreadsheet with me?”*

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Acquire

DESIRED STATE

- Forensics packages
  - Acquire based on forensic artefacts
  - Automated and scalable
- Tools: Velociraptor/Dissect Acquire
  - EDR using Live Response (all remote)

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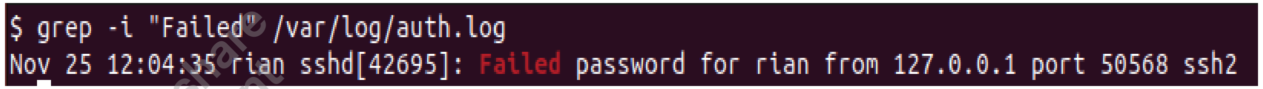
Unstructured Data

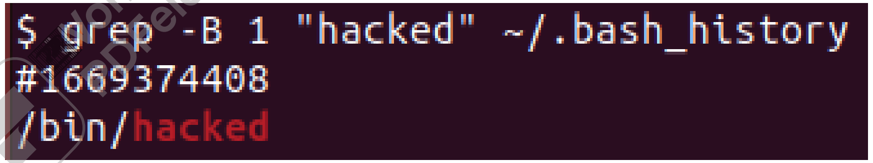
CURRENT STATE

- Authentication logs (user logons)



```
$ grep -i "Failed" /var/log/auth.log
Nov 25 12:04:35 rian sshd[42695]: Failed password for rian from 127.0.0.1 port 50568 ssh2
```

- Bash History (executed commands)



```
$ grep -B 1 "hacked" ~/.bash_history
#1669374408
/bin/hacked
```

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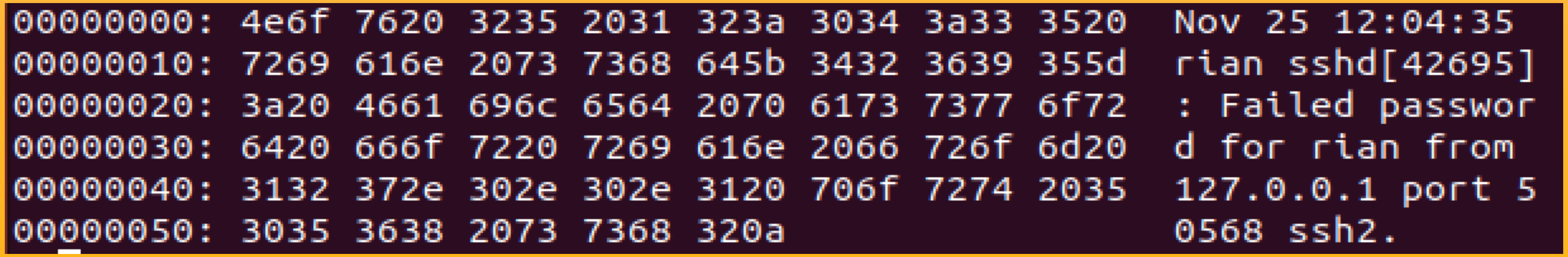
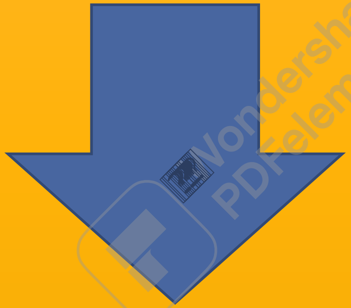


```
00000000: 4e6f 7620 3235 2031 323a 3034 3a33 3520  Nov 25 12:04:35
00000010: 7269 616e 2073 7368 645b 3432 3639 355d  rian sshd[42695]
00000020: 3a20 4661 696c 6564 2070 6173 7377 6f72  : Failed passwor
00000030: 6420 666f 7220 7269 616e 2066 726f 6d20  d for rian from
00000040: 3132 372e 302e 302e 3120 706f 7274 2035  127.0.0.1 port 5
00000050: 3035 3638 2073 7368 320a                 0568 ssh2.
```



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```
timestamp:’29/11/2022 13:58’ user:rian ip:127.0.0.1 action:login result:failed
timestamp:’29/11/2022 13:58’ user:rian ip:127.0.0.1 action:login result:failed
timestamp:’29/11/2022 13:58’ user:rian ip:127.0.0.1 action:login result:failed
timestamp:’29/11/2022 13:59’ user:rian ip:127.0.0.1 action:login result:successful session_id:1
timestamp:’29/11/2022 14:00’ user:rian command:”/bin/hacked” shell:/bin/bash
```

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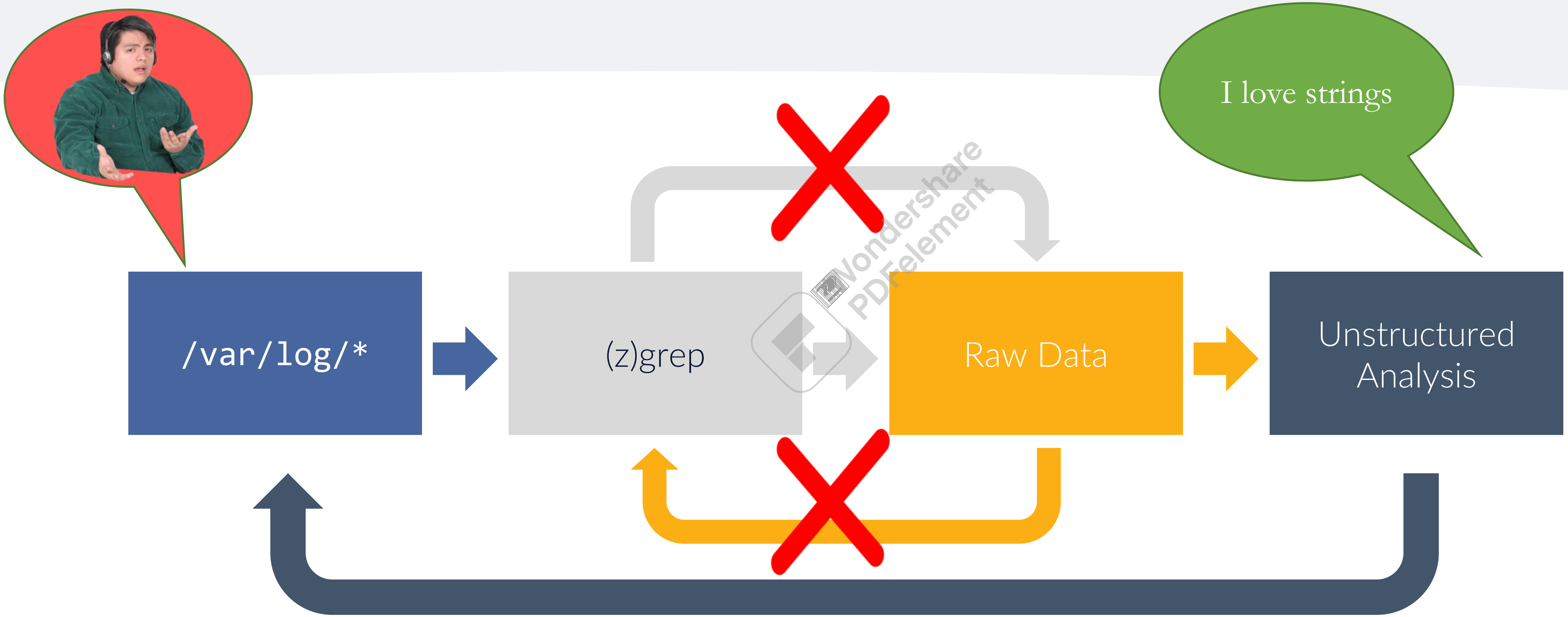
Big picture



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New incident - repeating manual steps over and over again

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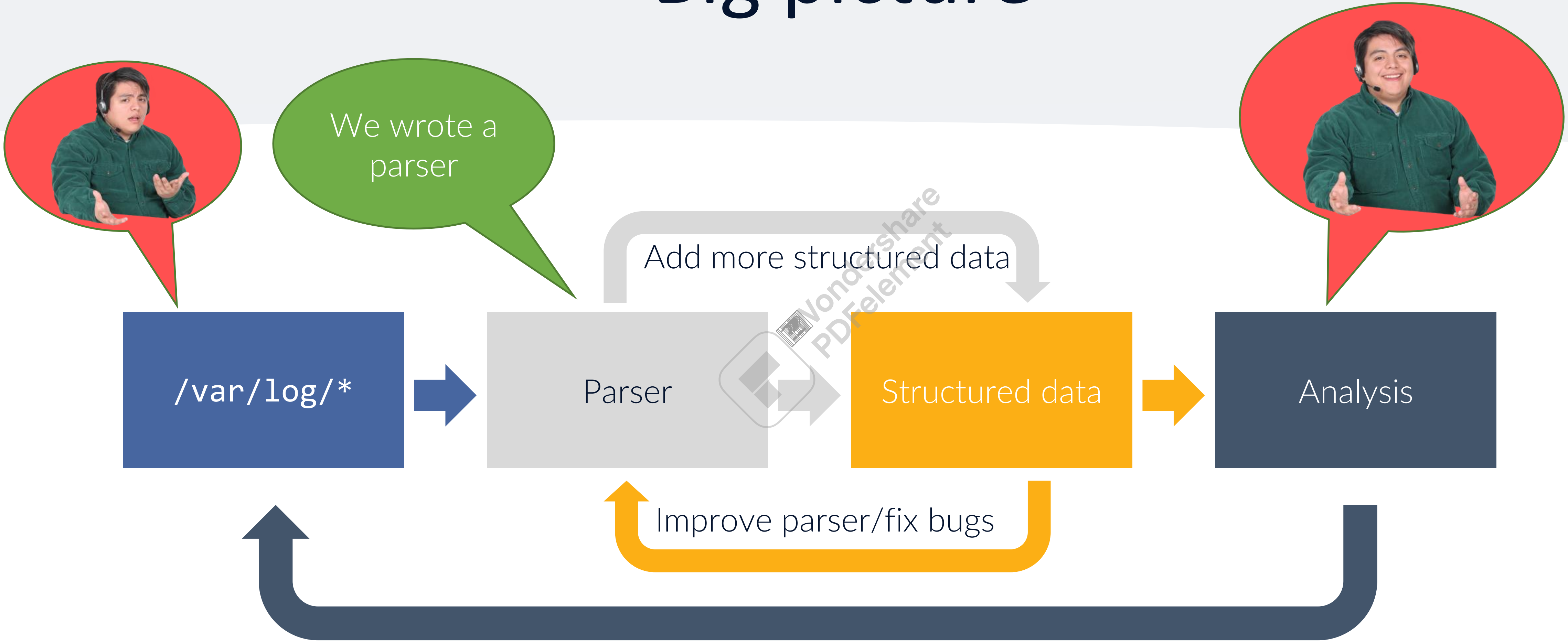
Big picture



New incident ☺

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Analysis

DESIRED STATE

- Timelines, timelines, timelines
- Query language
  - `srcip:127.0.0.1 AND srcport:1337`
- Backup
  - GNU tools: `strings, grep, awk, cut, etc.`

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Automated Analysis

SHOW IT

- Repeatable
- Transform human knowledge

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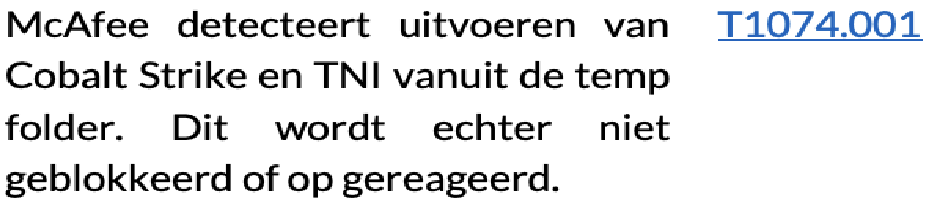

McAfee detecteert uitvoeren van Cobalt Strike en TNI vanuit de temp folder. Dit wordt echter niet geblokkeerd of op gereageerd. T1074.001

```
data_type:"windows:evtx:record" AND
source_name:McLogEvent           AND
event_identifier:257
```

https://www.huntandhackett.com/redmudnester, https://github.com/huntandhackett/red-mudnester/blob/main/RedMudnester.ipynb

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DevOps Mindset

CHALLENGE

Automation

Feedback Loops

Iterative

Repeatability

Speed

Metrics

Continuous Improvement

Structured Data

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We would like to thank YOU!

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Process

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Acquire

gsutil cp

Beats

Process

Logstash

Analysis

timesketch

elasticsearch

jupyter

sigma

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EVOLVE YOUR INCIDENT RESPONSE

Share your thoughts

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