Enforcing the OpenSSF Ecosystem

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Enforcing the OpenSSF Ecosystem with AMPEL

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Hello, I’m @puerco! ✌️

- Software Engineer @ Carabiner
- Technical Lead on the Kubernetes Release Engineering team (SIG Release)
- Technical Lead of OpenVEX and Protobom (incubating in OpenSSF)
- SPDX Project Contributor

- I like to ride my bike around the world! 🚴

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systems

Supply Chain Transparency

or, verifiable software consumption

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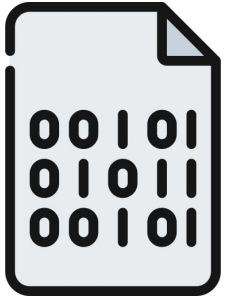

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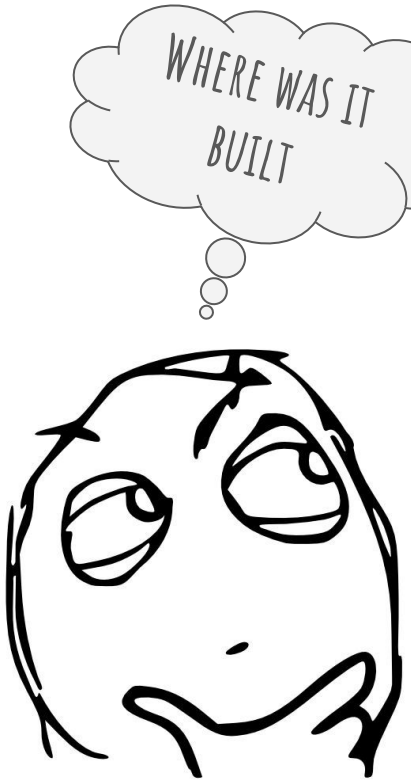

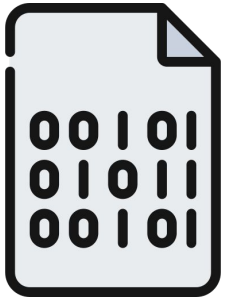

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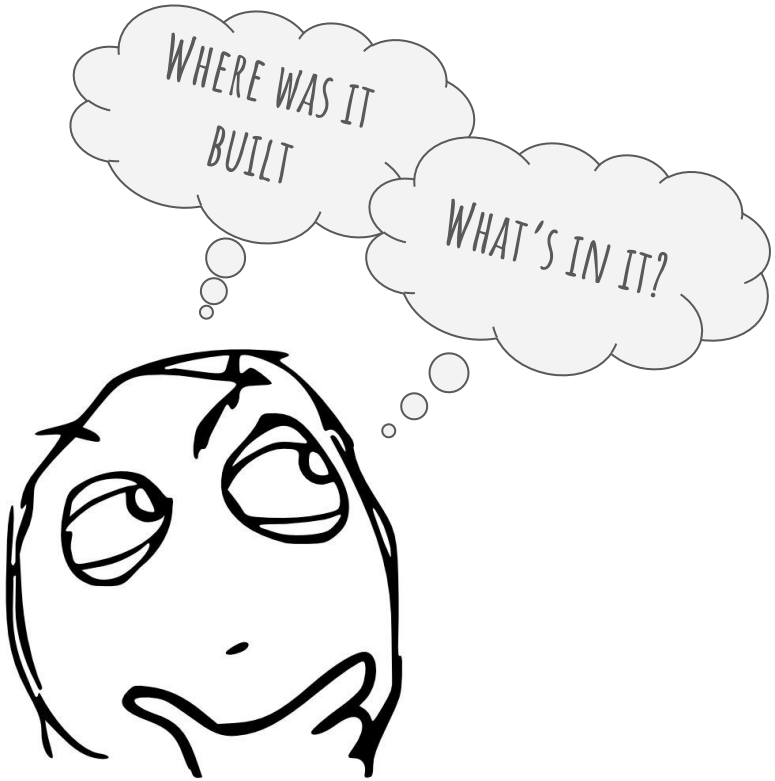

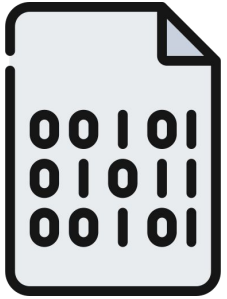

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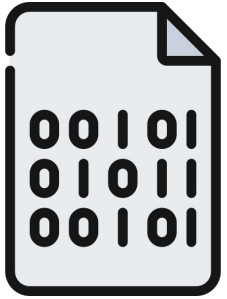
WHO BUILT THIS?
WHERE WAS IT BUILT
WHAT'S IN IT?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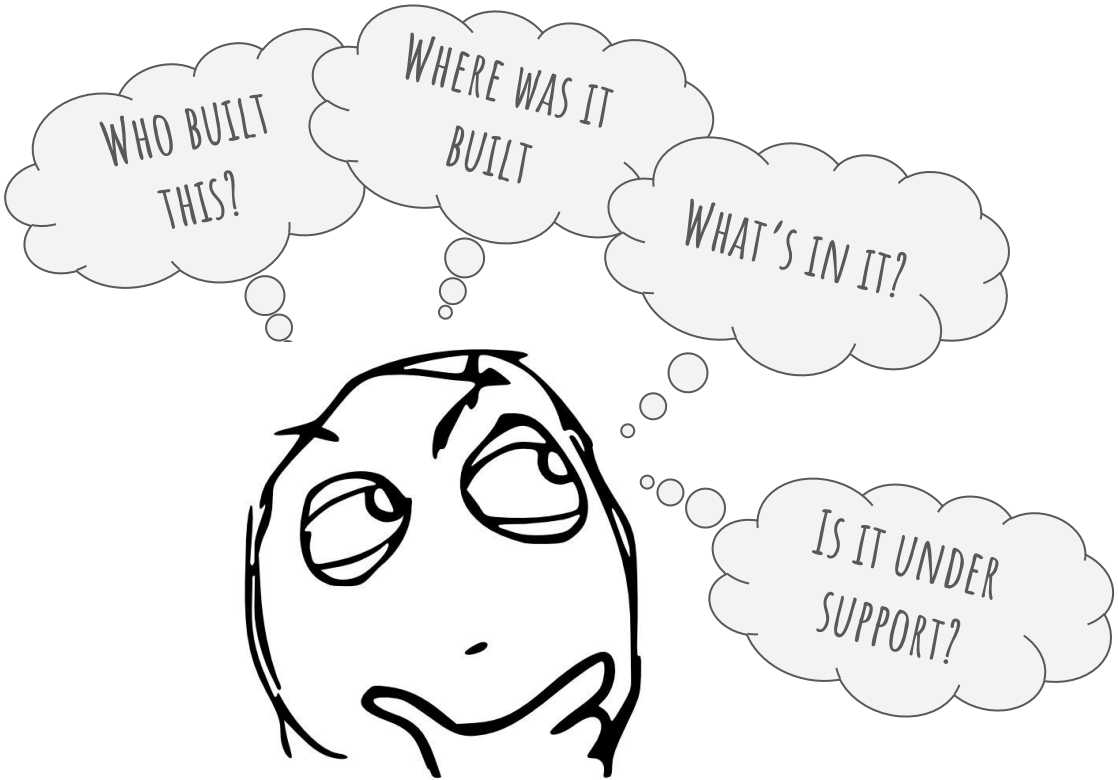
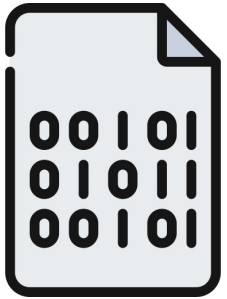
01011
00101

carabiner


Who built this?
Where was it built
What's in it?
Is it under support?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01011
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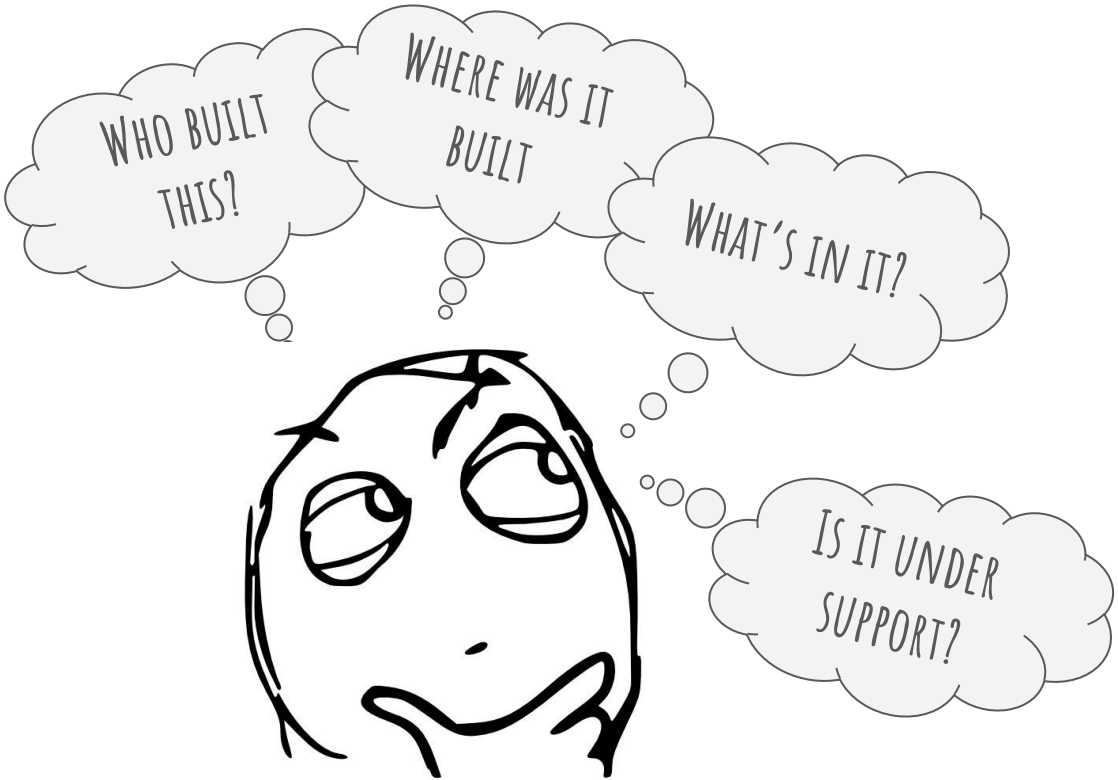
carabiner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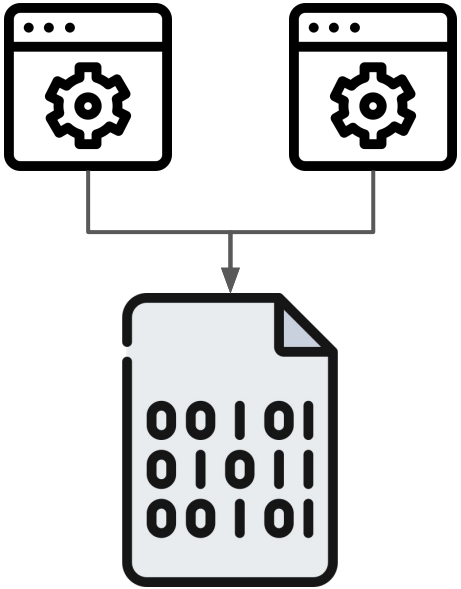
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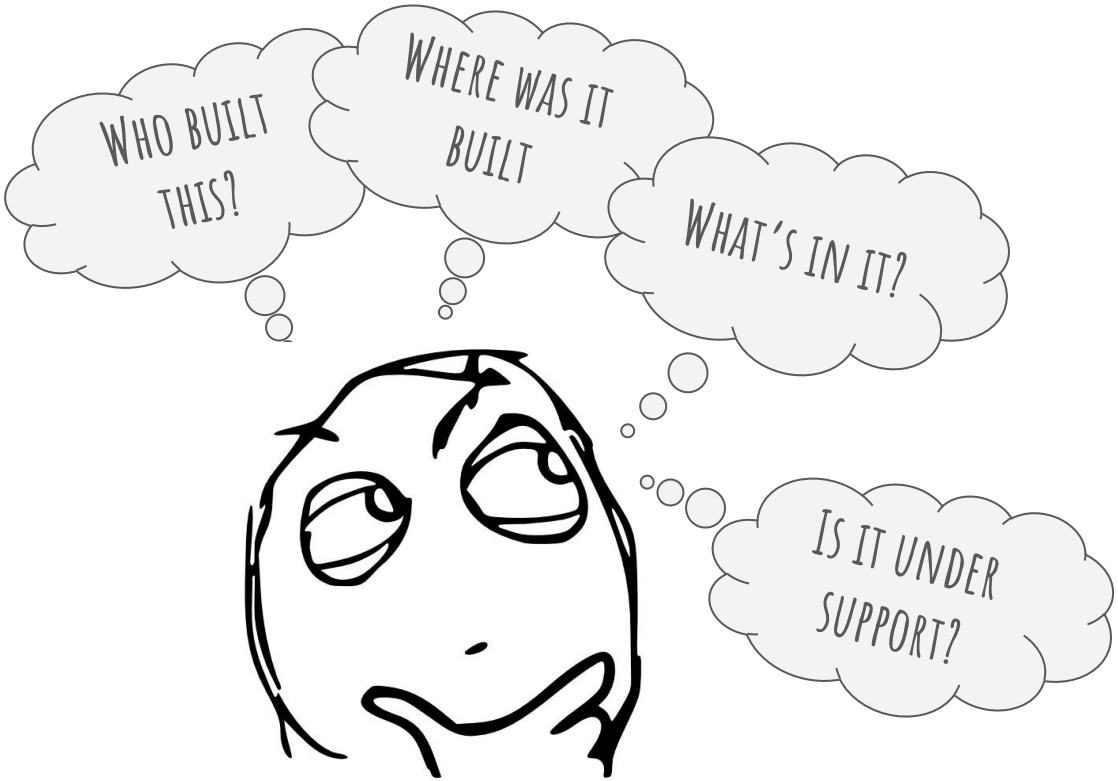
carabiner


WHO BUILT THIS?
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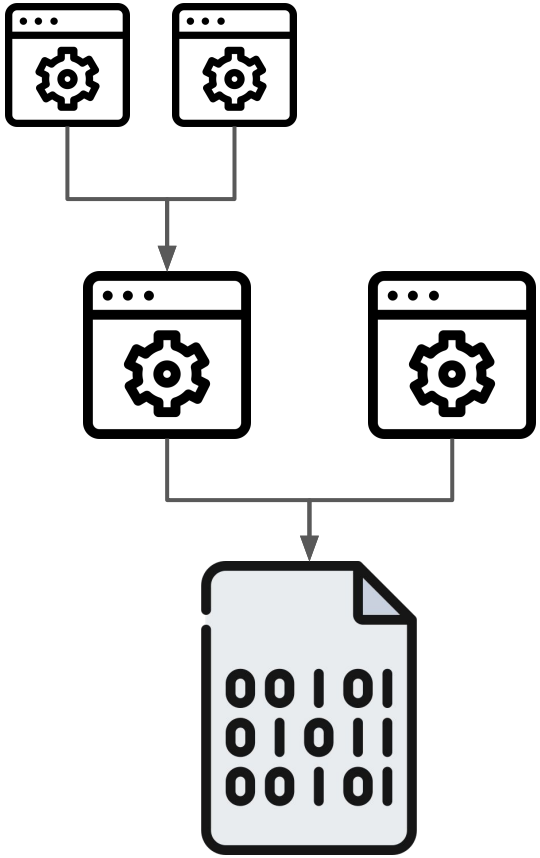
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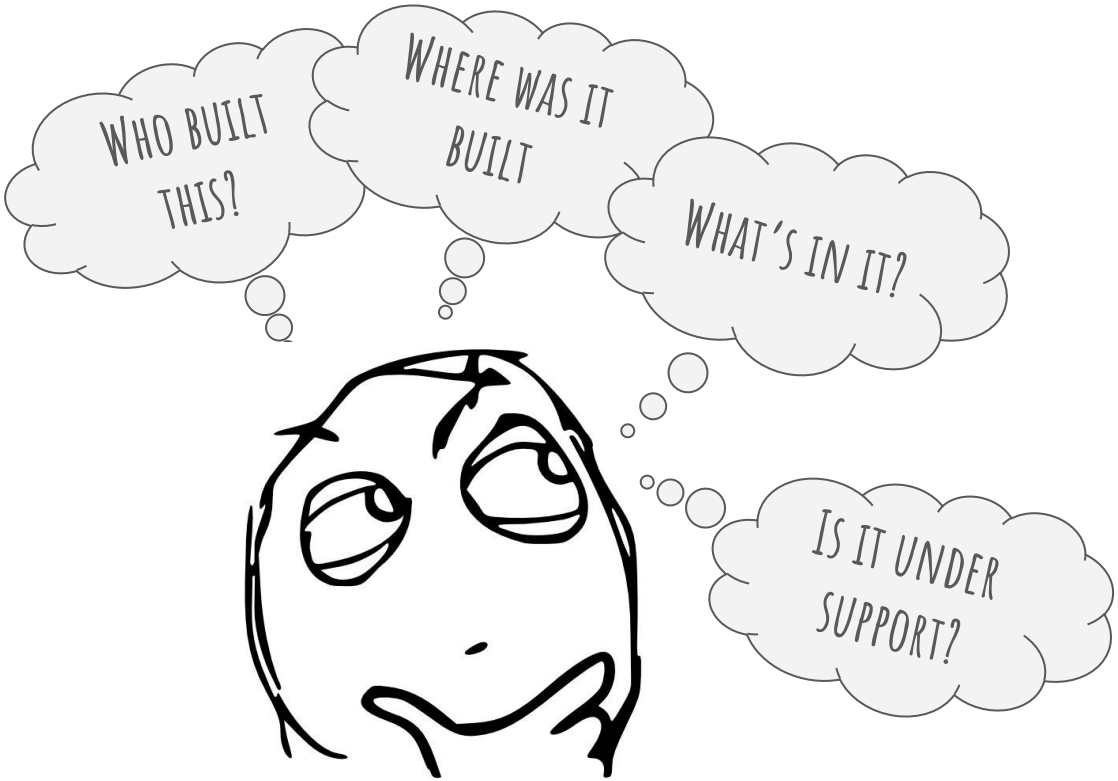
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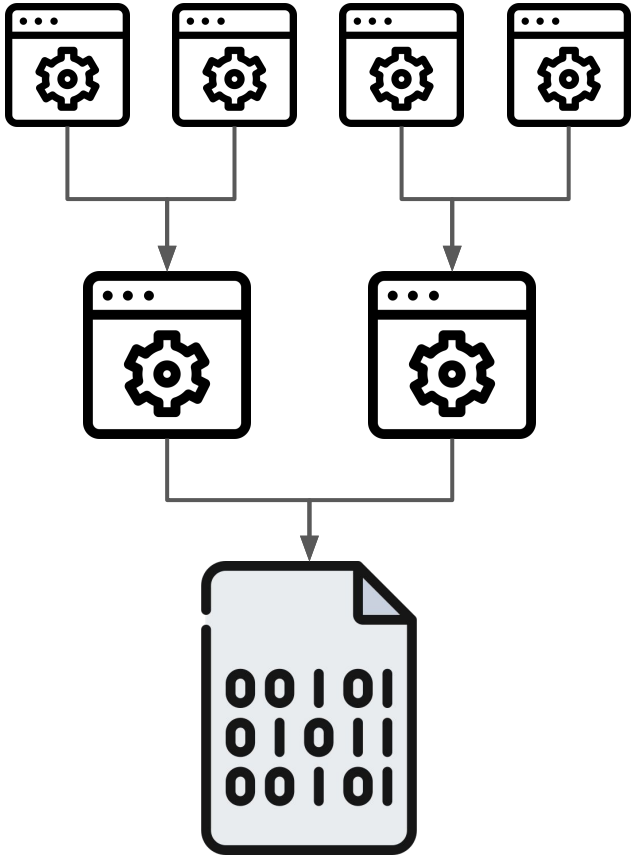
Where was it built
What's in it?
Is it under support?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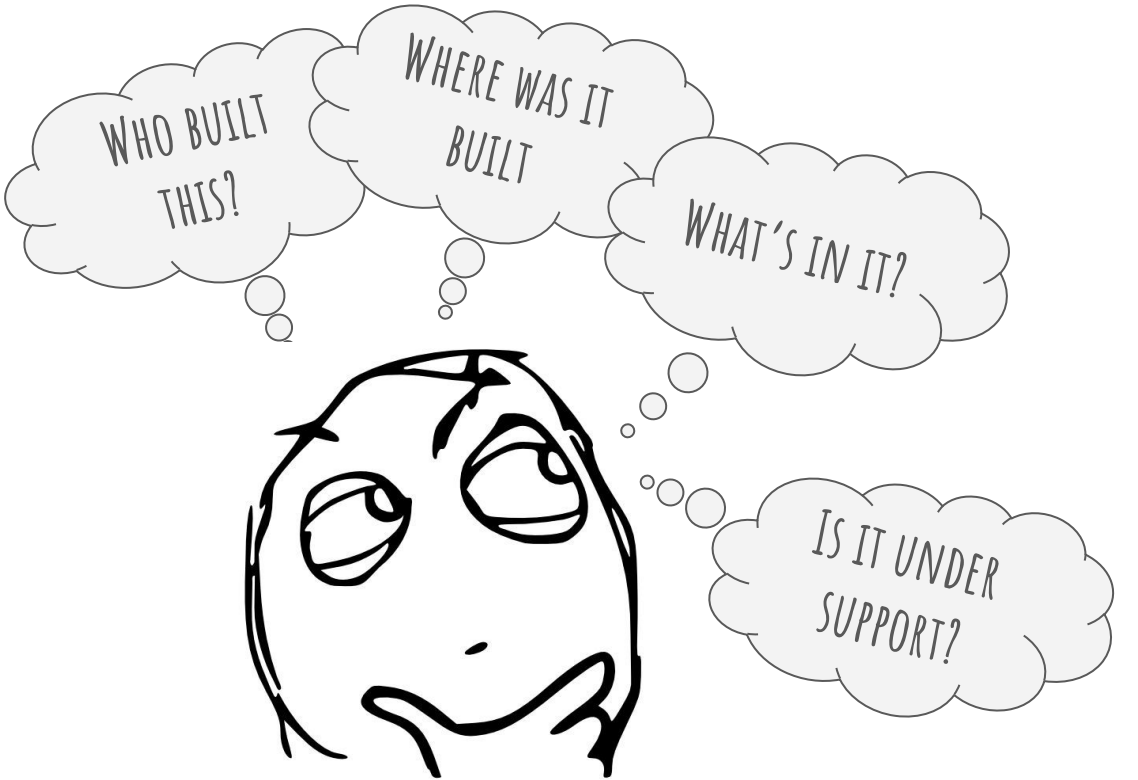
Who built this?
Where was it built
What's in it?
Is it under support?


Here's what you need to know!
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01011
00101

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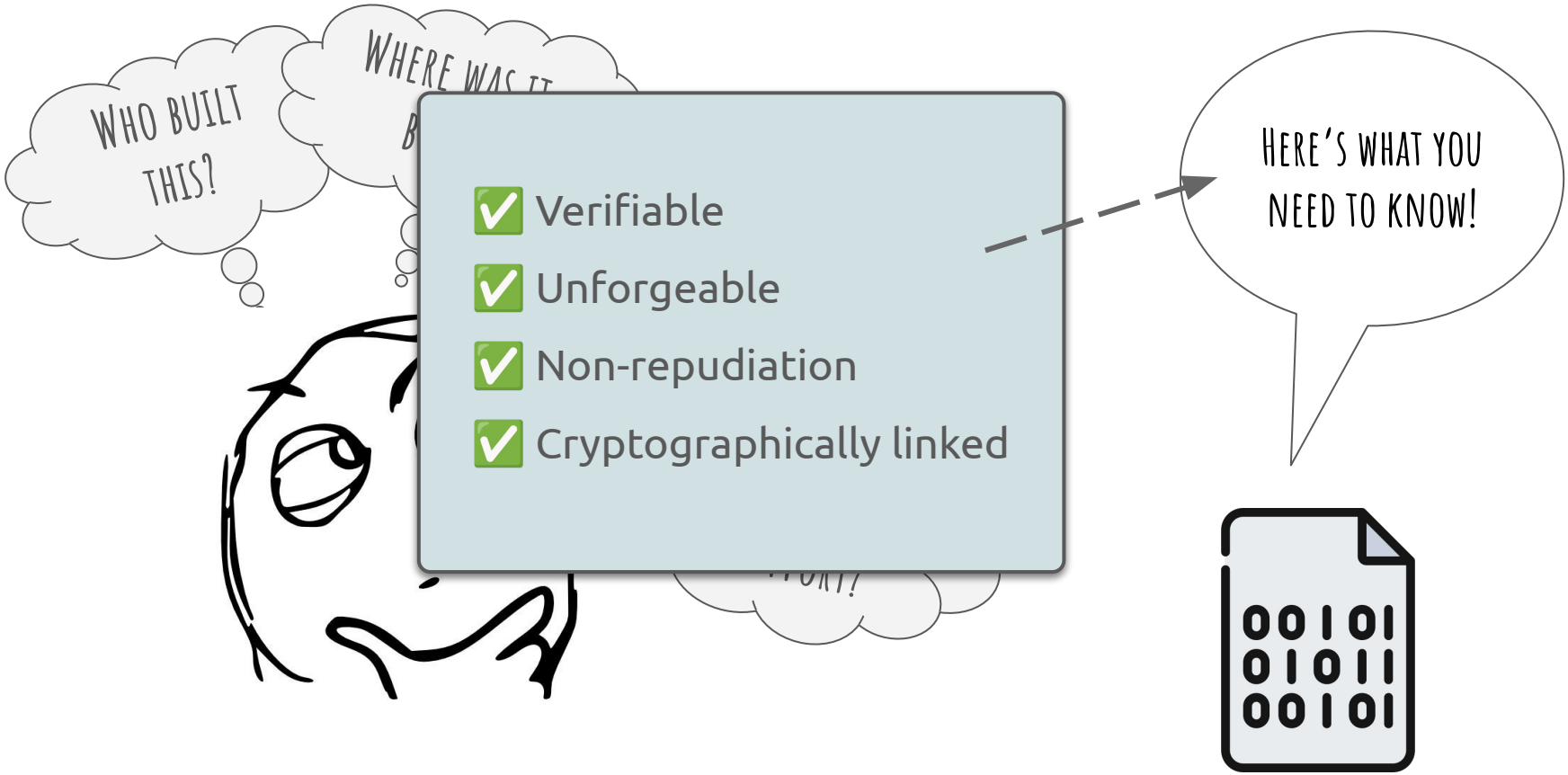
WHO BUILT THIS?
WHERE WAS IT
✅ Verifiable
✅ Unforgeable
✅ Non-repudiation
✅ Cryptographically linked
HERE'S WHAT YOU NEED TO KNOW!
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01011
00101

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What is an Attestation?

Understanding signed claims

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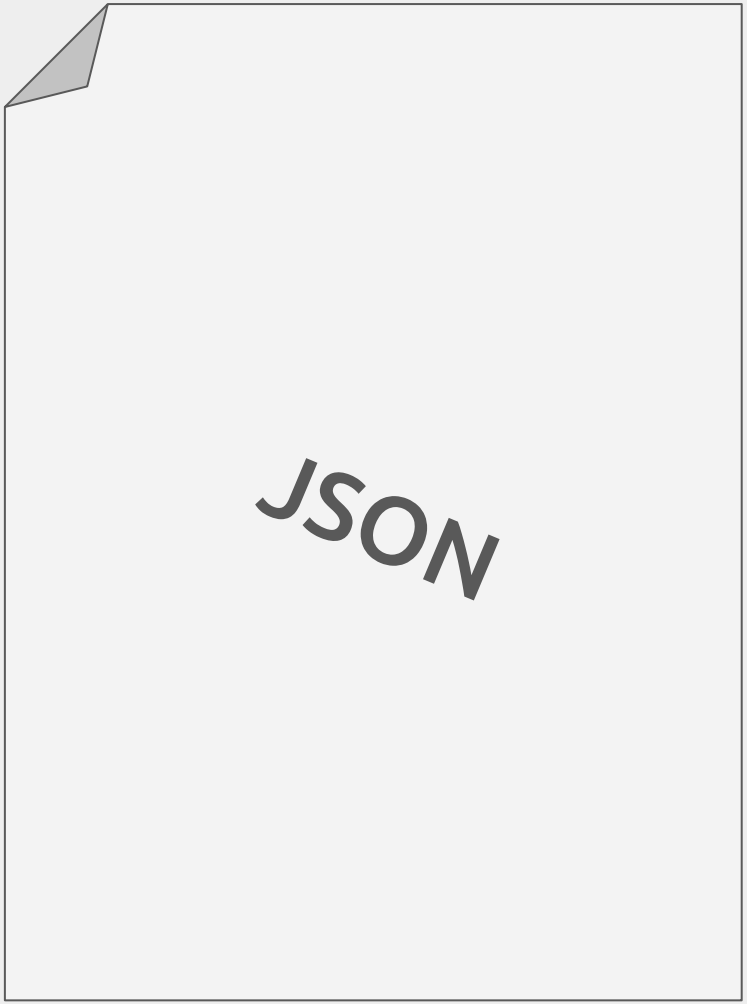
What is an Attestation?

“A signed set of claims about a subject”



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What is an Attestation?

> *Little atoms of a Secure Software Supply Chain*
>
> Dr Santiago Torres-Arias

JSON

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What is an Attestation?

“A signed set of claims about a subject”

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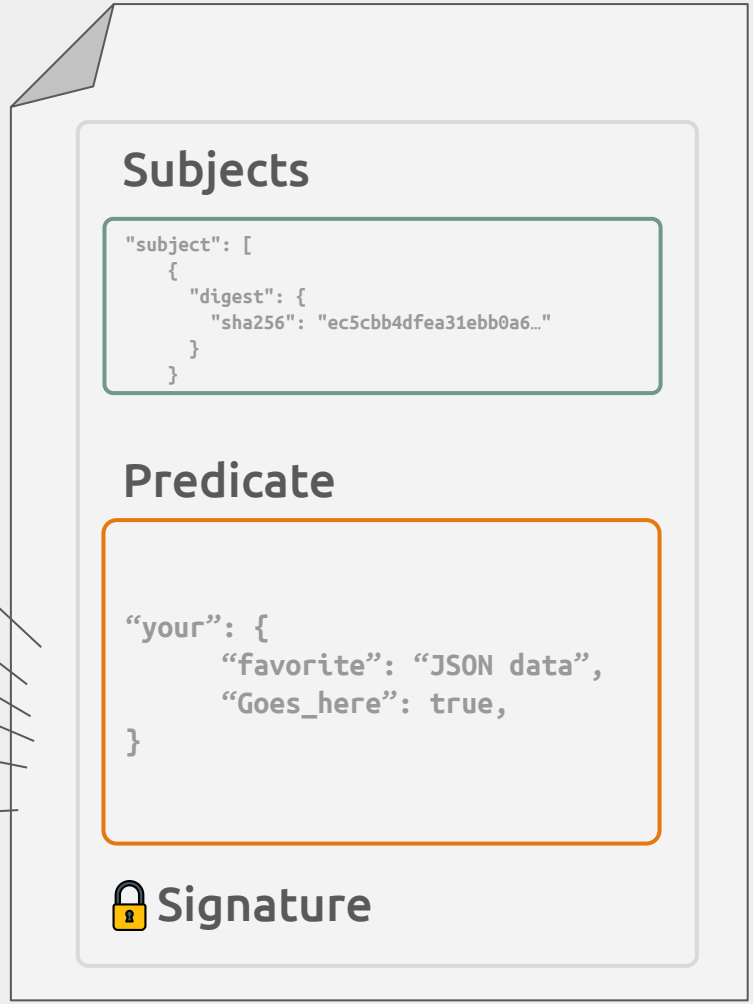
What is an Attestation?



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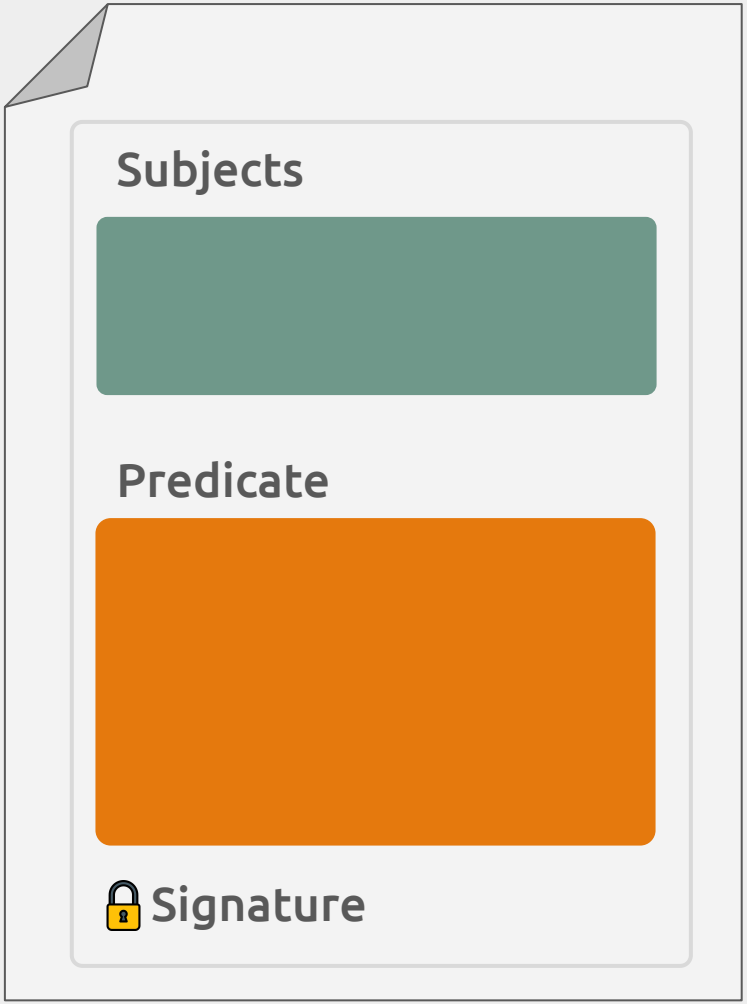
What is an Attestation?

“A signed set of claims about a subject”



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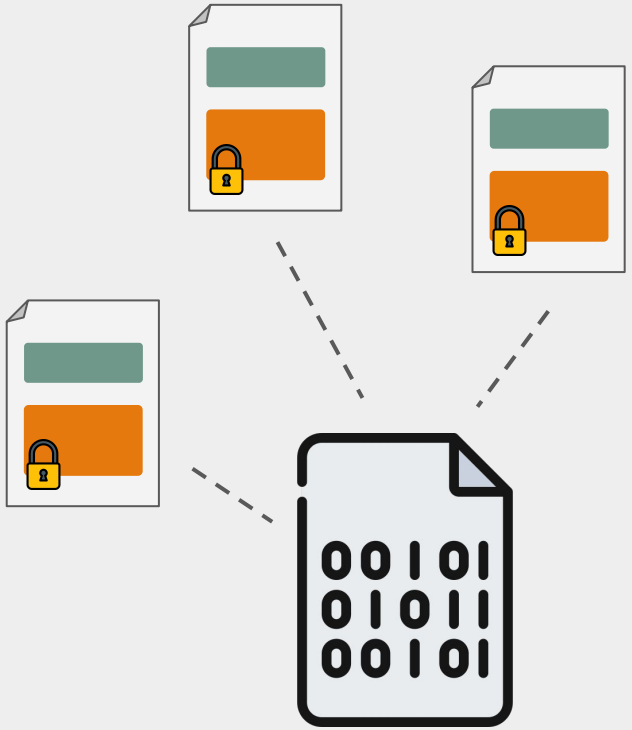
What is an Attestation?

“A signed set of claims about a subject”



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What is an Attestation?

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“ There’s no security without verification „

- Trevor Rosen
GitHub

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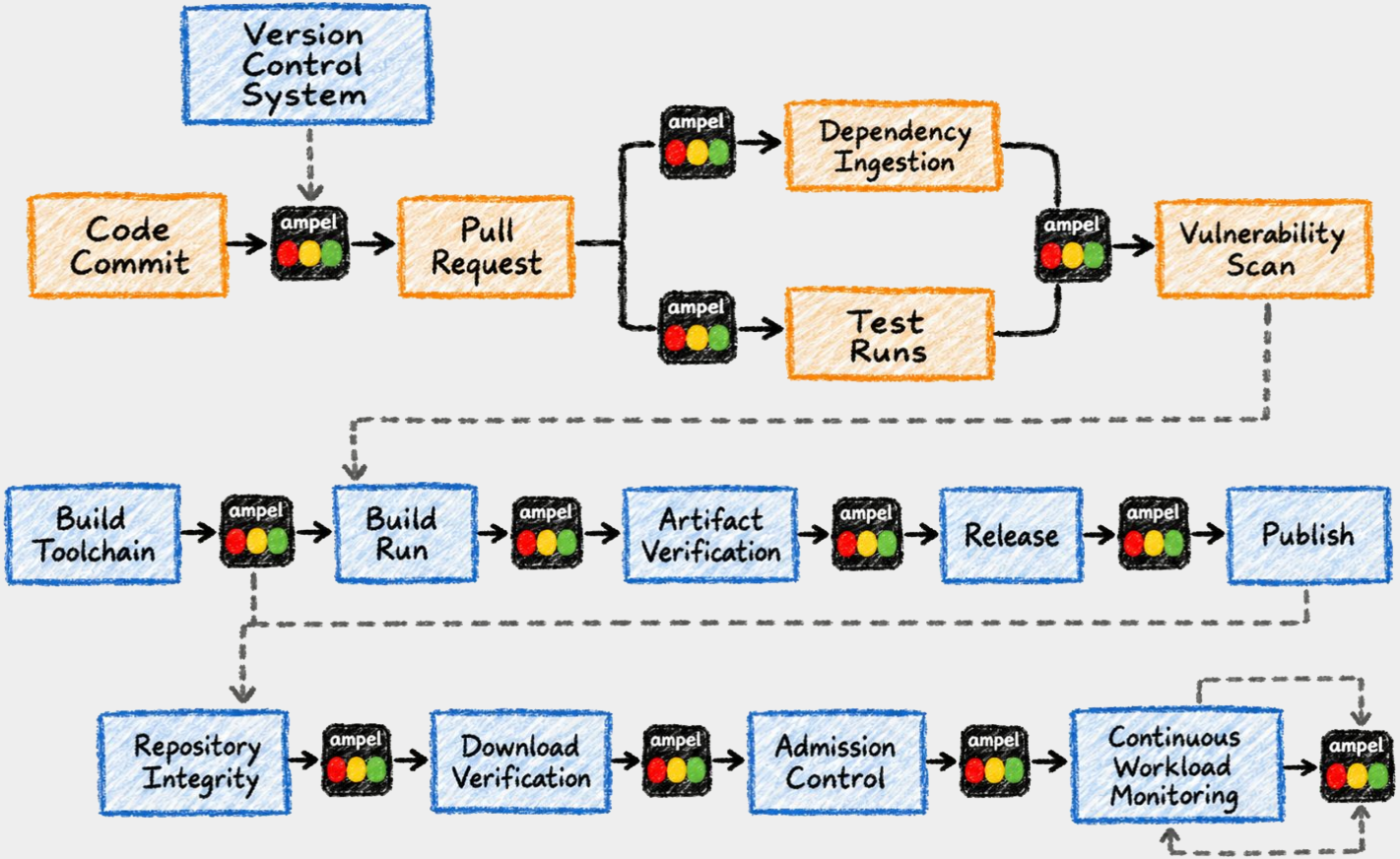
Amazing Multipurpose Policy Engine

Amazing Multipurpose Policy Engine (and L)


Version Control System
Code Commit
ampel
Pull Request
ampel
Dependency Ingestion
ampel
Test Runs
ampel
Vulnerability Scan
Build Toolchain
ampel
Build Run
ampel
Artifact Verification
ampel
Release
ampel
Publish
Repository Integrity
ampel
Download Verification
ampel
Admission Control
ampel
Continuous Workload Monitoring
ampel

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With a modular architecture, AMPEL solves some of the problems preventing the operationalization of software supply chain security technologies.

Key Blockers Solved by AMPEL

- Embeddable
- Policy Reuse
- Policy Composition
- Community ecosystem
- Domain-based extensions
- Tool Compatibility

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Evidence Diversity

Gimme all the formats!

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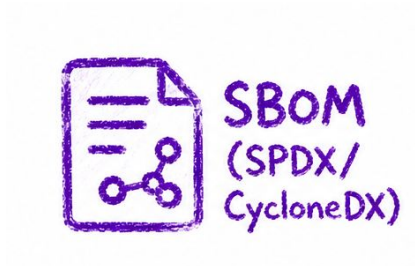

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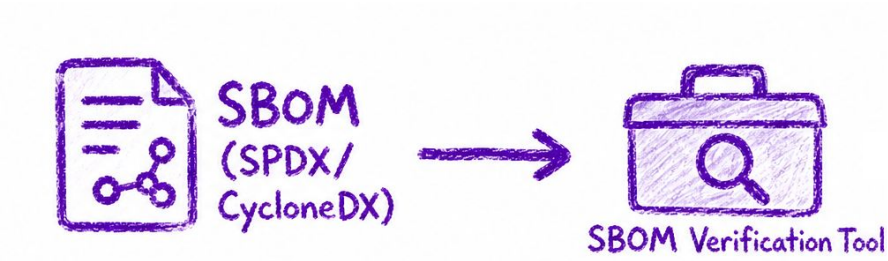

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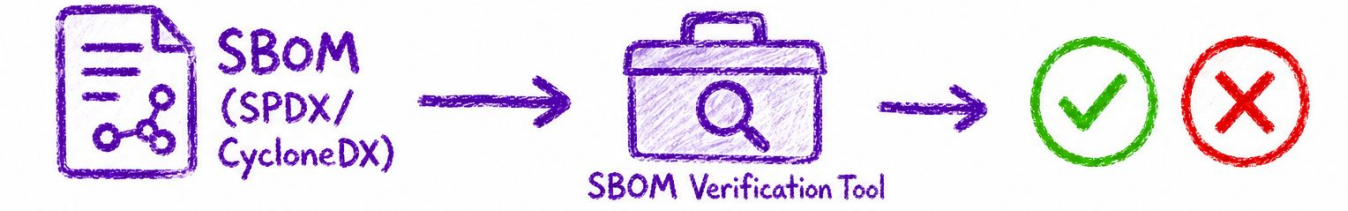

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SBOM
(SPDX/
CycloneDX)
SBOM Verification Tool
SLSA
SLSA Verification Tool

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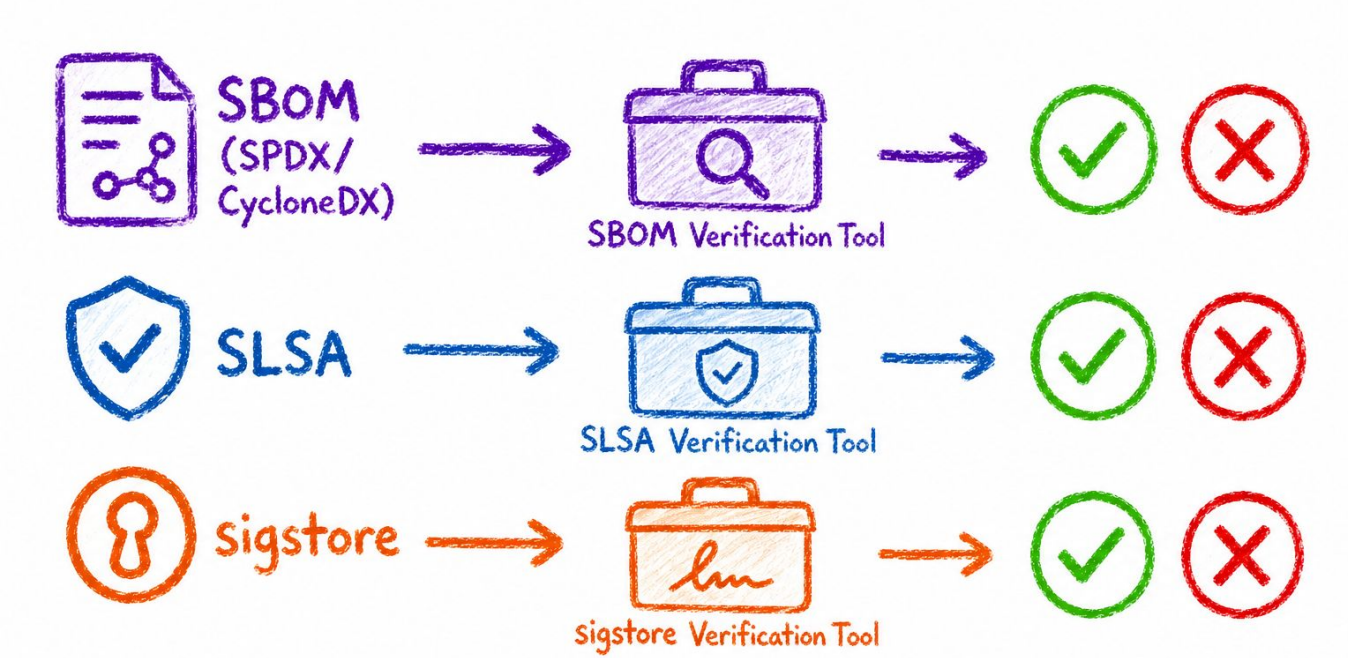
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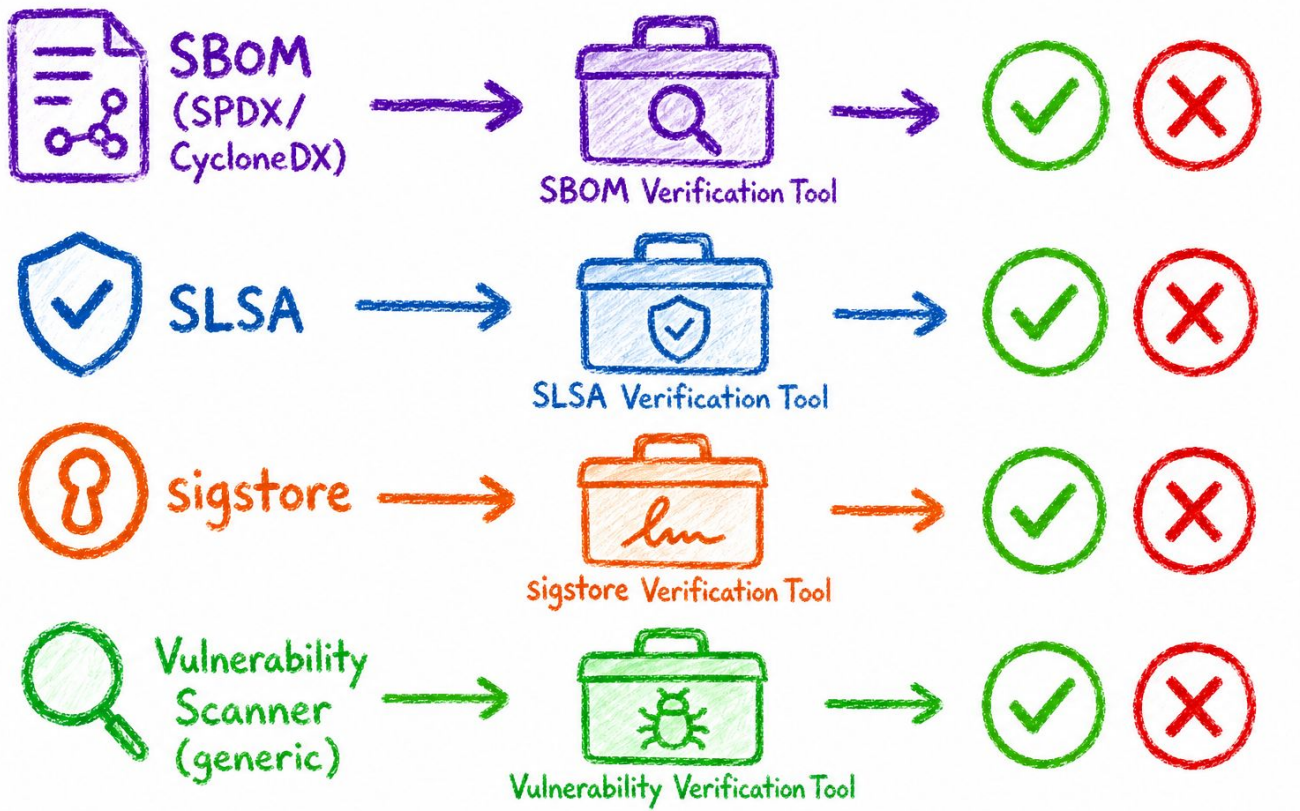
(SPDX/
CycloneDX)
SBOM Verification Tool
SLSA
SLSA Verification Tool
sigstore
sigstore Verification Tool

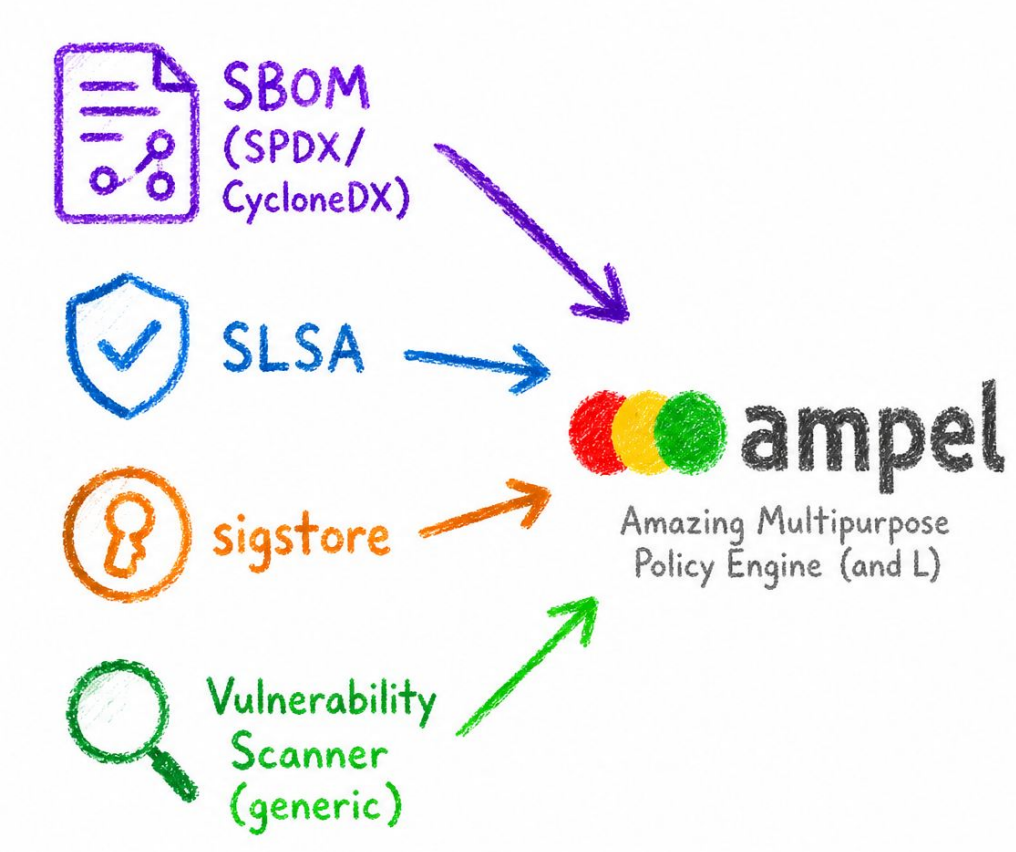
carabiner


SBOM
(SPDX/
CycloneDX)
SBOM Verification Tool
SLSA
SLSA Verification Tool
sigstore
sigstore Verification Tool
Vulnerability
Scanner
(generic)
Vulnerability Verification Tool

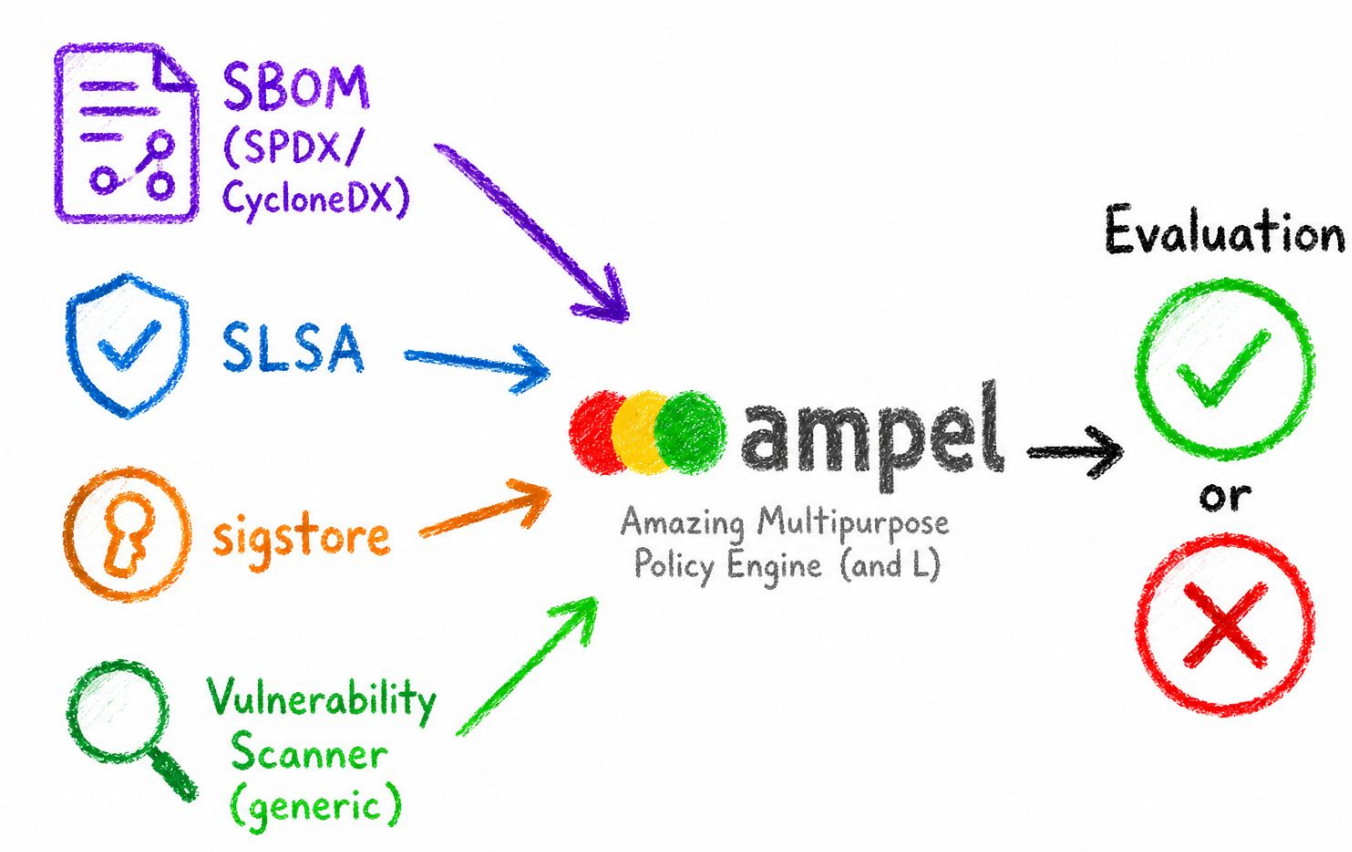
carabiner


SBOM
(SPDX/
CycloneDX)
SLSA
sigstore
Vulnerability
Scanner
(generic)

carabiner


SBOM
(SPDX/
CycloneDX)
SLSA
sigstore
Vulnerability
Scanner
(generic)
ampel
Amazing Multipurpose
Policy Engine (and L)

carabiner


SBOM
(SPDX/
CycloneDX)
SLSA
sigstore
Vulnerability
Scanner
(generic)
ampel
Amazing Multipurpose
Policy Engine (and L)
Evaluation
or

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Full Stack Verification

All them cakes belong to you!

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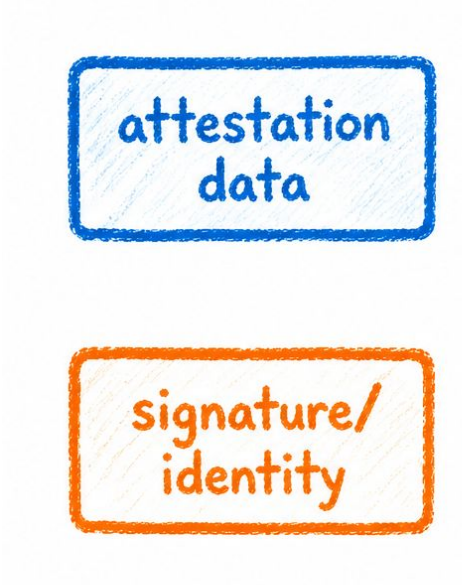

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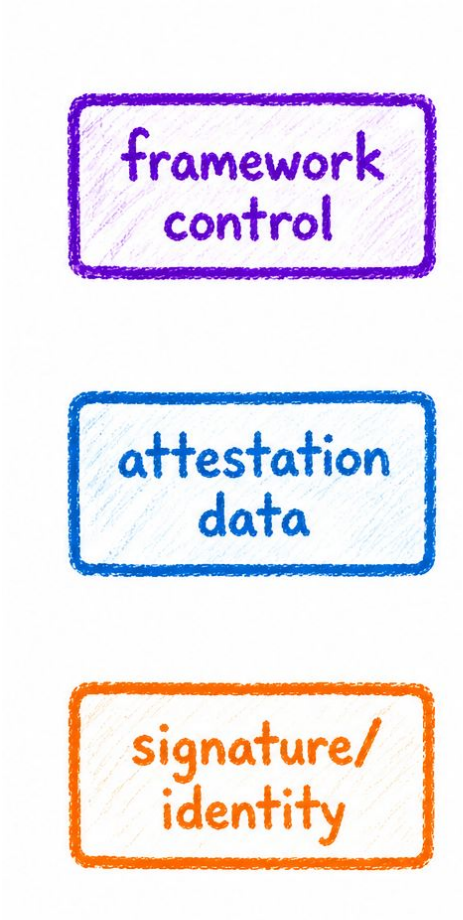

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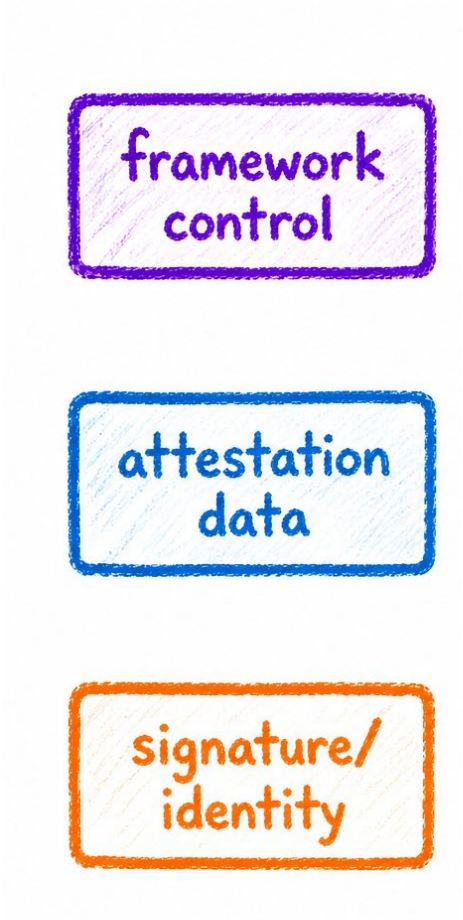
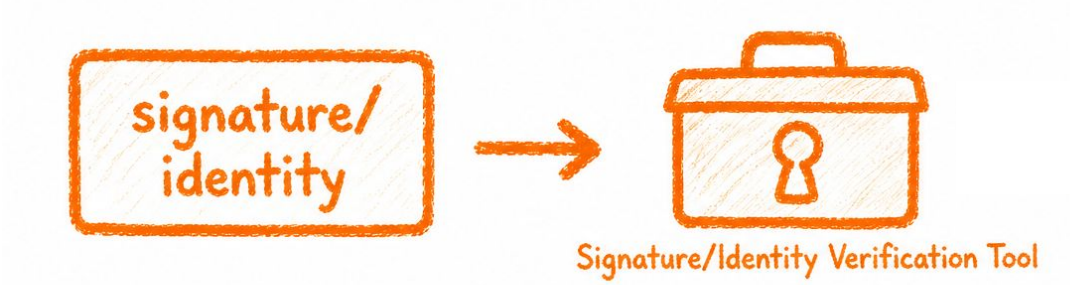

framework control
attestation data
signature/ identity
Why?
What?
Who?

carabiner

carabiner


signature/
identity
Signature/Identity Verification Tool

carabiner


signature/
identity
Signature/Identity Verification Tool

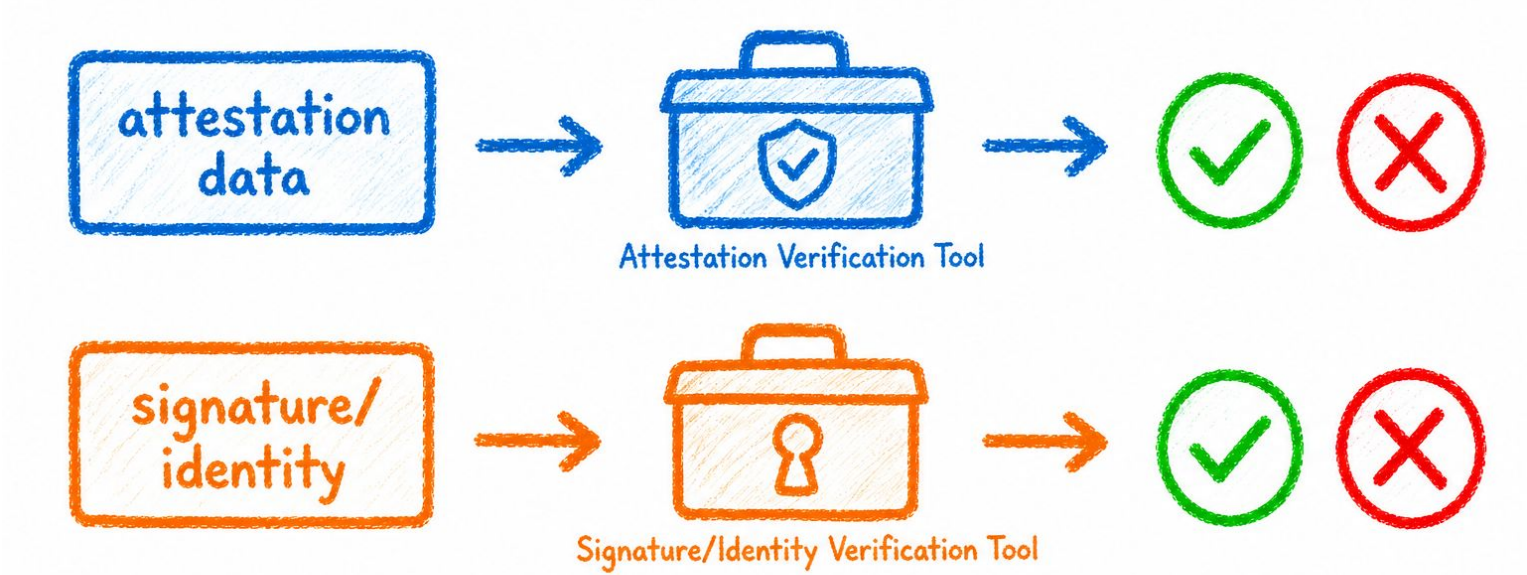
carabiner


attestation data
signature/ identity
Signature/Identity Verification Tool

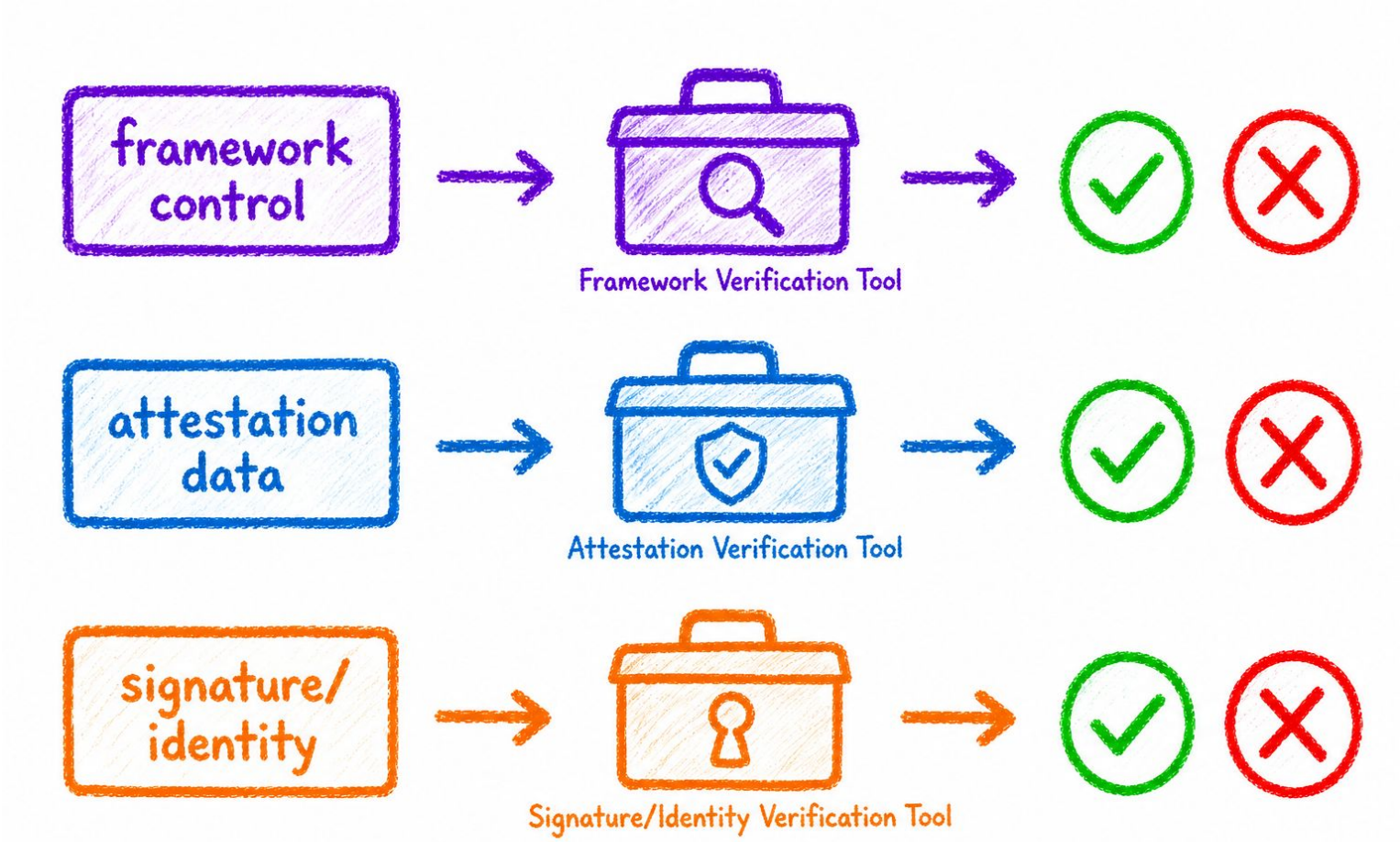
carabiner


attestation data
Attestation Verification Tool
signature/ identity
Signature/Identity Verification Tool

carabiner


attestation data
Attestation Verification Tool
signature/ identity
Signature/Identity Verification Tool

carabiner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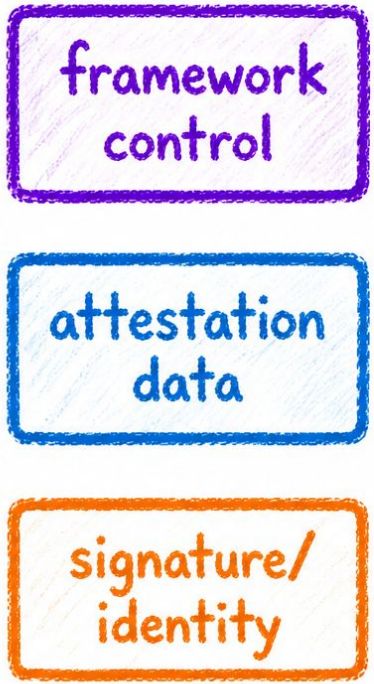
Framework Verification Tool
attestation data
Attestation Verification Tool
signature/ identity
Signature/Identity Verification Tool

carabiner



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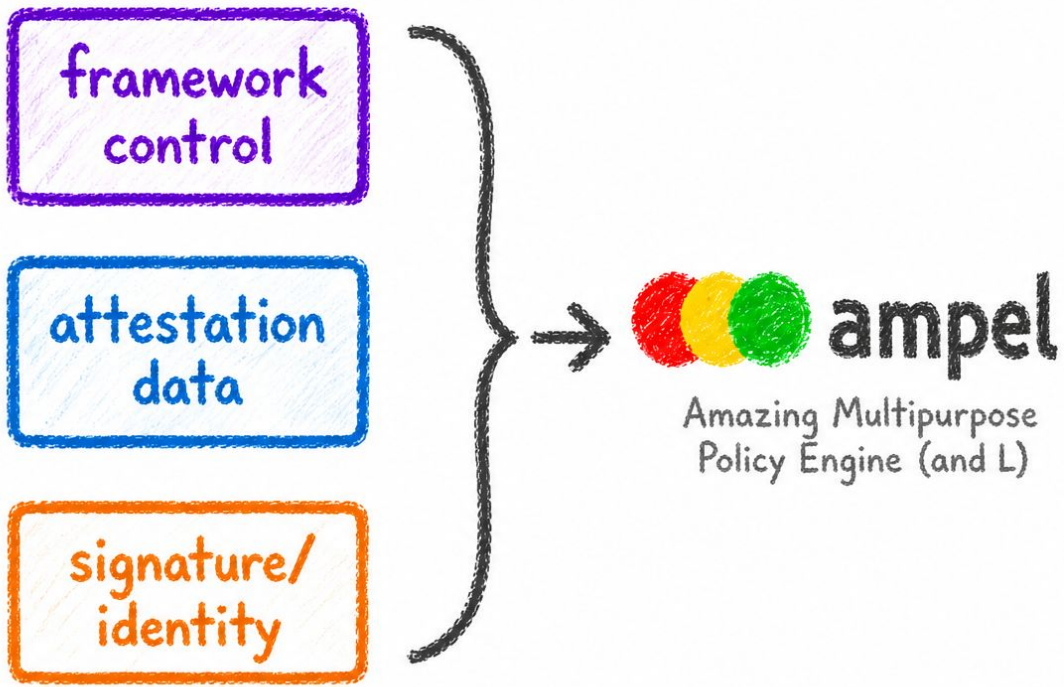
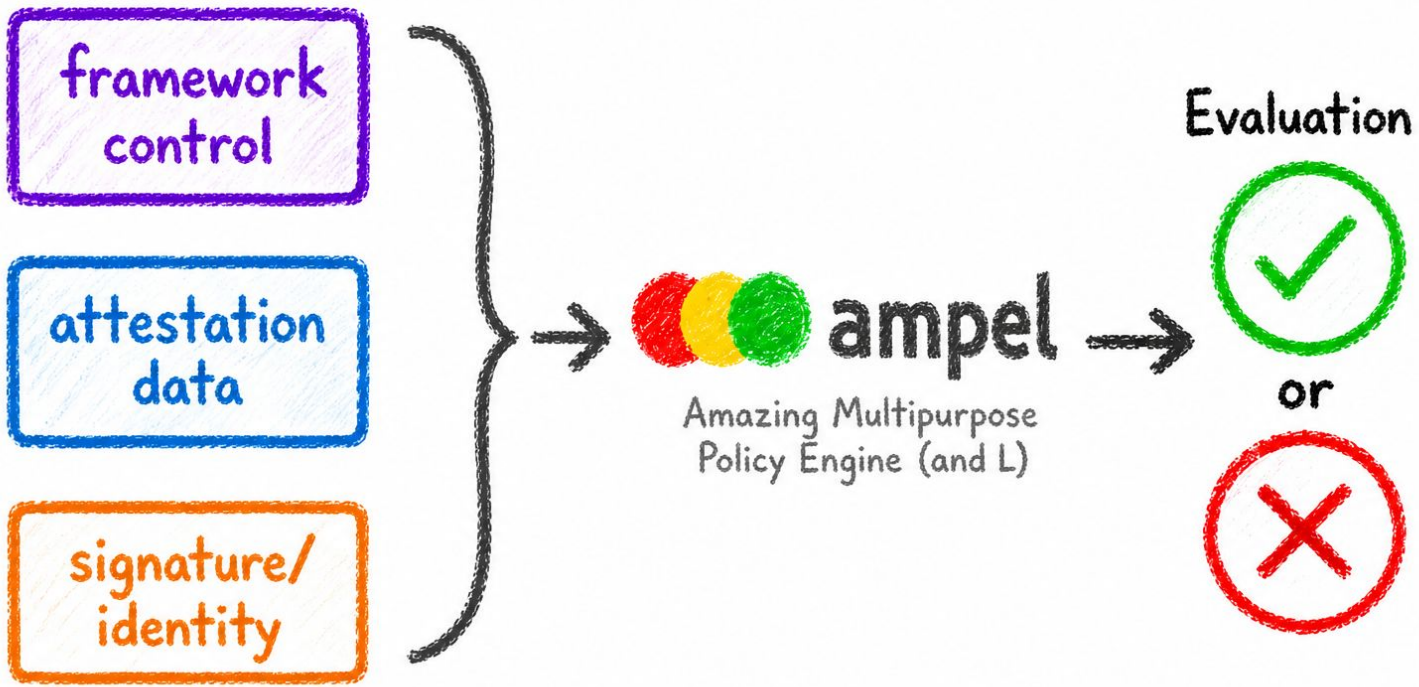

framework control
attestation data
signature/ identity
ampel
Amazing Multipurpose Policy Engine (and L)

carabiner


framework control
attestation data
signature/ identity
ampel
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Evaluation
or

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Implementation Diversity

Do what you want, not what they say

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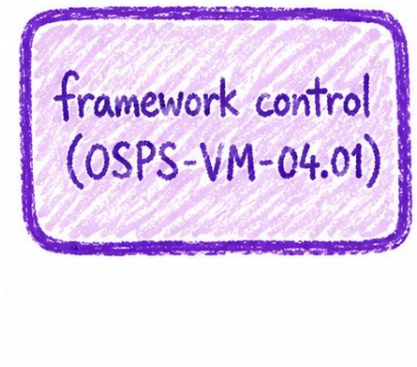

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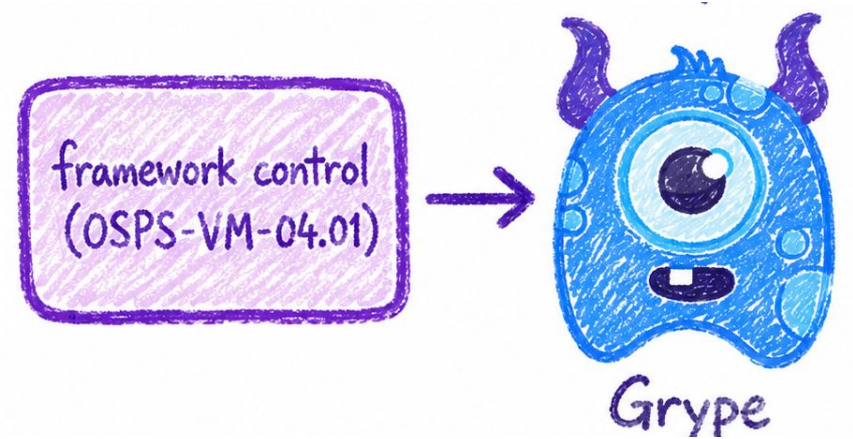

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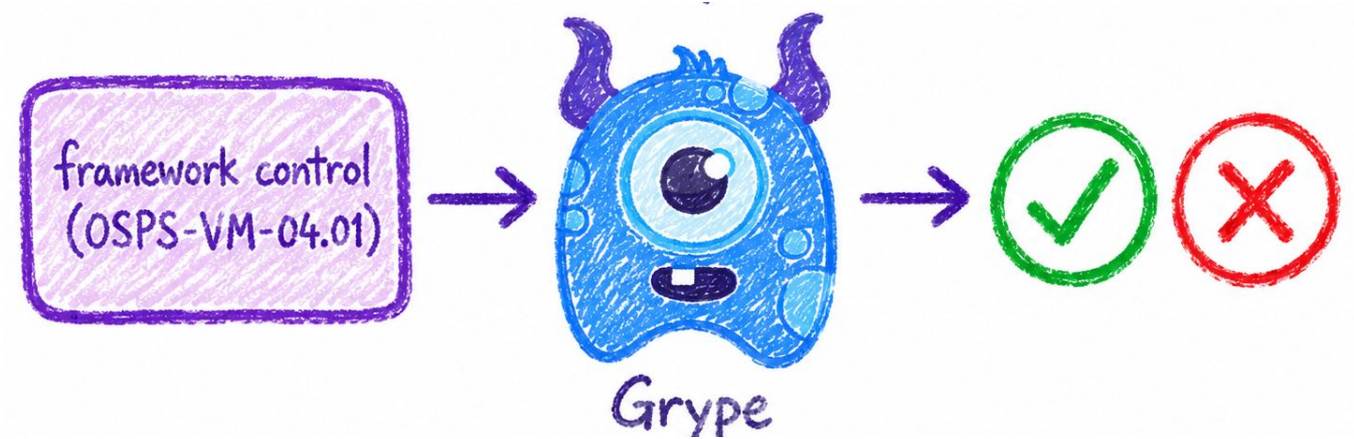

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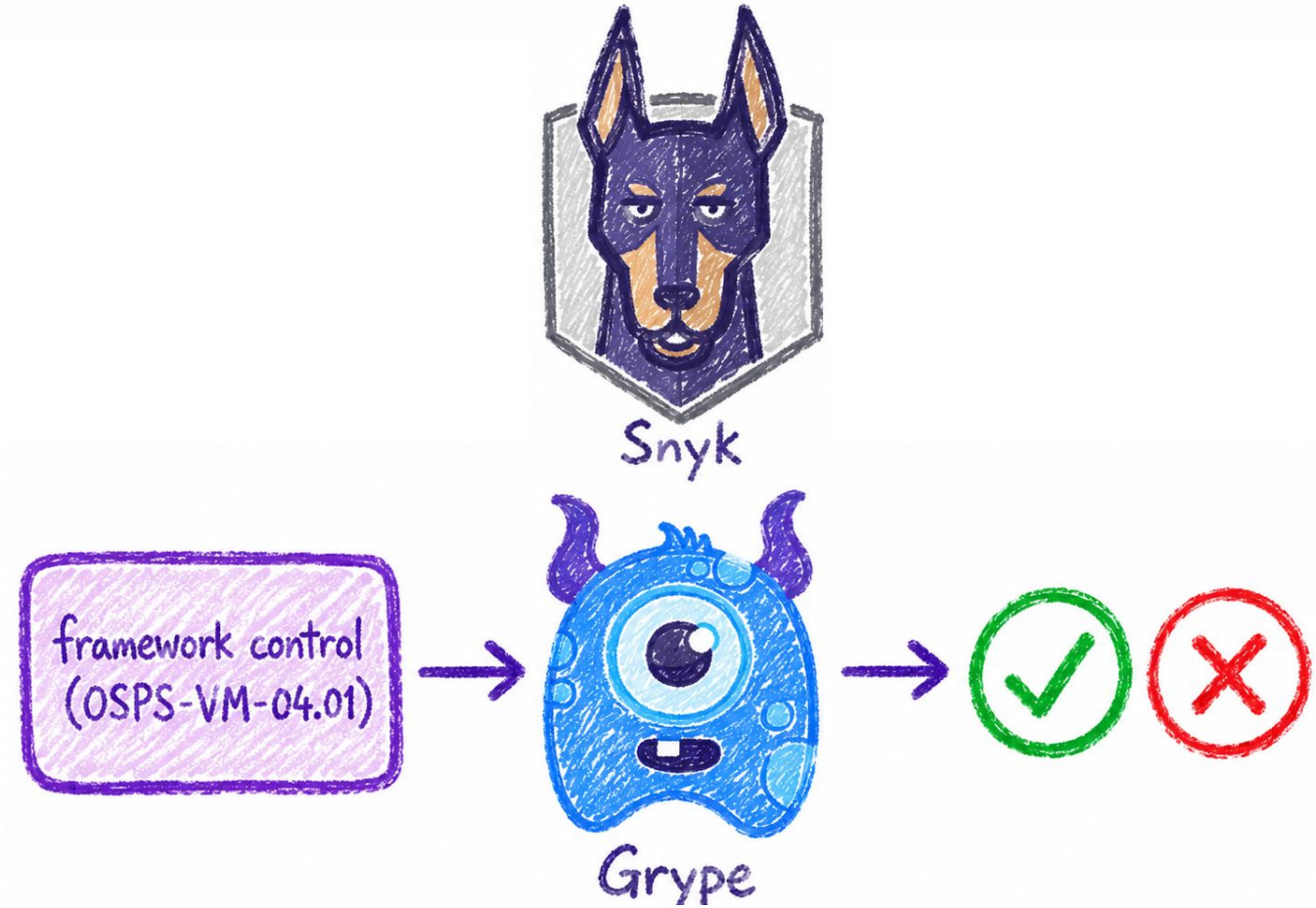

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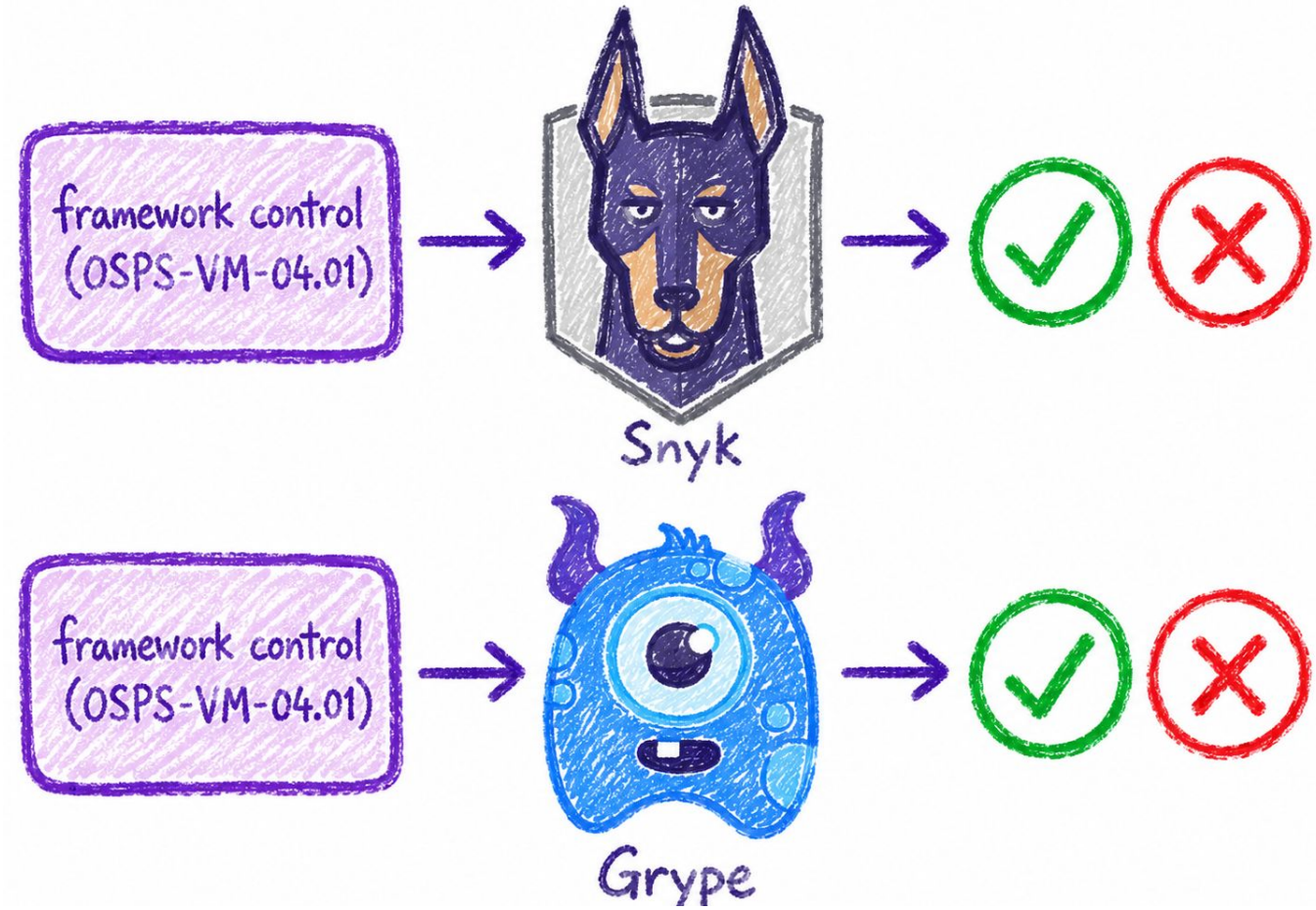
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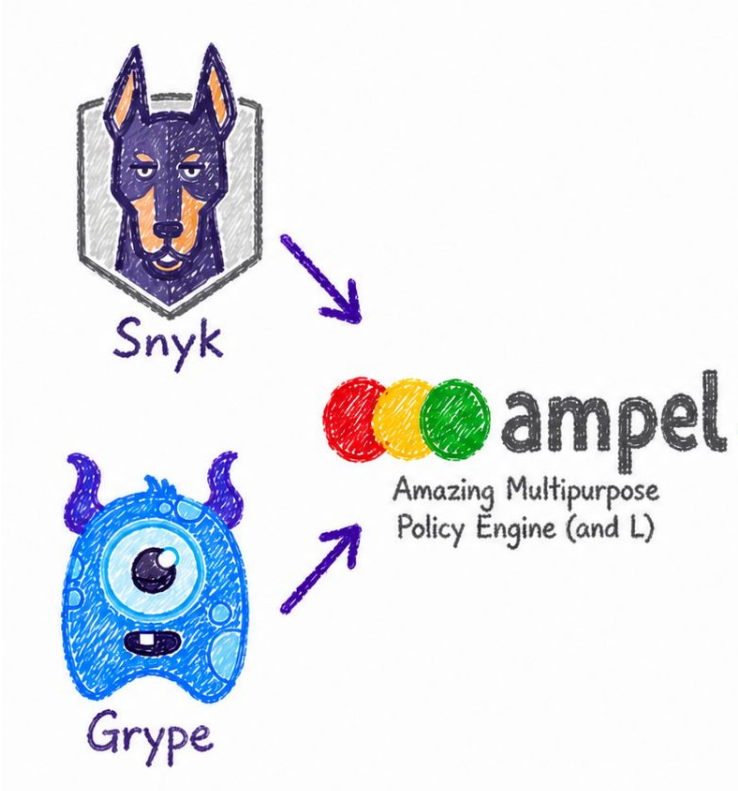
(OSPS-VM-04.01)
Snyk
framework control
(OSPS-VM-04.01)
Grype

carabiner

carabiner

carabiner



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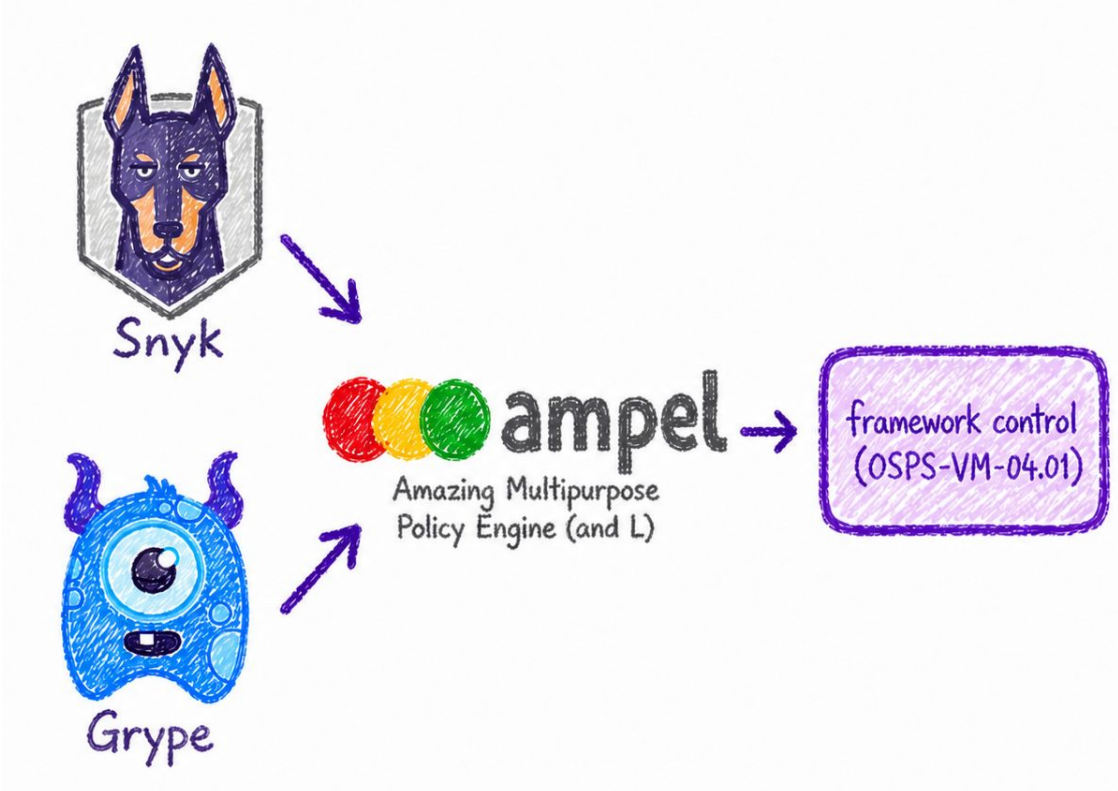
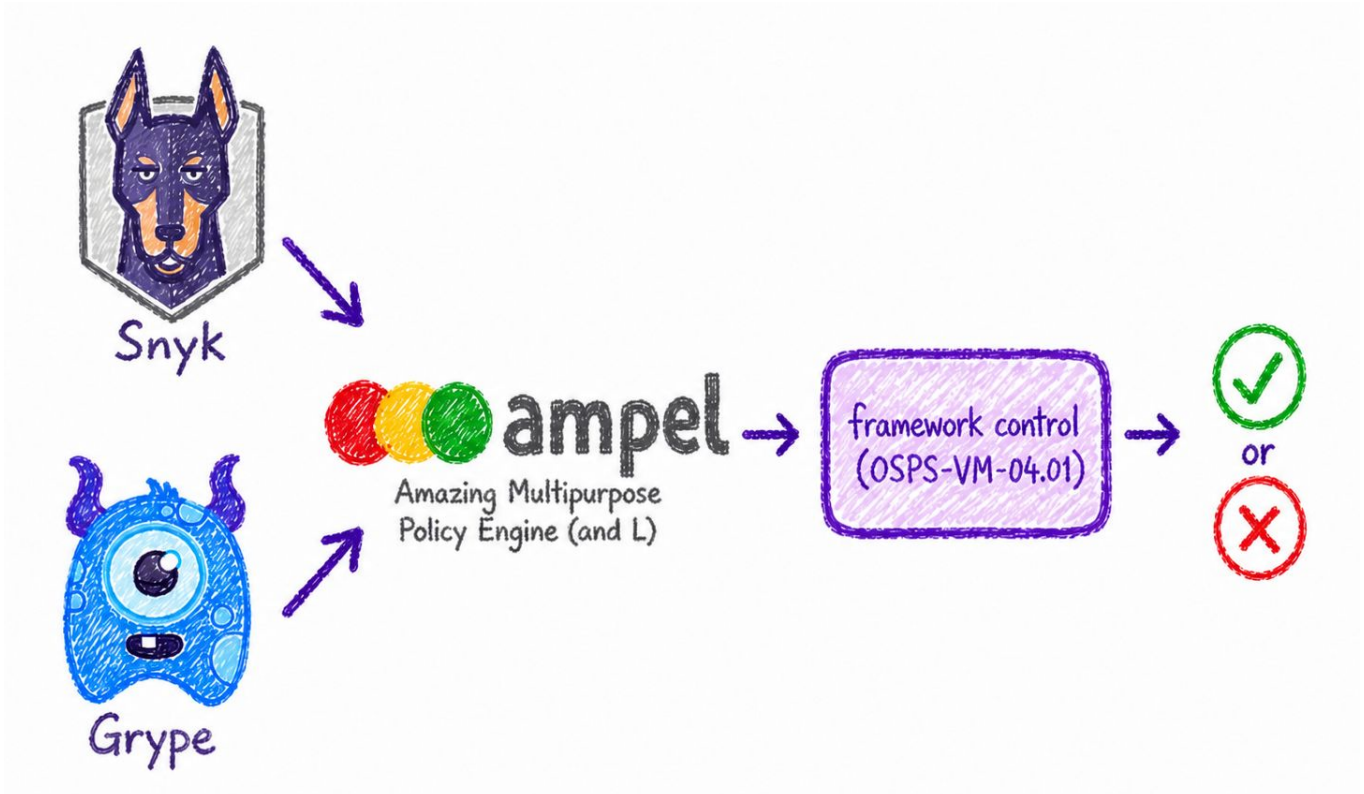

Snyk
Grype
ampel
Amazing Multipurpose
Policy Engine (and L)
framework control
(OSPS-VM-04.01)

carabiner


Snyk
Grype
ampel
Amazing Multipurpose
Policy Engine (and L)
framework control
(OSPS-VM-04.01)
or

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Evidence Discovery

There is no one source to rule them all :(

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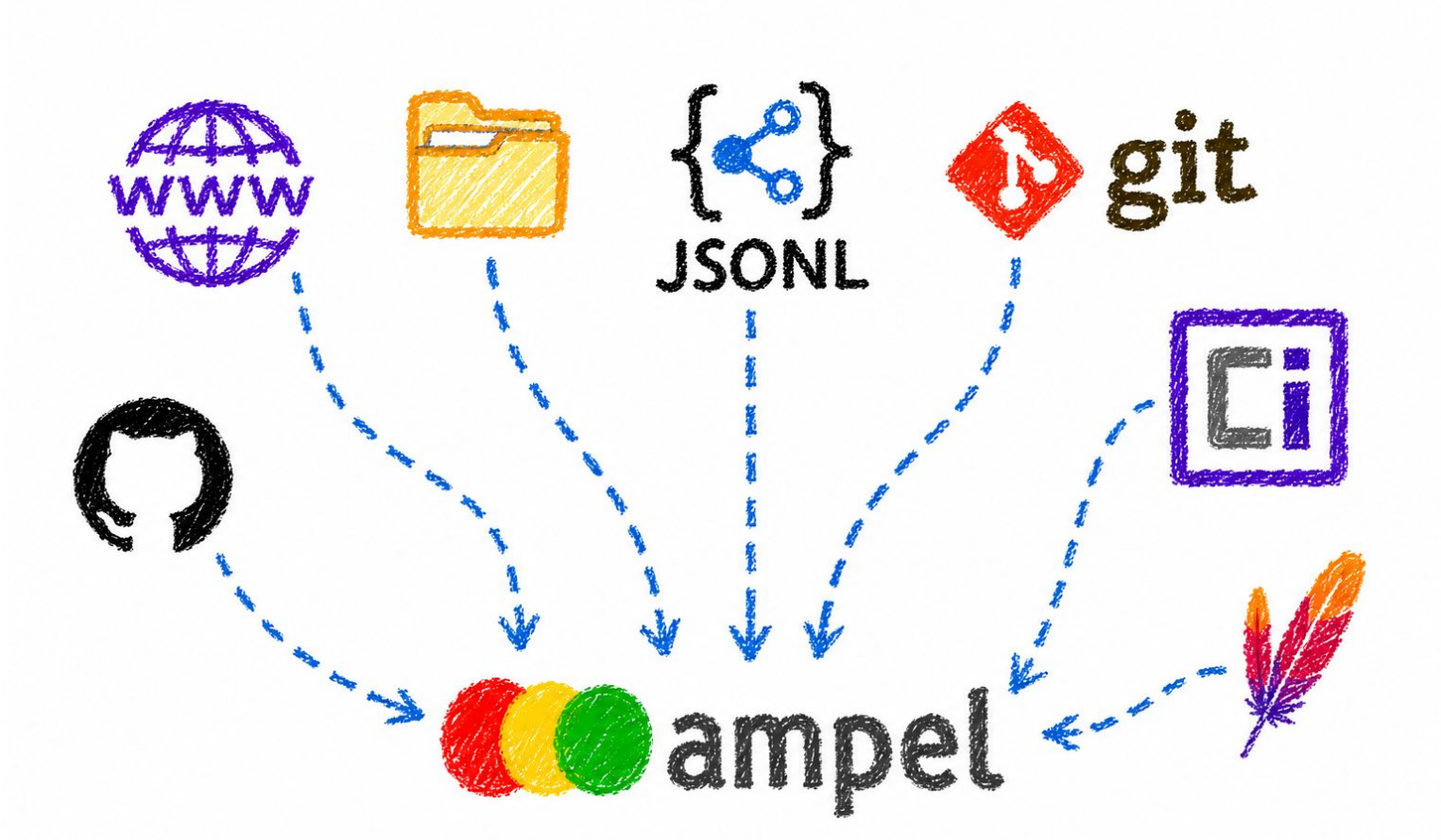

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Community Policies

Do it once. For everybody.

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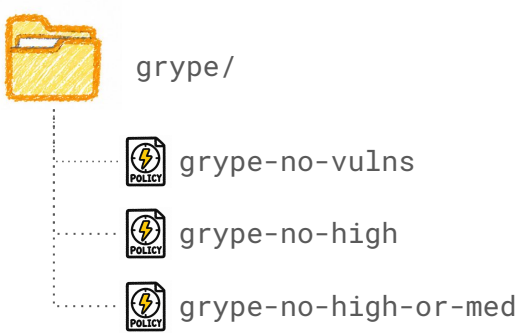
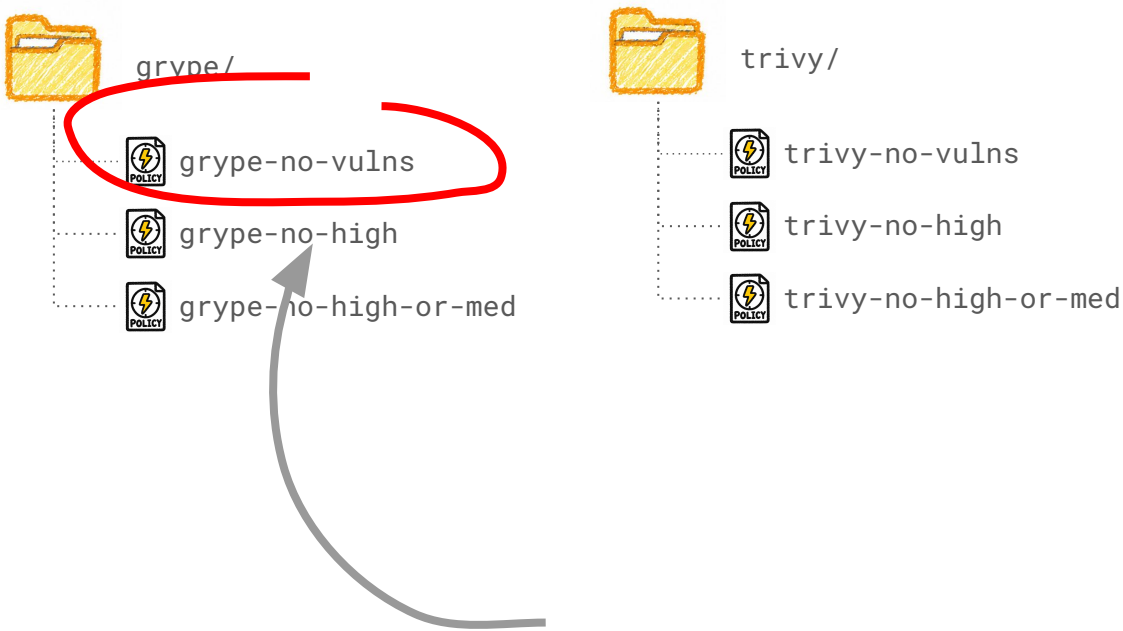

grype/
grype-no-vulns
grype-no-high
grype-no-high-or-med


trivy/
trivy-no-vulns
trivy-no-high
trivy-no-high-or-med

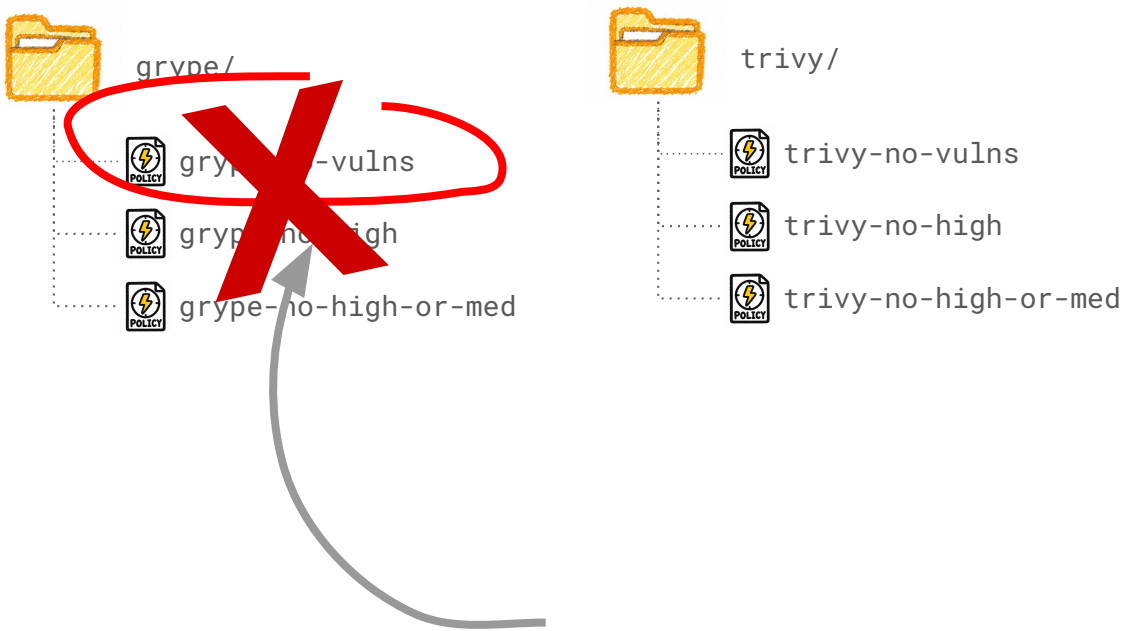

ampel

carabiner



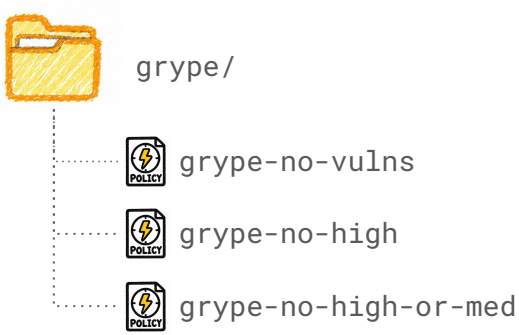
ampel

carabiner



ampel

carabiner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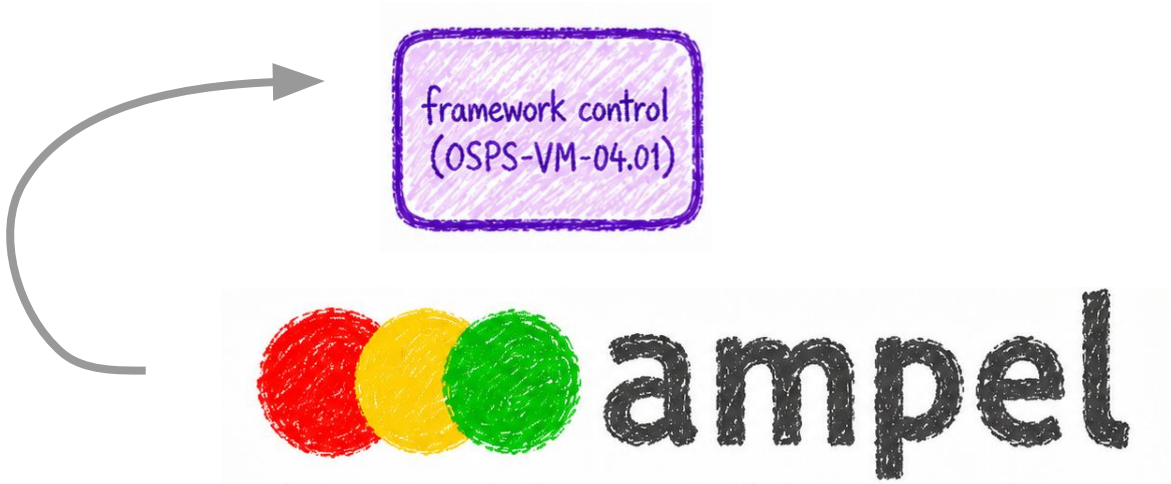
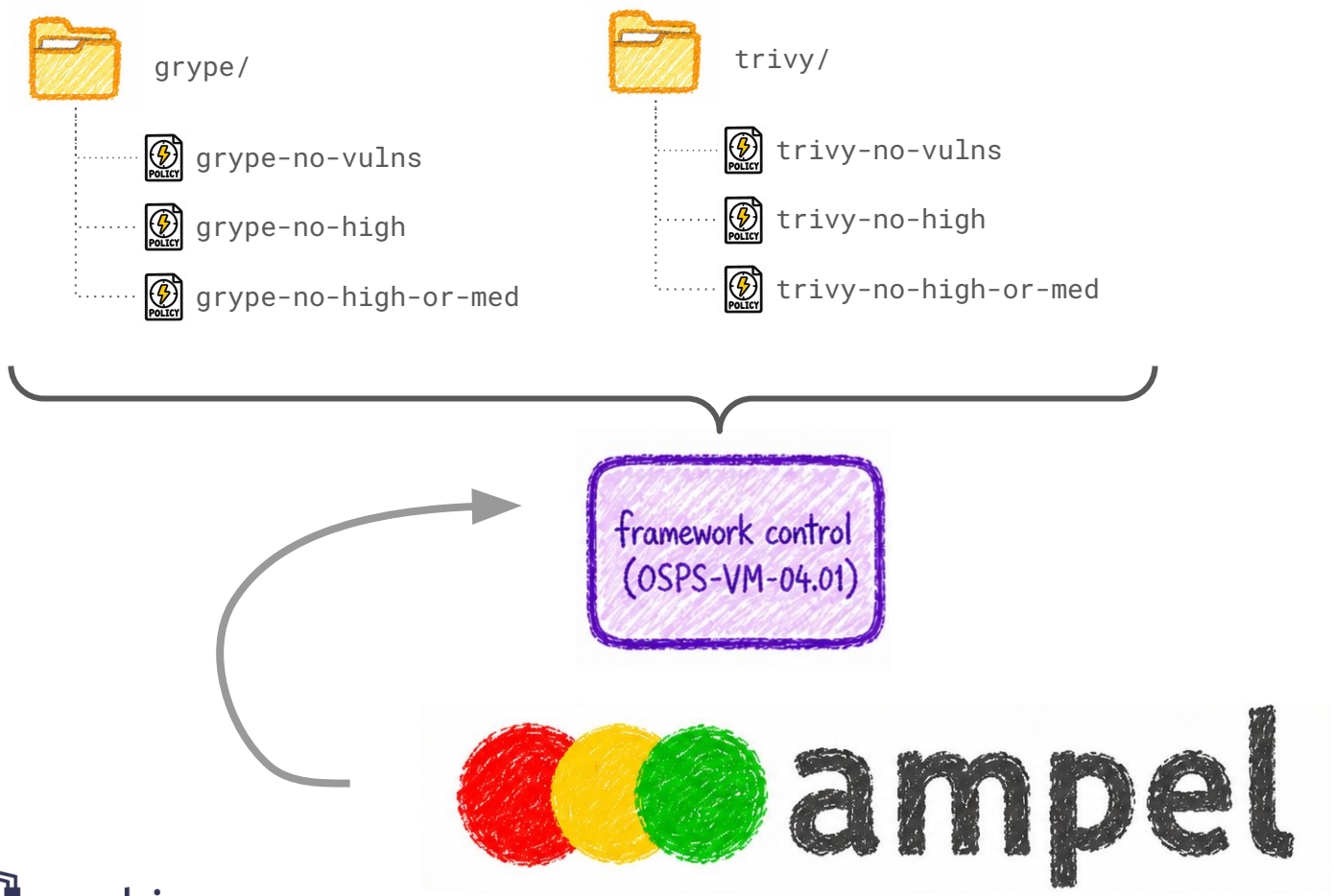
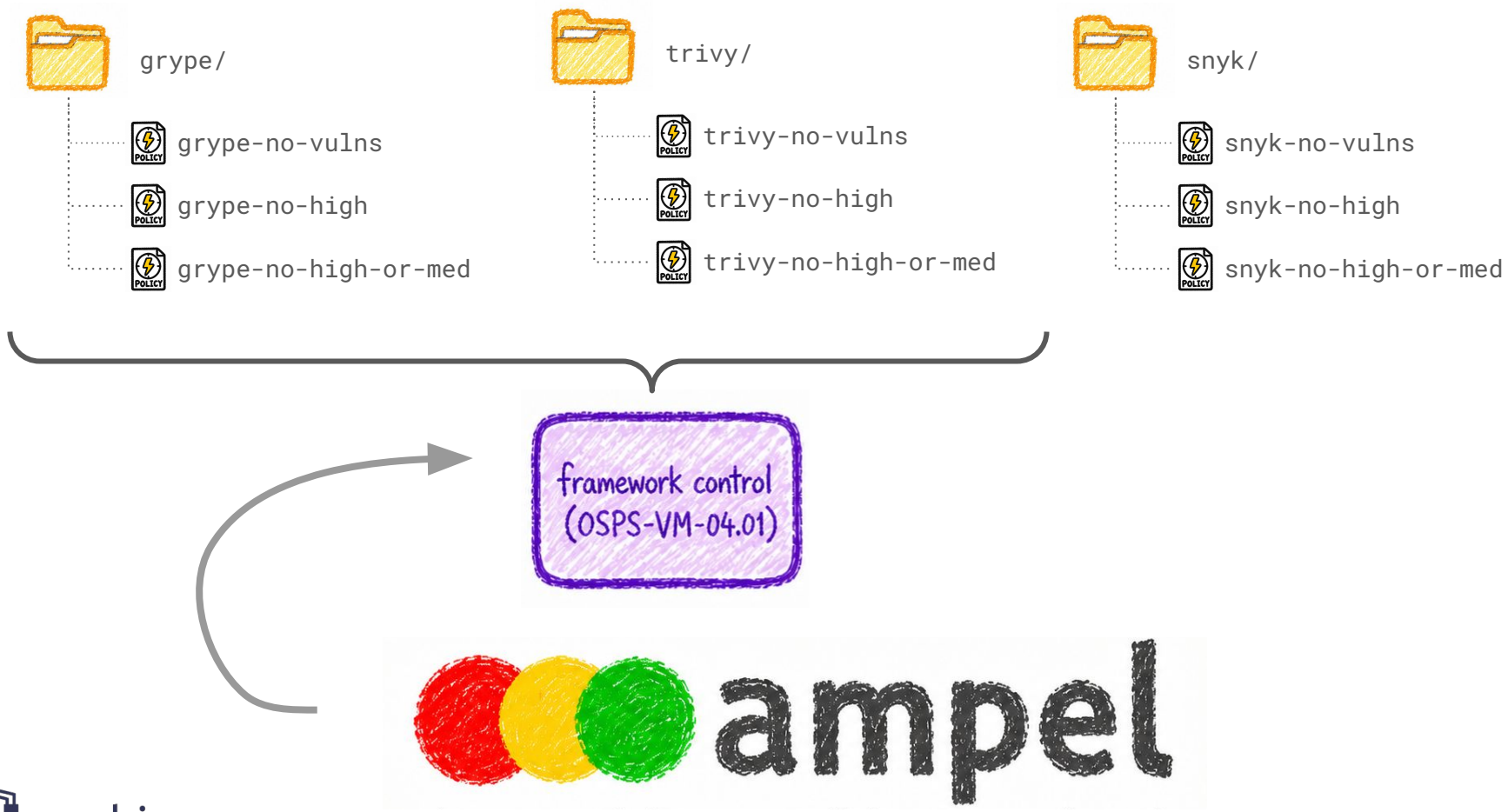
trivy/
trivy-no-vulns
trivy-no-high
trivy-no-high-or-med

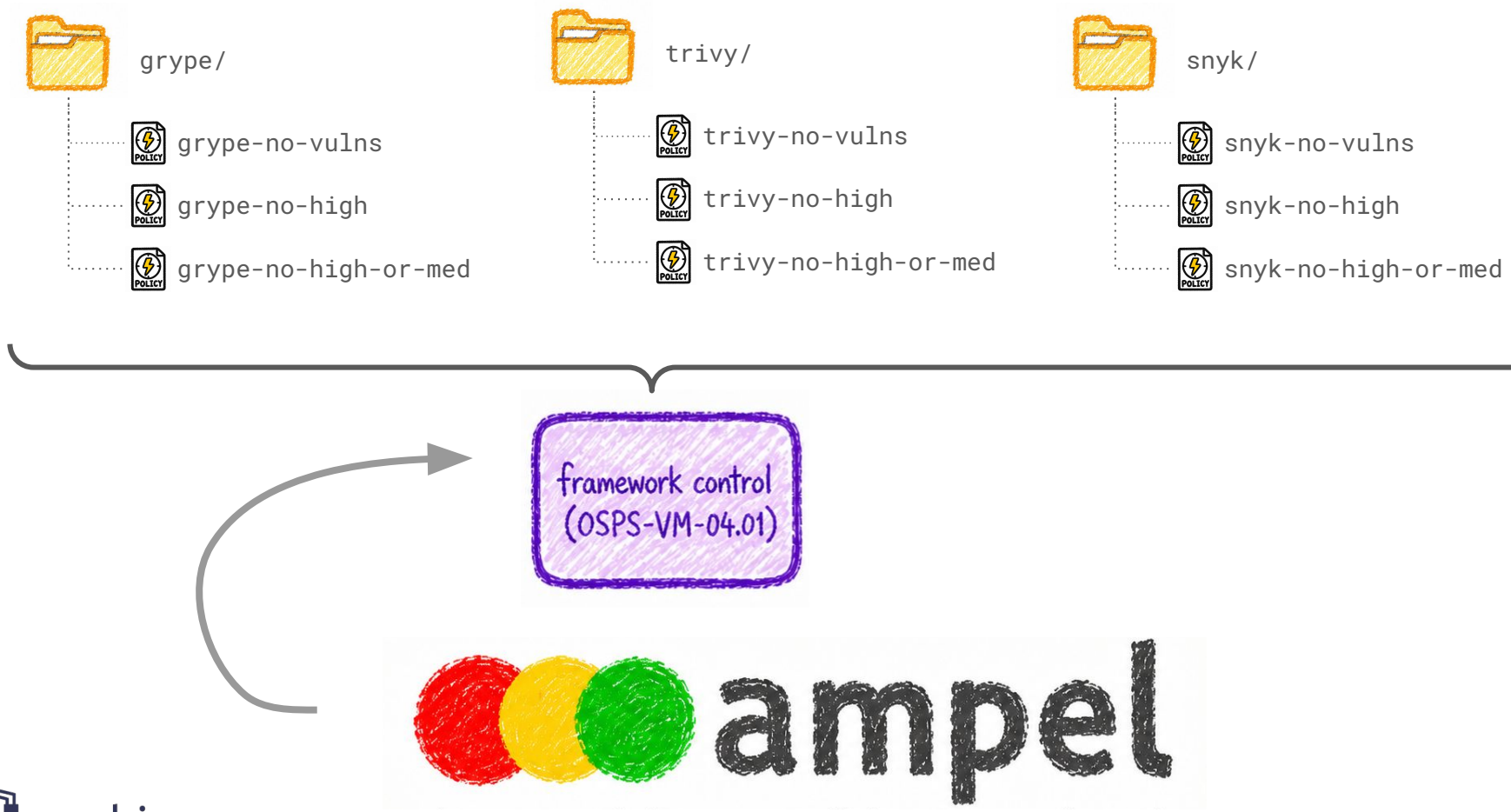

framework control
(OSPS-VM-04.01)
ampel

carabiner


grype/
grype-no-vulns
grype-no-high
grype-no-high-or-med
trivy/
trivy-no-vulns
trivy-no-high
trivy-no-high-or-med
framework control
(OSPS-VM-04.01)
ampel

carabiner


grype/
grype-no-vulns
grype-no-high
grype-no-high-or-med
trivy/
trivy-no-vulns
trivy-no-high
trivy-no-high-or-med
snyk/
snyk-no-vulns
snyk-no-high
snyk-no-high-or-med
framework control
(OSPS-VM-04.01)
ampel
carabiner


grype/
grype-no-vulns
grype-no-high
grype-no-high-or-med
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trivy-no-vulns
trivy-no-high
trivy-no-high-or-med
snyk/
snyk-no-vulns
snyk-no-high
snyk-no-high-or-med
framework control
(OSPS-VM-04.01)
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Let me show you >>>

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OK, but why?

Here's why.

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integration

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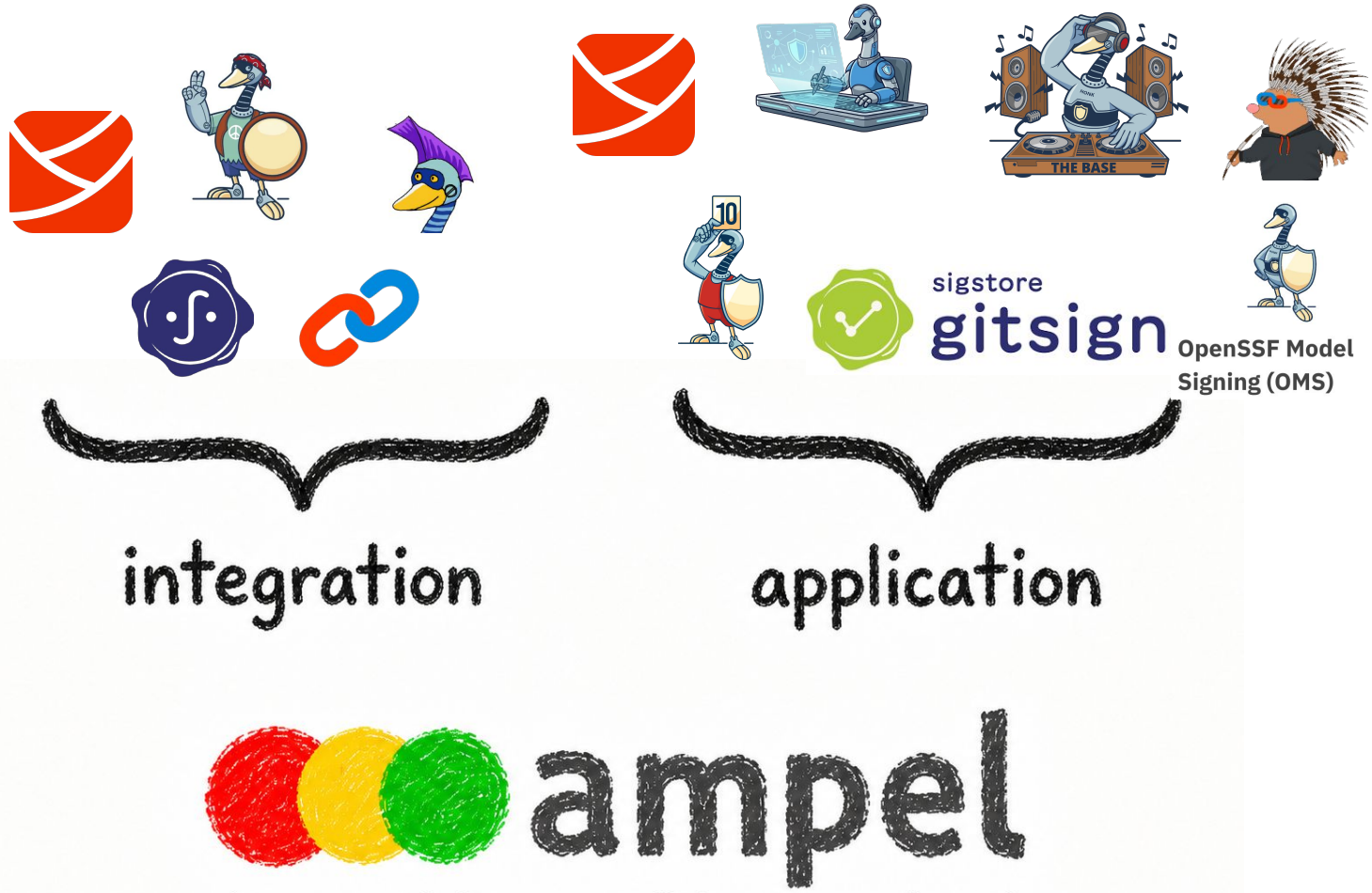
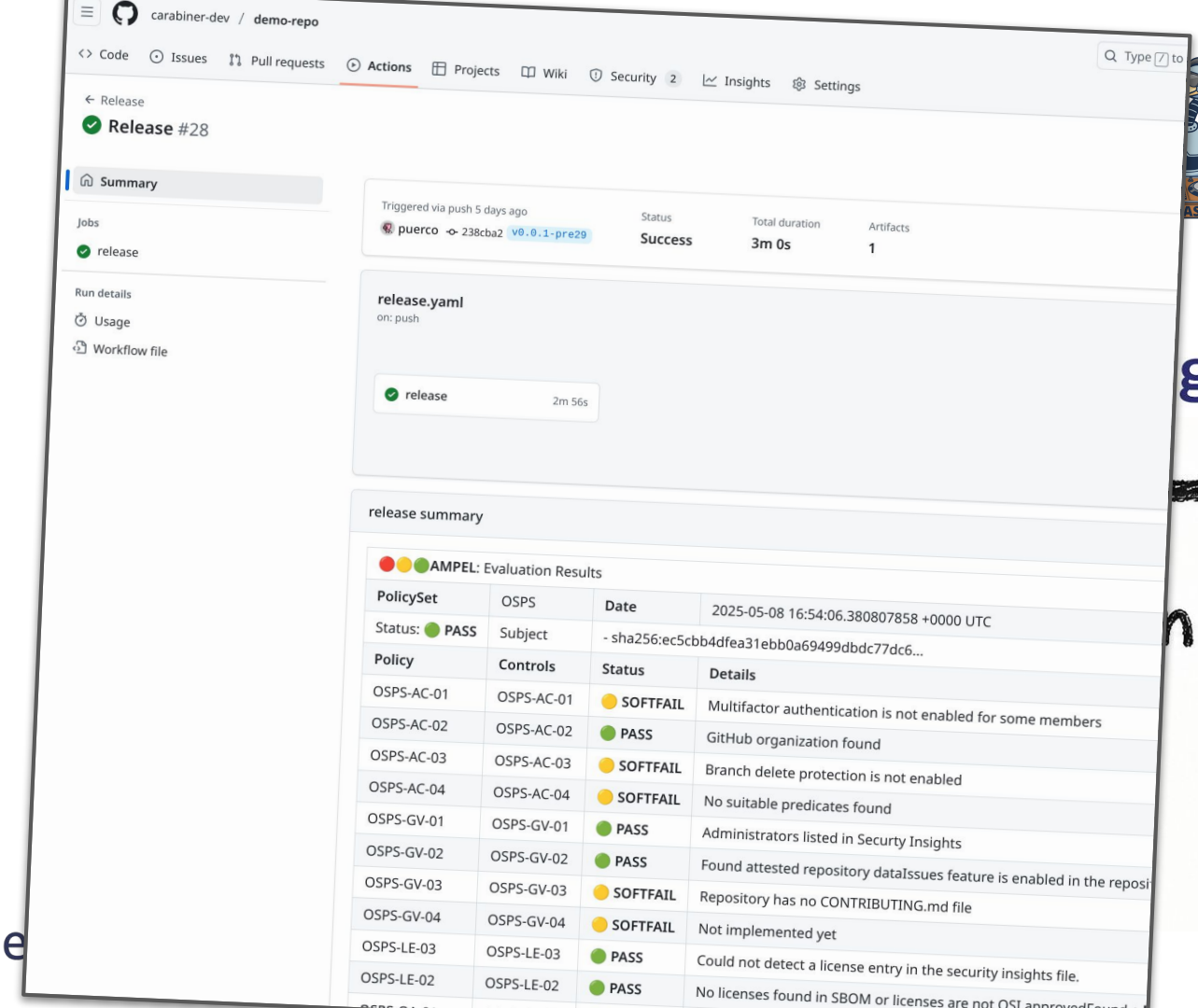

THE BASE
10
sigstore
gitsign
OpenSSF Model Signing (OMS)
integration
application
ampel

carabiner



gn OpenSSF Model Signing (OMS)

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But oh, look 👀

It’s a whole mini-ecosystem!

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Amazing Multipurpose Policy Engine (and L)

libraries utilities

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Thank you!

carabiner

Thank you!

https://github.com/carabiner-dev/ampel

Adolfo García Veytia
@puerco

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