FOSDEM 2024

SBOMs that you can trust

the good, the bad, and the ugly

Miguel Martinez Trivino, Chainloop

Daniel Liszka, Chainloop

Hi, we are happy to be here!

Daniel **Miguel**

Miguel Martinez

co-founder at Chainloop. 10+ years designing, implementing and operating Software Supply Chain automation at Bitnami/VMware. **The IT-crowd fan**

Daniel Liszka

co-founder and Chainloop maintainer, previously Engineering at Bitnami and Product at VMware. Dad, previously traveller, biker, and skier ;)

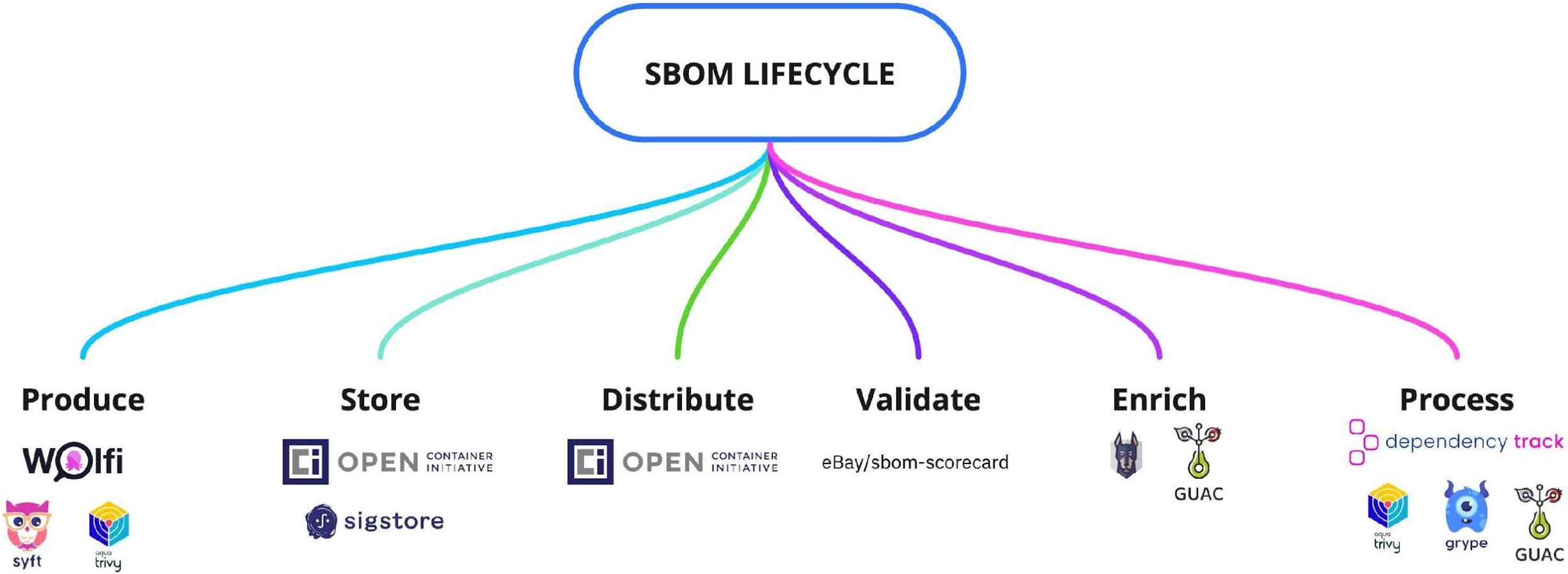
☆ if you like what we do, give our GitHub **chainloop-dev/chainloop** a star :) ☆

[bit.ly/addoc8]

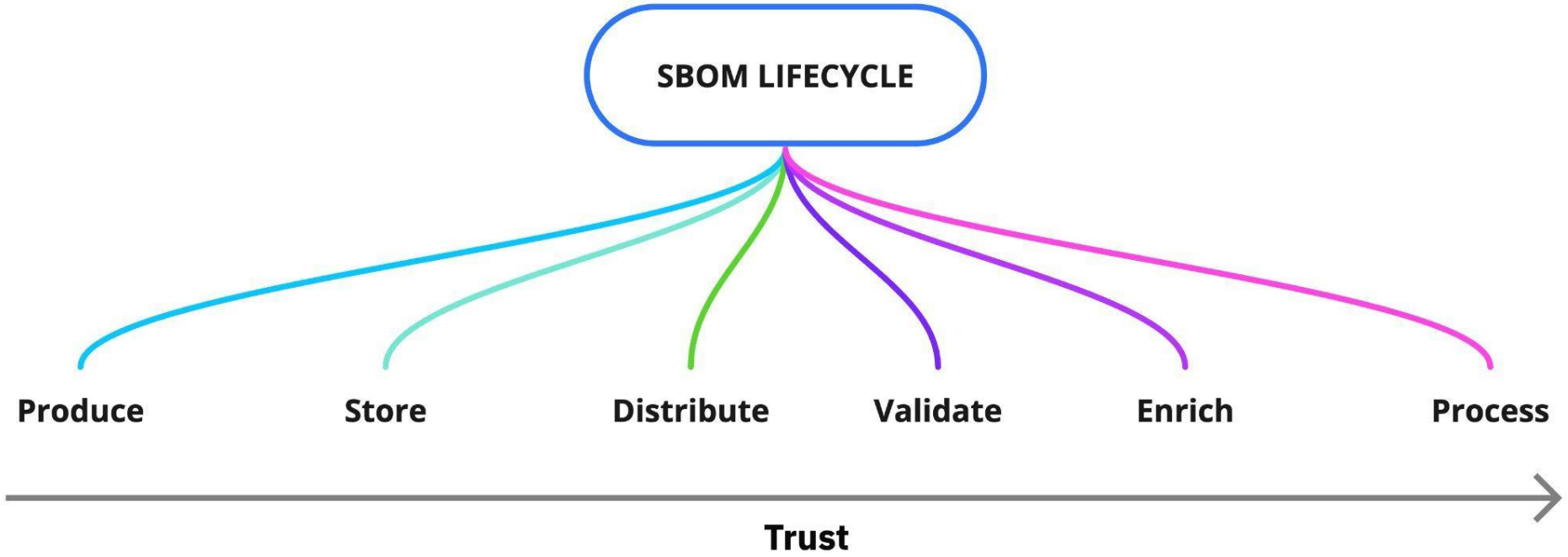
Trustworthy SBOM

- What does it mean?
- Why now?
- How can we achieve it?
- Demo

Yet another SBOM talk

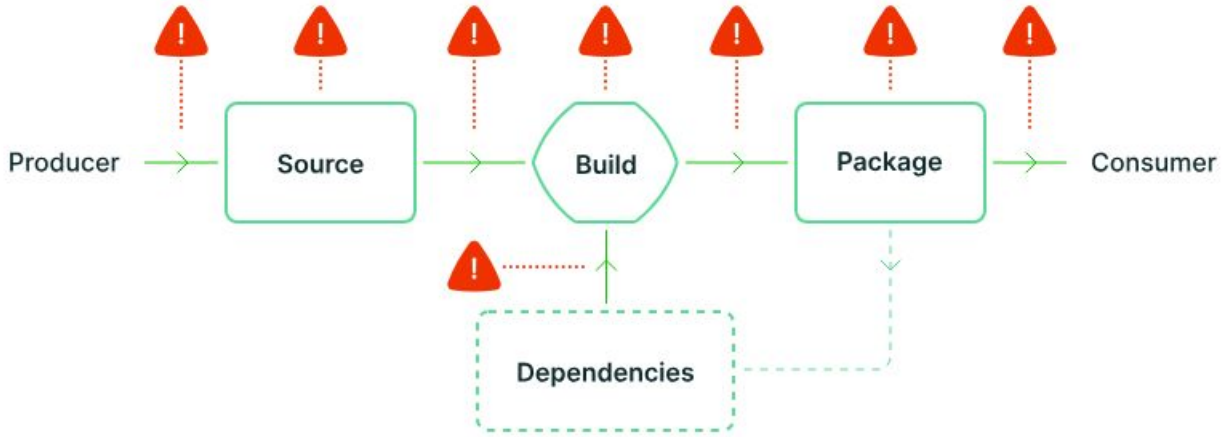


Building the Trust Layer - What's Trust?



- Can I uniquely identify an SBOM?
- Will it be available when I need it?
- Can I trust that the content has not been tampered with?
- How was it built, from whom or where does it come from?
- Is it complete and consistent?
- Does it even exist?

Building the Trust Layer - Why?

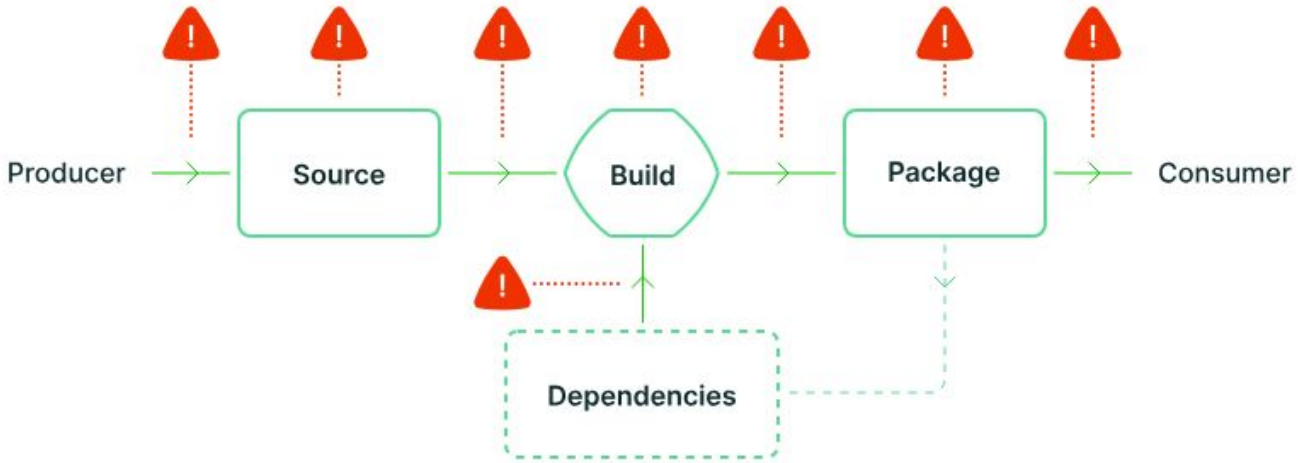


SSC Security bar has been raised and SBOM is just another deliverable

"Any software can introduce vulnerabilities into a supply chain[…] **it's critical to** already **have checks** and best practices in place **to guarantee artifact integrity**, **that the source code you're relying on is the code you're actually using**[…]"

https://slsa.dev

Building the Trust Layer - Why (cont)



An SBOMs is yet another artifact **as important** as the artifact they reference

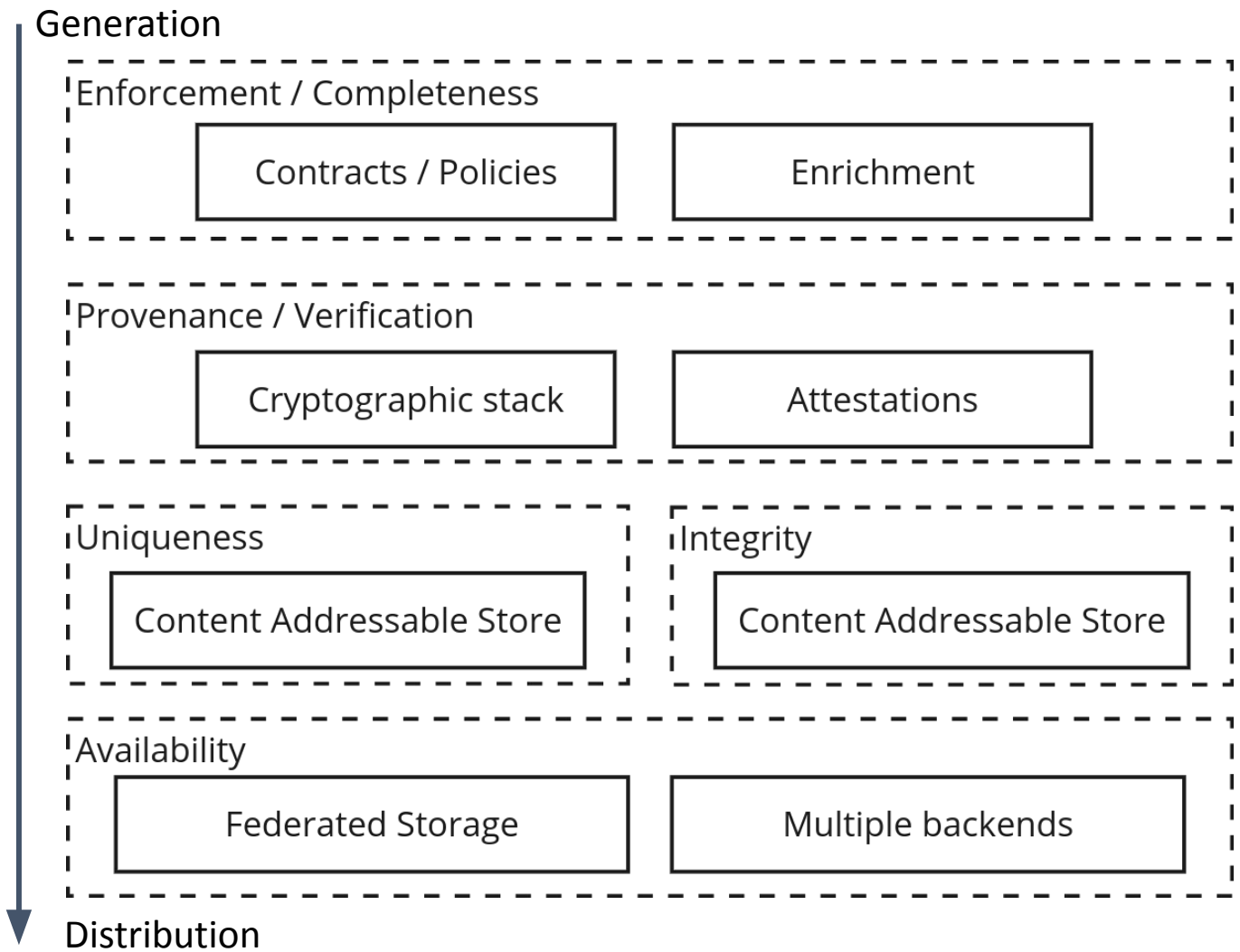
- They **must meet the highest security posture**.
- **They can get compromised too**.

https://slsa.dev

An SBOM that you can’t trust is useless and in fact dangerous…

…we need our SBOMs to be uniquely identifiable, unforgeable, complete and available

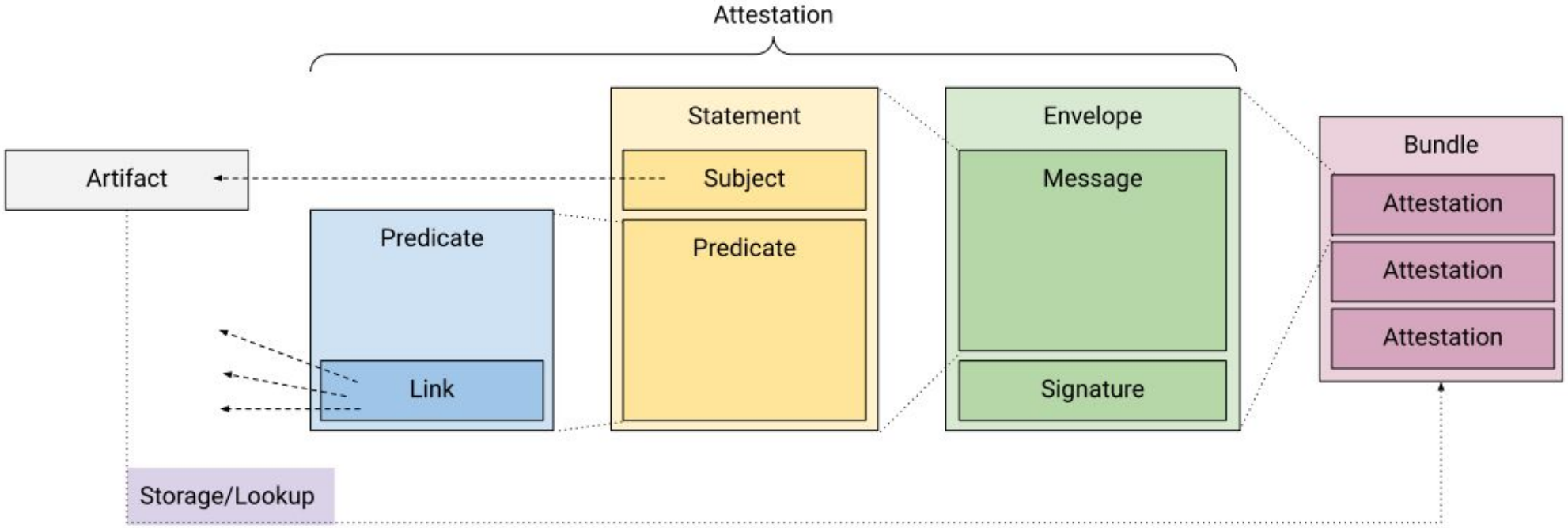
Building the Trust Layer - Pattern



Core components

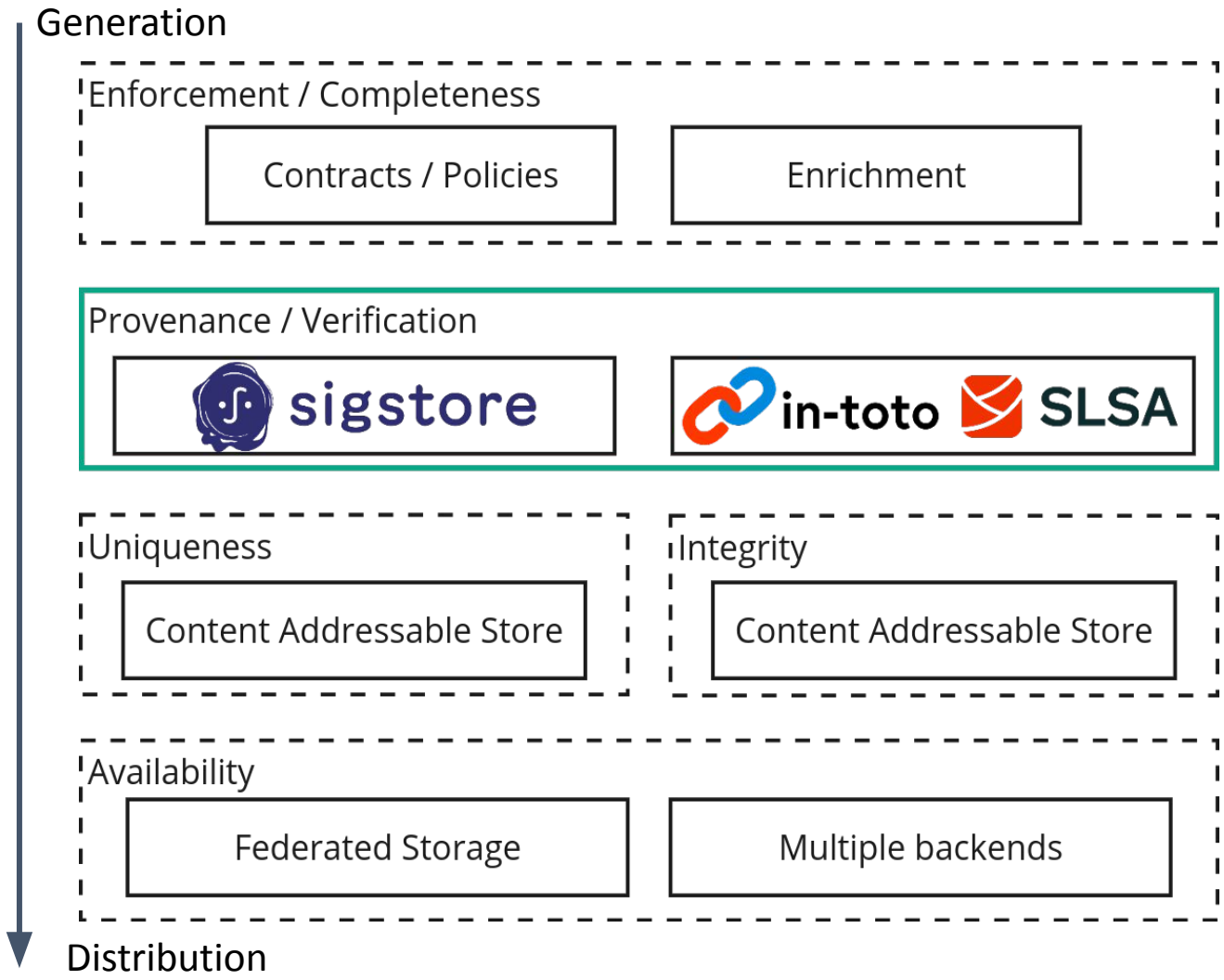
- Decentralized storage
- Content Addressable Storage
- Attestations
- Contracts

Building the Trust Layer - Attestations



"A software attestation is an **authenticated** statement (metadata) about a software artifact or collection of software artifacts ... **a generalization of raw artifact/code signing** - slsa.dev

Building the Trust Layer - Attestations (cont)

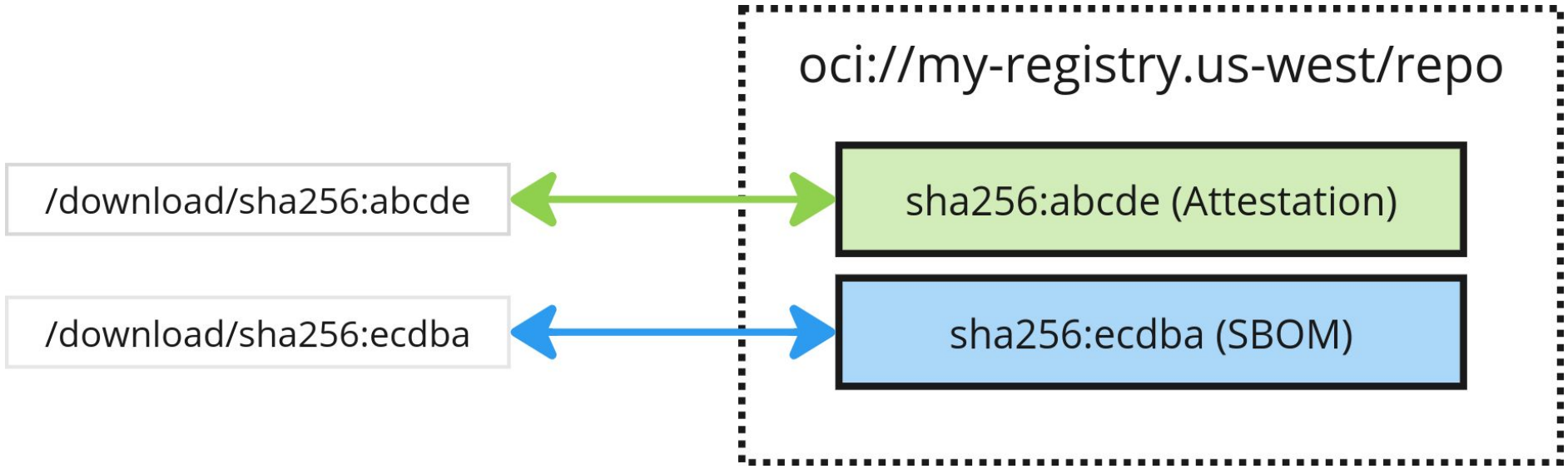


Attestations will wrap SBOMs with additional information and a signature to **enable integrity and provenance verifications**.

sigstore in-toto

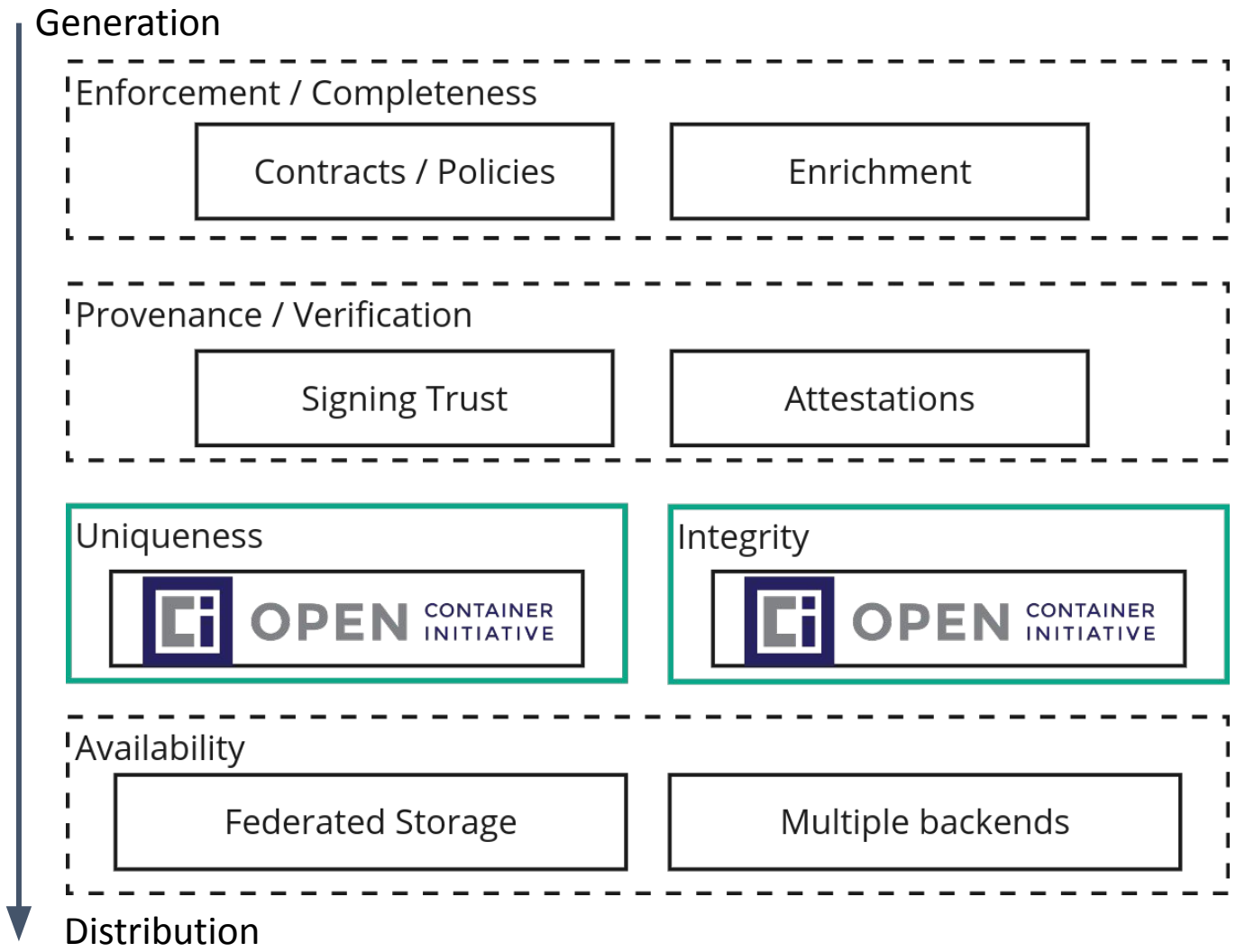
SBOMit

Building the Trust Layer - CAS



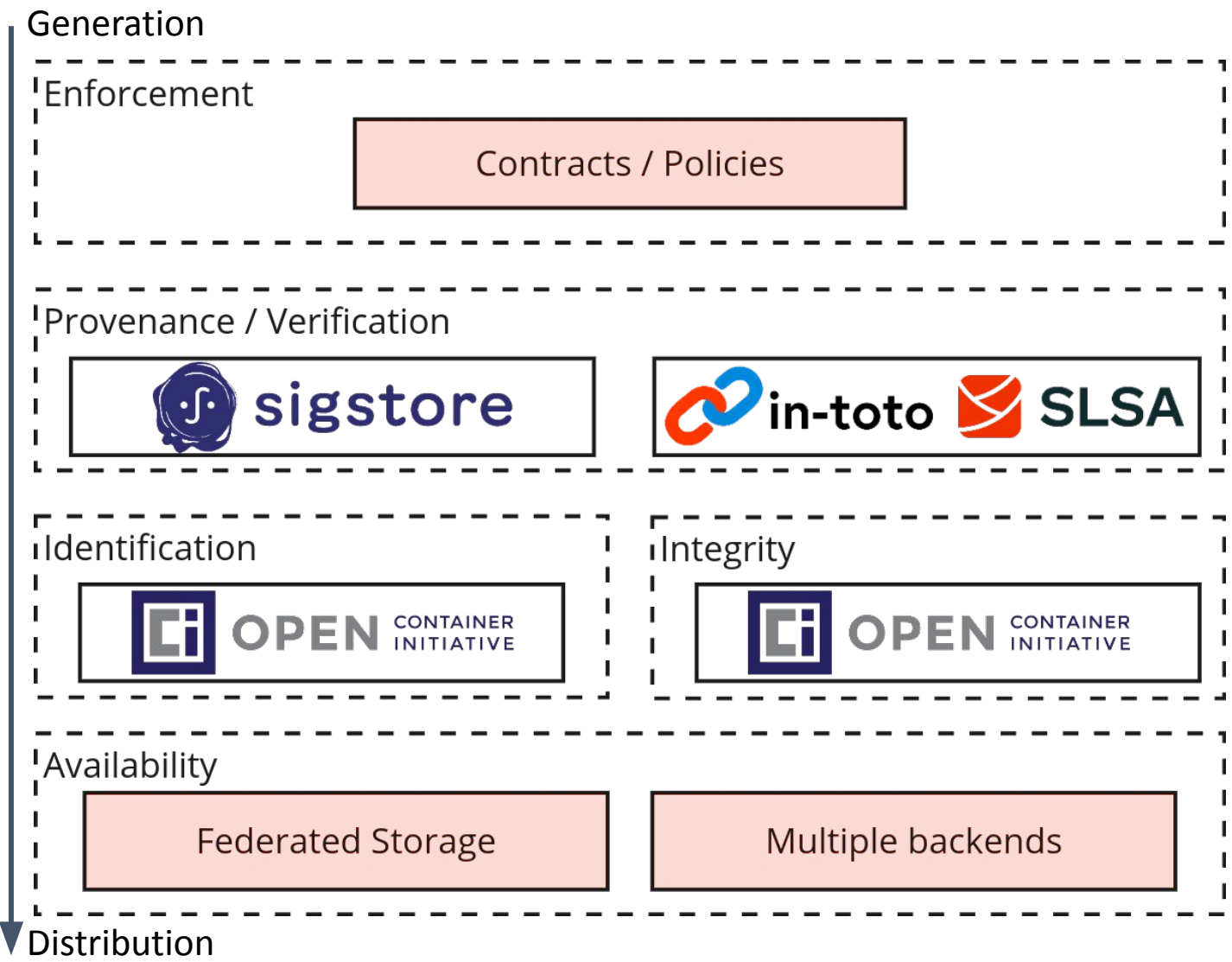
Content-Addressable Storage (CAS) is a system that organizes and **retrieves** data **based on the data's content**, **rather than** its location or **name**, ensuring data integrity and immutability

Building the Trust Layer - CAS (cont)



Stored SBOMs will be unique, identifiable and integrity verifiable

Building the Trust Layer - Implementation



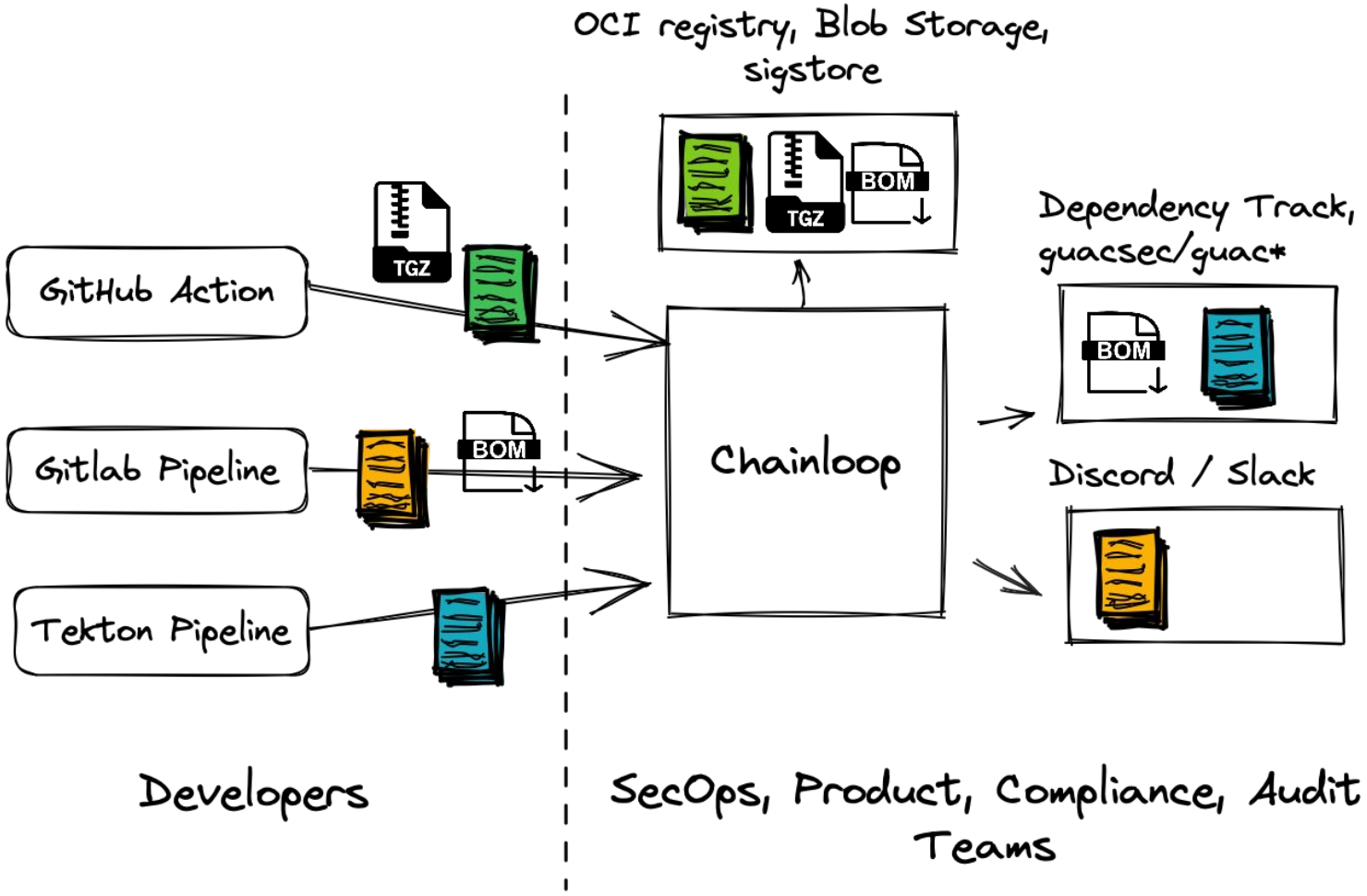
SBOMs that you can trust its identity, integrity and origin

in-toto + sigstore cosign + OPEN CONTAINER INITIATIVE

Trusted Supply Chain Metadata

Chainloop

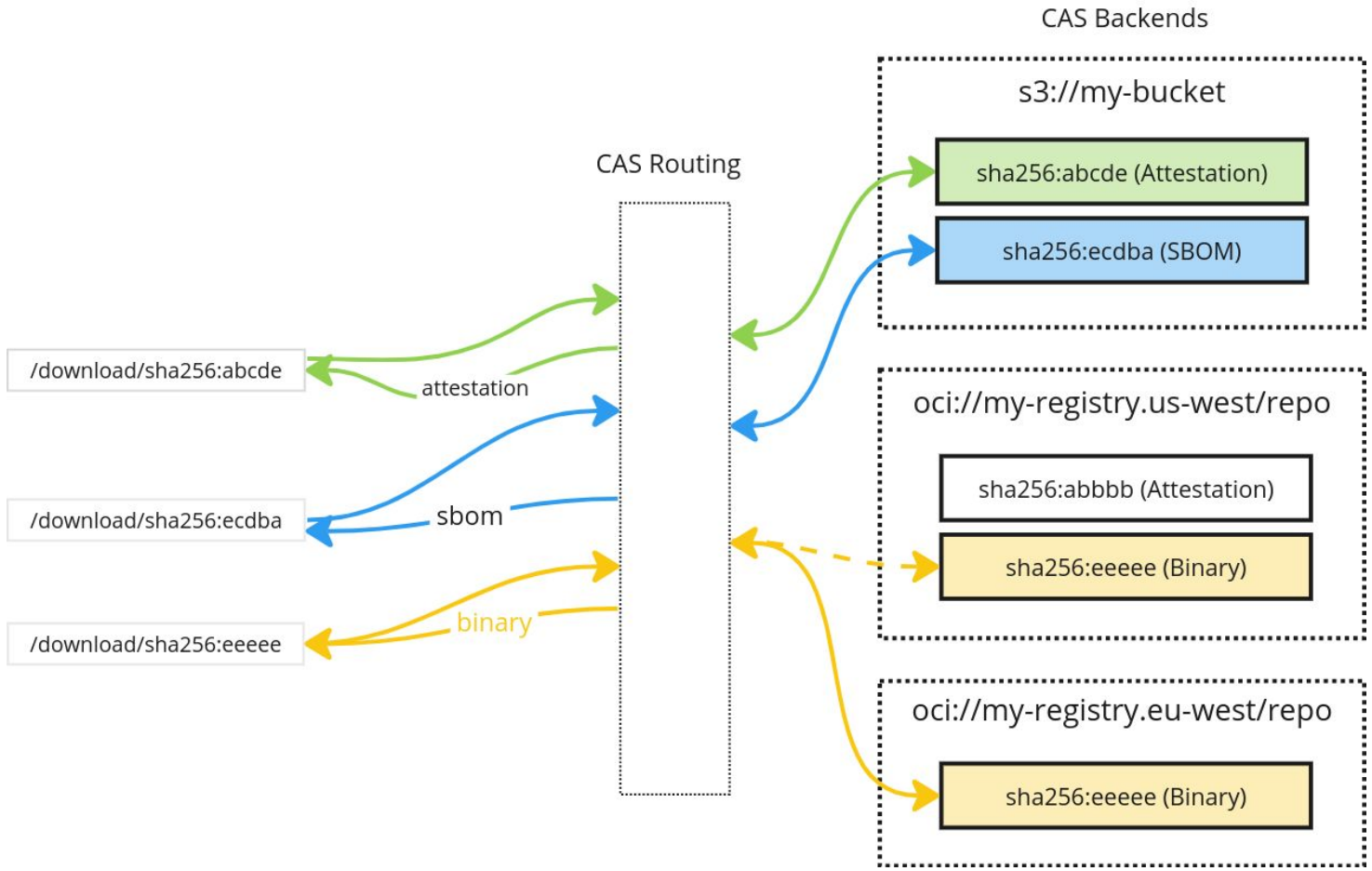
Chainloop is an Open Source Metadata Vault for your Software Supply Chain metadata, SBOMs, VEX, SARIF files and more



github.com/chainloop-dev/chainloop

Trusted Supply Chain Metadata

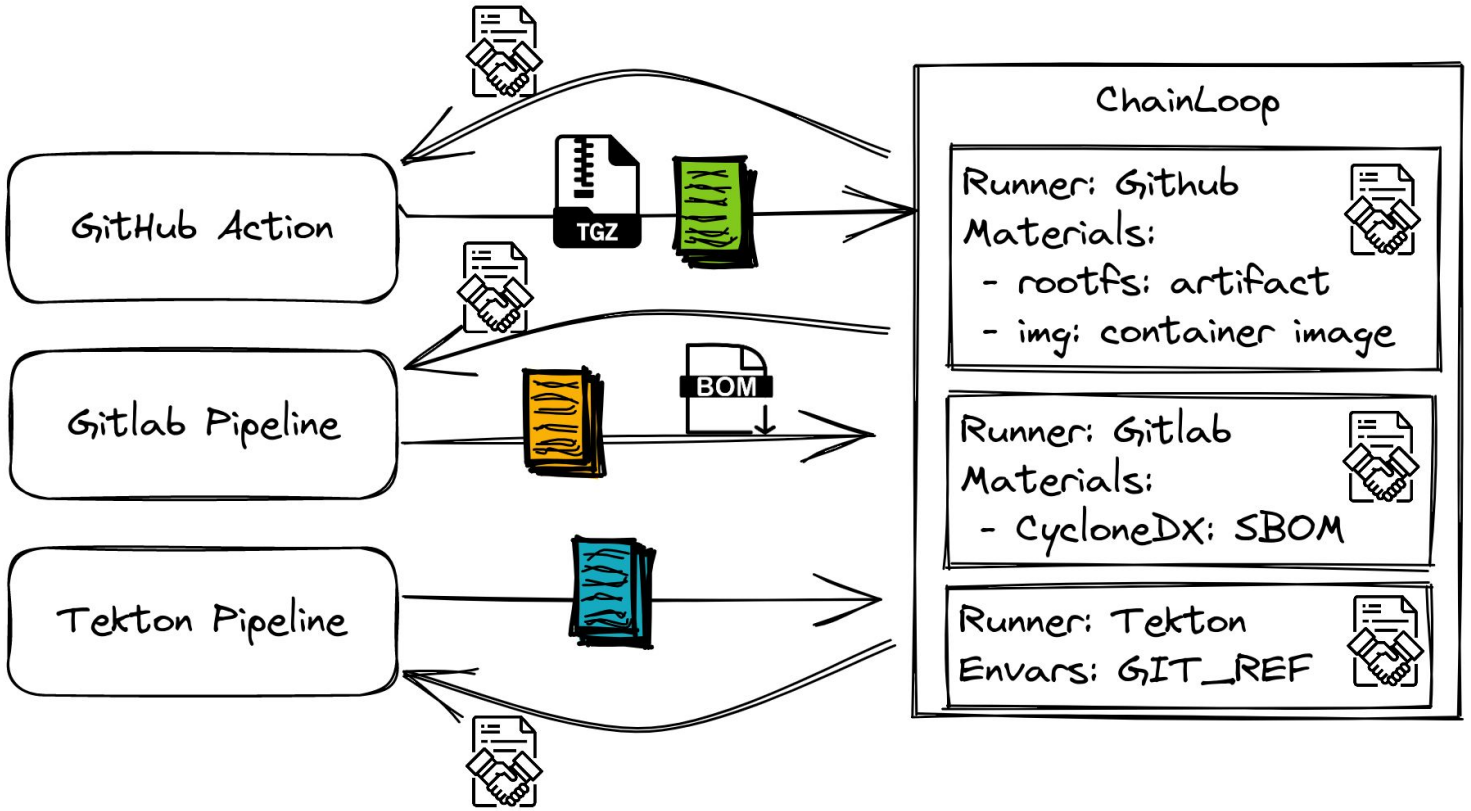
Federated storage



Federated Content-Addressable Storage (CAS) works across backends enabling advanced routing for replication, geolocation, retention rules, ...

Trusted Supply Chain Metadata

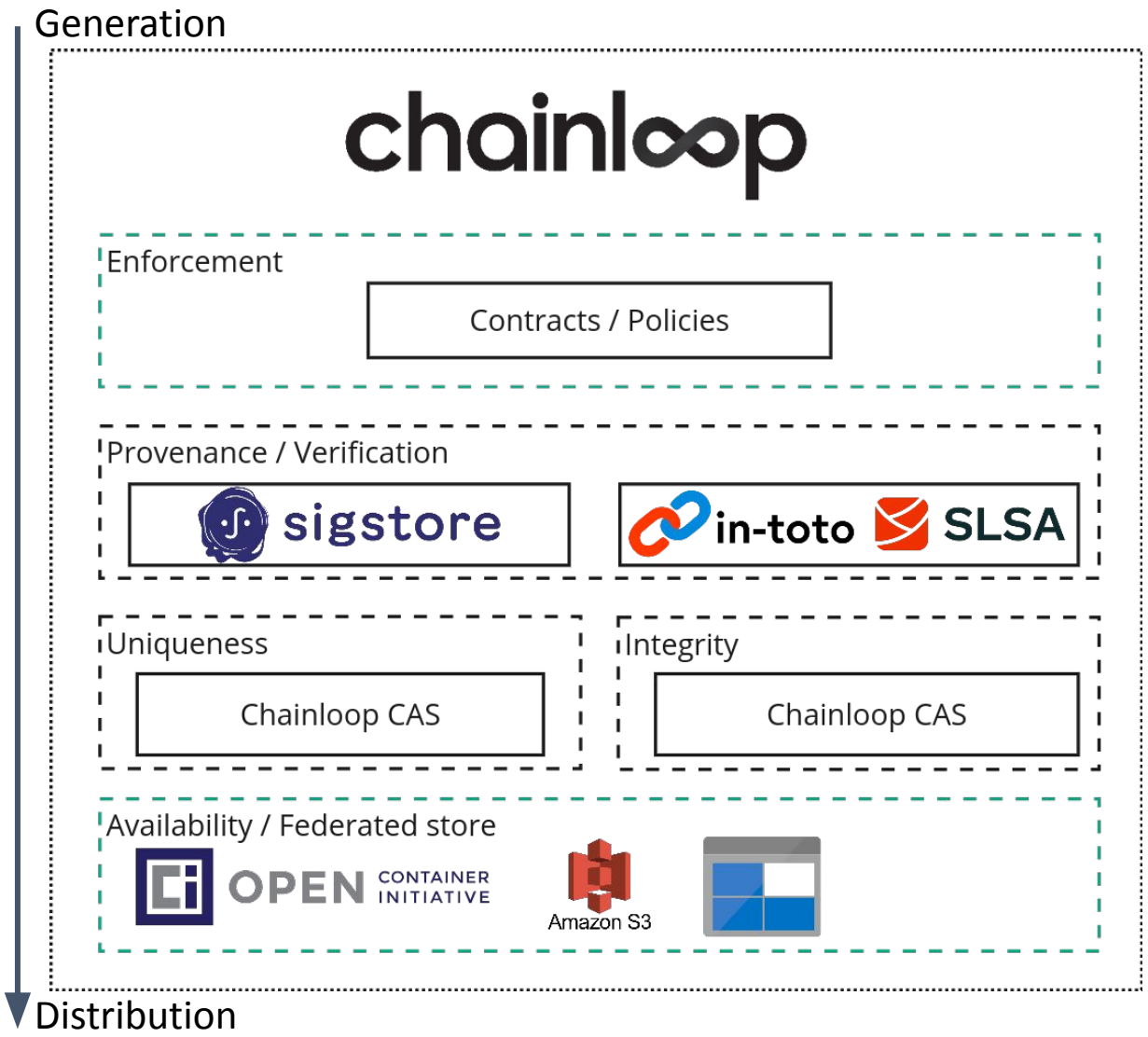
Enforcement




```
schemaVersion: v1

materials:

  - type: ARTIFACT

    name: binary

    output: true

  - type: SBOM_CYCLONEDX_JSON

    name: sbom

runner:

  type: "GITHUB_ACTION"
```

Contracts are declarative requirements of the pieces of evidence a development team needs to provide

Trusted Supply Chain Metadata - Chainloop

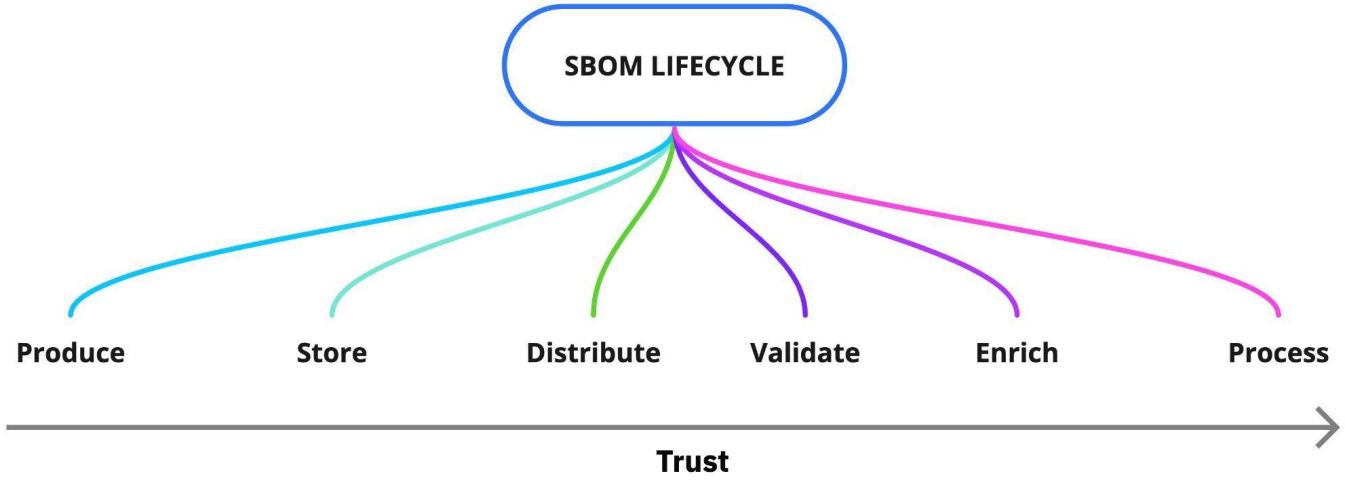


SBOMs that you can trust, on identity, integrity and origin. Also **storage compliant and enforced**

github.com/chainloop-dev/chainloop

Demo

Demo



CycloneDX

in-toto

OPEN CONTAINER INITIATIVE

GUAC

1 - Setup, collection and storage

- Collect CycloneDX SBOM from GitHub Action
- Wrap it in in-toto attestation
- Store it in Azure Blob Storage and OCI registry on GCP
- Send it to
  a. Dependency-Track
  b. guacsec/guac

2 - SBOM + VEX use-case

3 - SBOM sharing

The bar has been raised

Metadata compliance and security bar is being raised and **SBOM trust is the next challenge**...

... but you can get a head start with open source security tools today :)

Thank you

Find us in Discord

- **https://twitter.com/migmartri**
- **https://twitter.com/danlishka**
- **chainloop-dev/chainloop**

☆ if you like what we do, give our GitHub **chainloop-dev/chainloop** a star :) ☆