# Creator Assertions Working Group

Update for IIW 40

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9 April 2025

# Topics for today

Who's who

C2PA data model overview

CAWG and the identity assertion

# Who's who?

Content Authenticity Initiative

C2 PA — Coalition for Content Provenance and Authenticity

Creator Assertions Working Group

# Who's who?

**Content Authenticity Initiative**

Outreach · Advocacy · Open Source
*\* also name of Adobe's team*

**C2 PA** Coalition for Content Provenance and Authenticity

Technical Standards: **What / How**

Creator Assertions Working Group

Technical Standards: **Who**

# Who's who?

| | |
|---|---|
| **Content Authenticity Initiative** | contentauthenticity.org |
| **C2 PA** Coalition for Content Provenance and Authenticity | c2pa.org |
| Creator Assertions Working Group | cawg.io |

# Who's who?
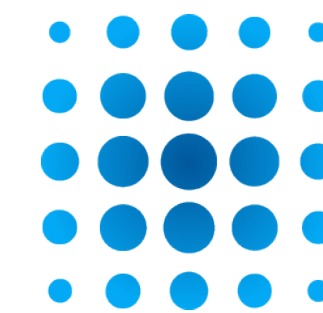
**Content Authenticity Initiative**

**C2PA** — Coalition for Content Provenance and Authenticity

Creator Assertions Working Group

**New:** As of **March 2025**, part of

Decentralized Identity Foundation

# C2PA data model

# C2PA data model
## Overview

An **asset** is any piece of digital media that we wish to describe.

**asset**

Currently supported asset types include:
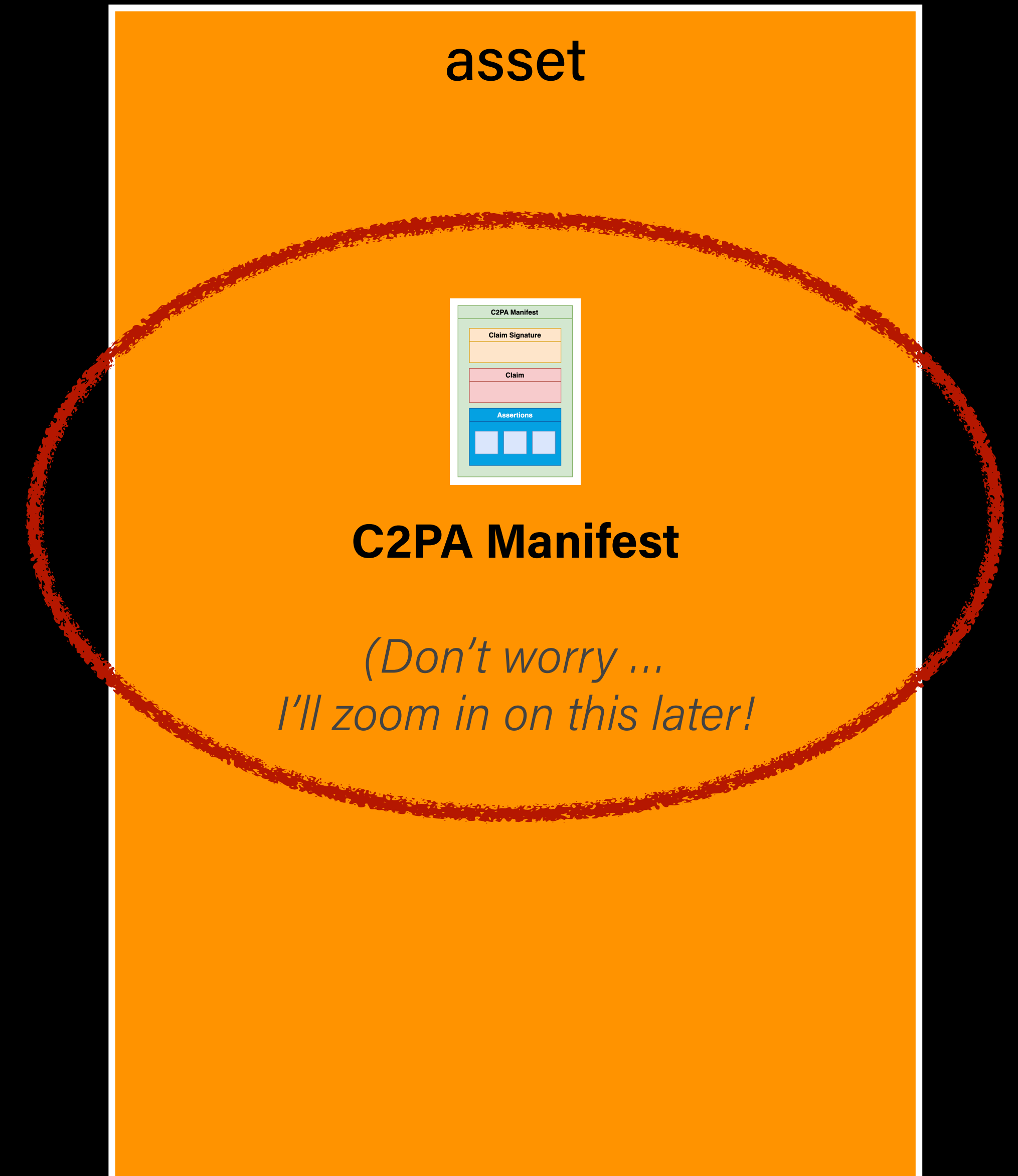
photo

video

audio

documents

fonts

# C2PA data model
## Overview

An **asset** is any piece of digital media that we wish to describe.

It is described by a **C2PA Manifest**.

asset



**C2PA Manifest**

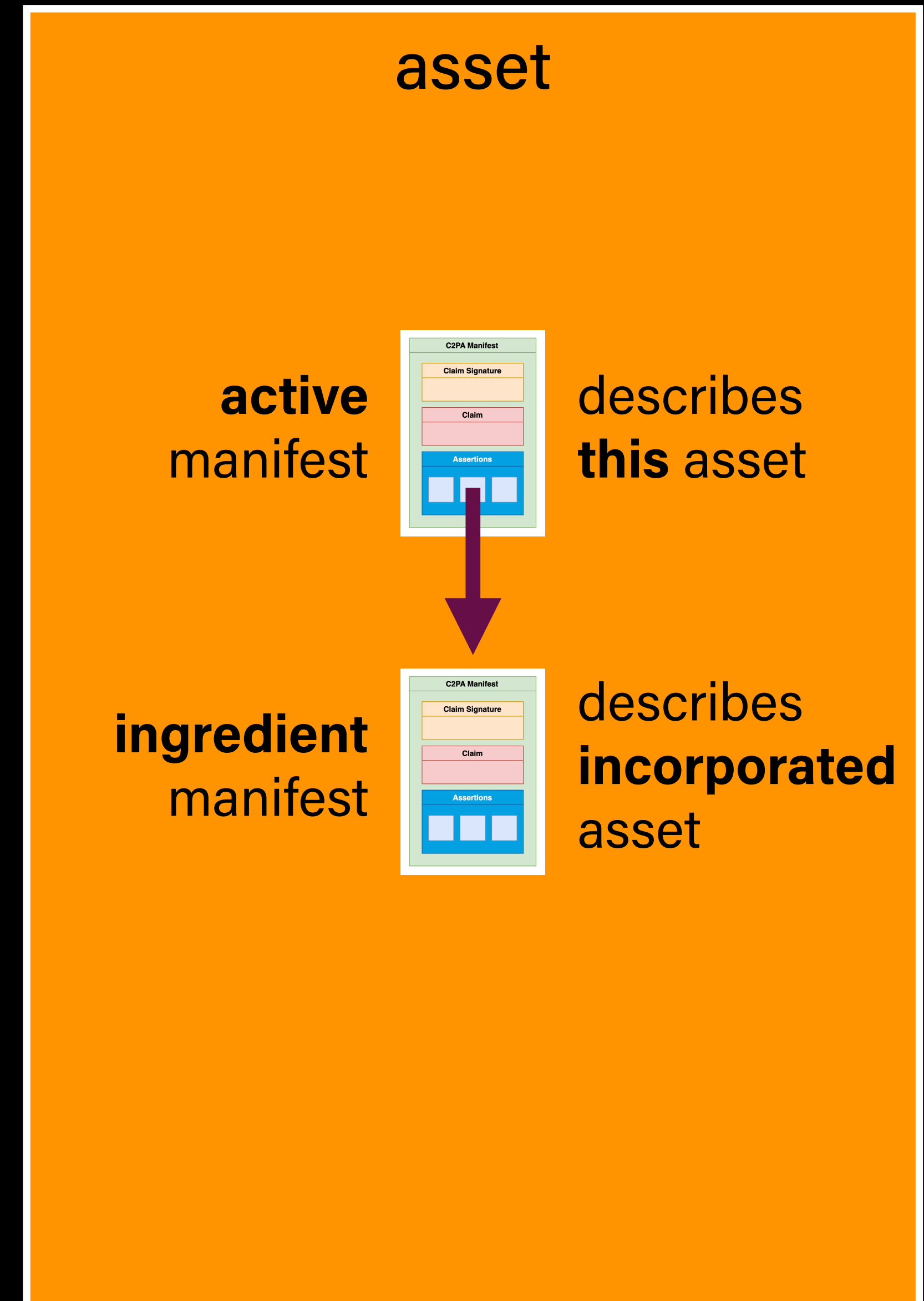*(Don't worry ...
I'll zoom in on this later!*

# C2PA data model
## Overview

An **asset** is any piece of digital media that we wish to describe.

It is described by a **C2PA Manifest**. Each asset in C2PA has an *active manifest* which describes the current asset.

That C2PA Manifest may refer to *ingredient manifests* when earlier content is incorporated.

# C2PA data model
## Overview

An **asset** is any piece of digital media that we wish to describe.

It is described by a **C2PA Manifest**. Each asset in C2PA has an *active manifest* which describes the current asset.

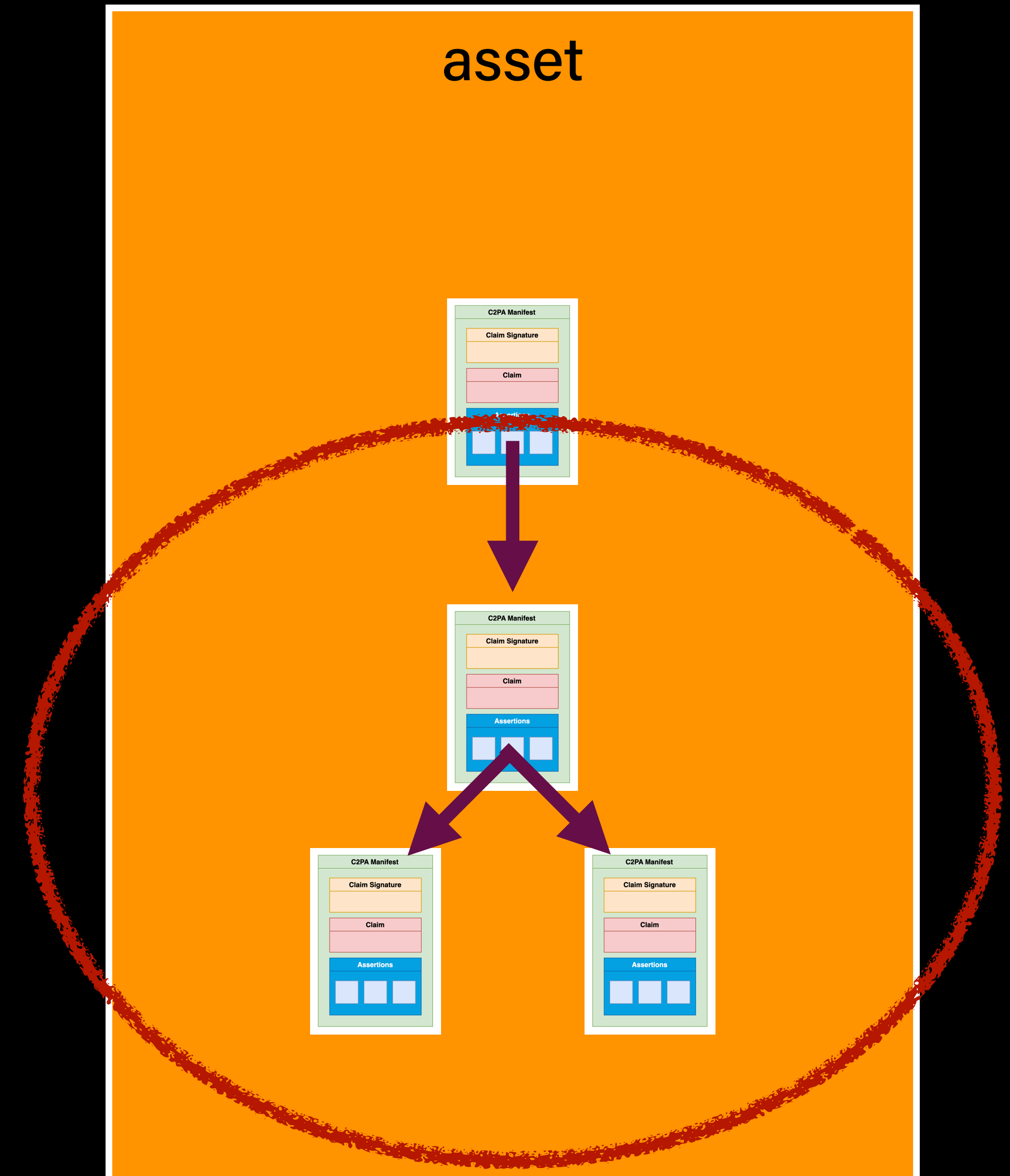That C2PA Manifest may refer to *ingredient manifests* when earlier content is incorporated.

# C2PA data model
## Overview

An **asset** is any piece of digital media that we wish to describe.

It is described by a **C2PA Manifest**. Each asset in C2PA has an *active manifest* which describes the current asset.

That C2PA Manifest may refer to *ingredient manifests* when earlier content is incorporated.

The collection of C2PA Manifests is referred to as a **C2PA Manifest Store.**
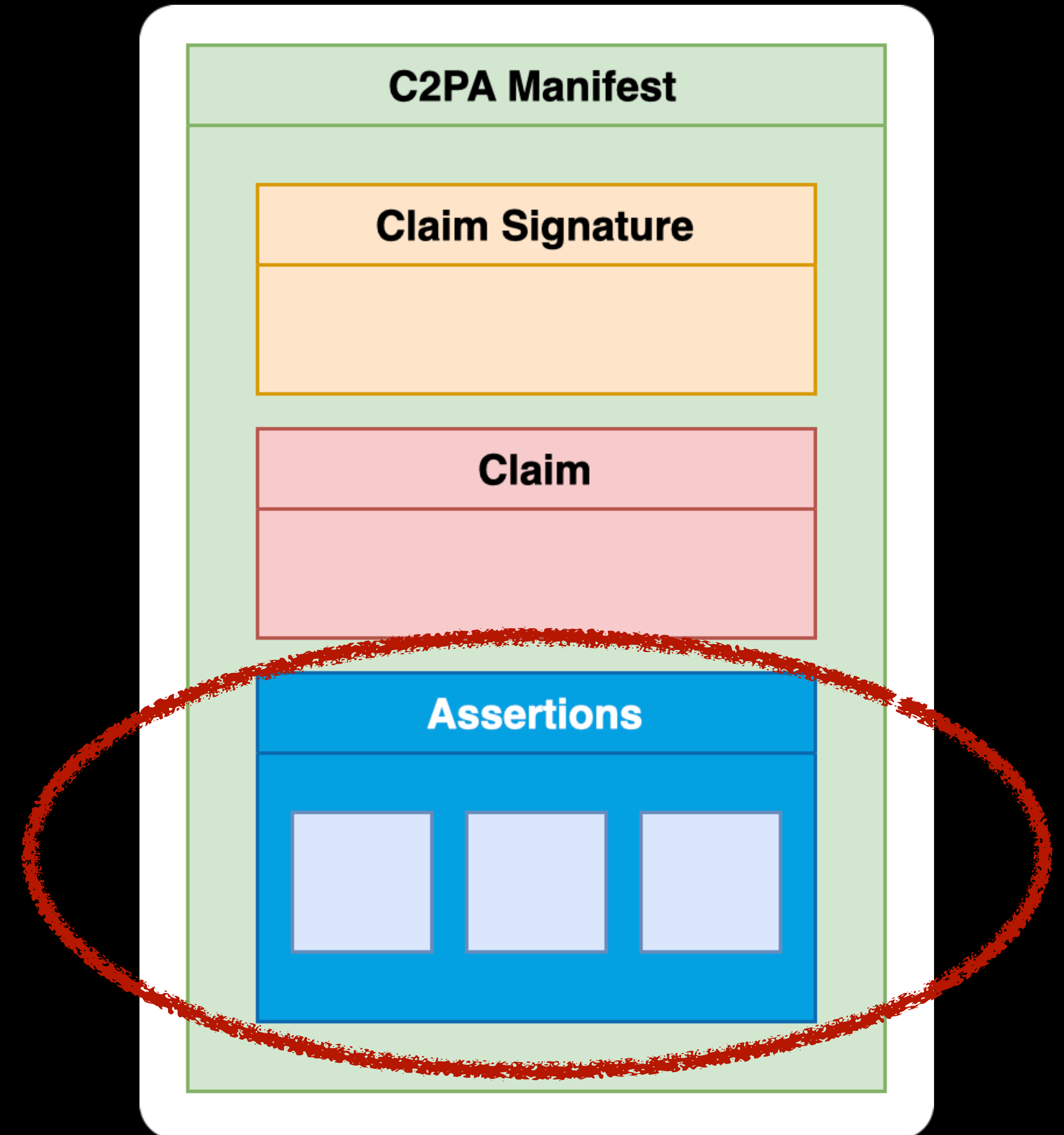
# C2PA data model
Assertions

**Assertions** are opt-in statements that cover areas such as:

- hard binding to asset's binary content *(required – provides tamper evidence)*

- capture device details

- edit actions

- thumbnail of the content

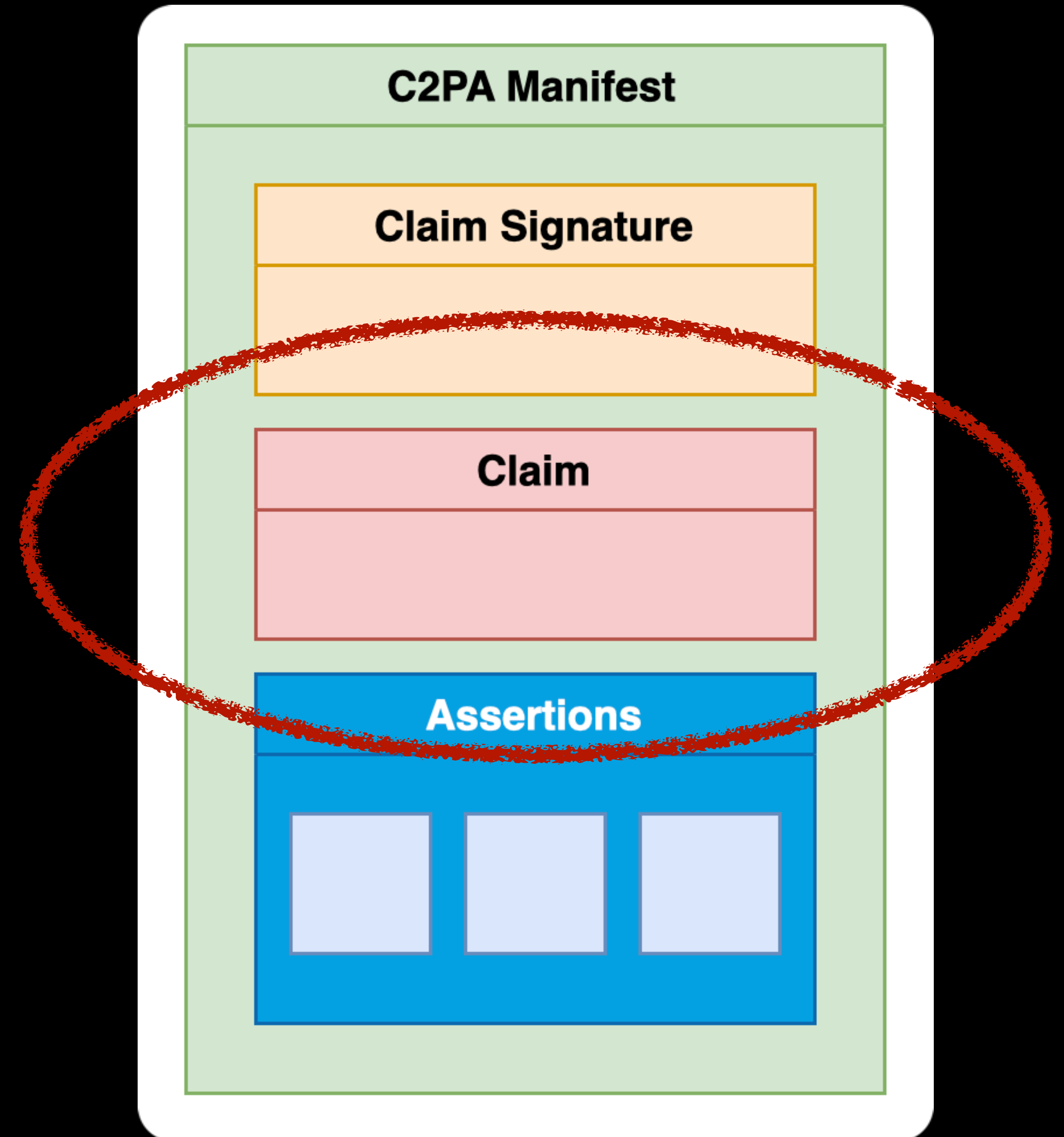- other content (ingredients) that were incorporated into this content

# C2PA data model
Claim

Every C2PA Manifest has exactly one **claim,** which contains:

- a list of its assertions
  (via hashed JUMBF URI)

- information about who created the
  claim (typically tool vendor)

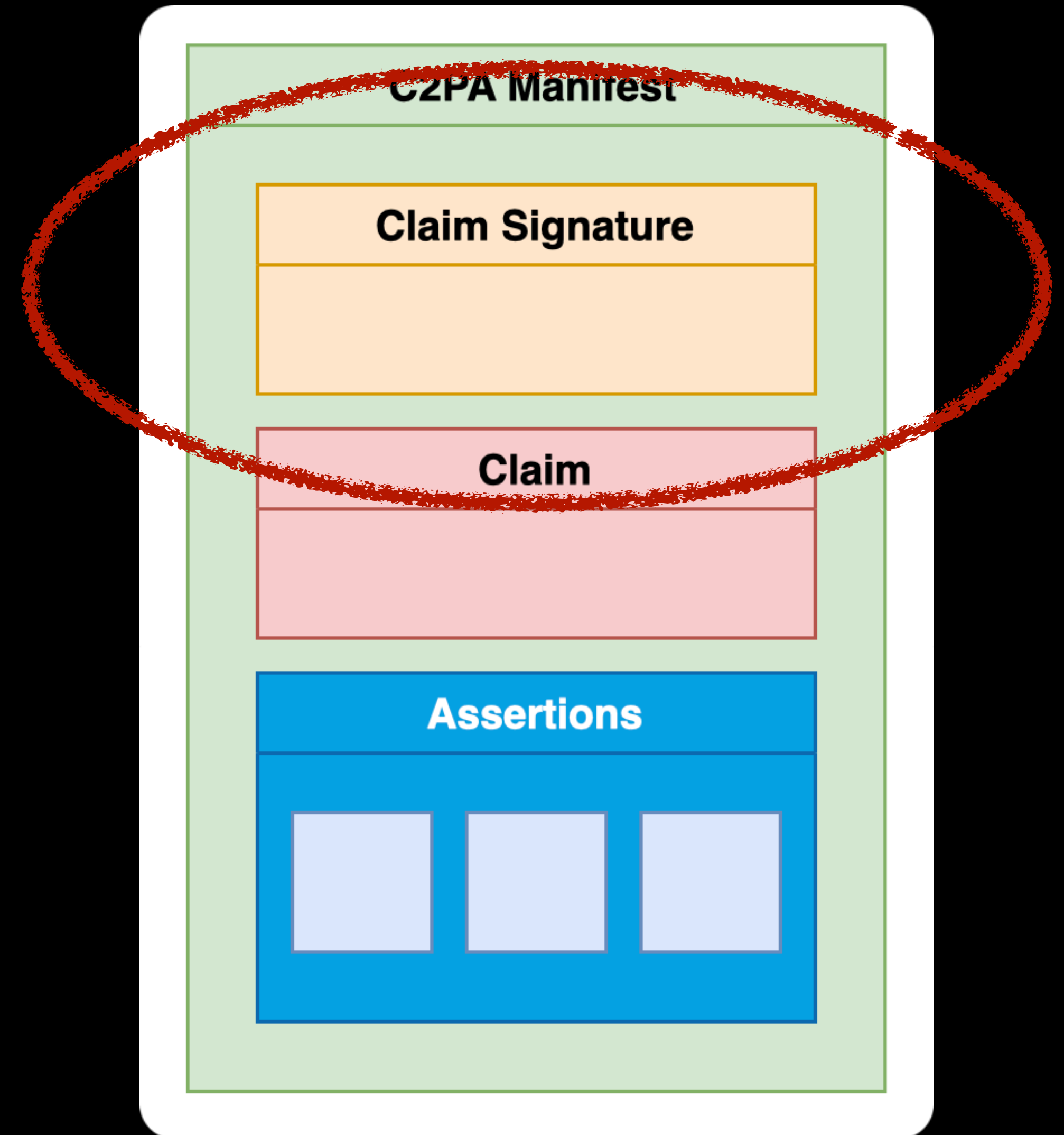- assertions from ingredients that were
  redacted

# C2PA data model
## Claim signature

A **claim signature** is a COSE signature that binds the claim data structure to an X.509 certificate holder.

The X.509 certificate typically identifies the *implementation* of C2PA (hardware or software), **not** the content author.
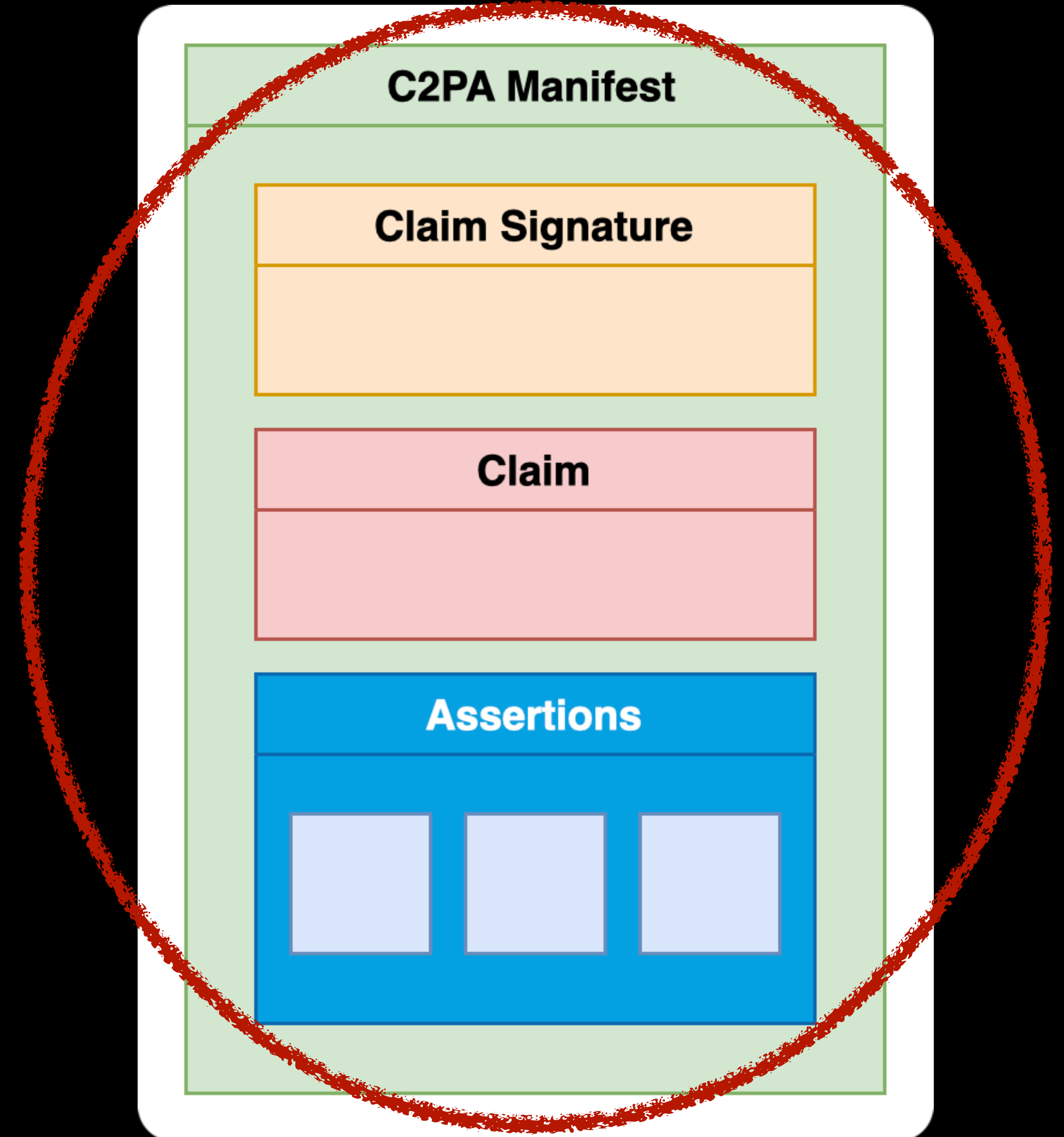
# C2PA data model
## C2PA Manifest

A **C2PA Manifest** is a JUMBF data structure which contains the claim signature, claim, and assertions.

# C2PA 2.0 transition
## Claim data structure

Claim version 2 introduces this distinction:

- **Created assertions** ▶ assertions described in the C2PA technical specification and **do not require human input.** Claim generator can directly attest to the content.

- **Gathered assertions** ▶ assertions not described in the C2PA technical specification. Information in these assertions **may come from a source other than the claim generator.**
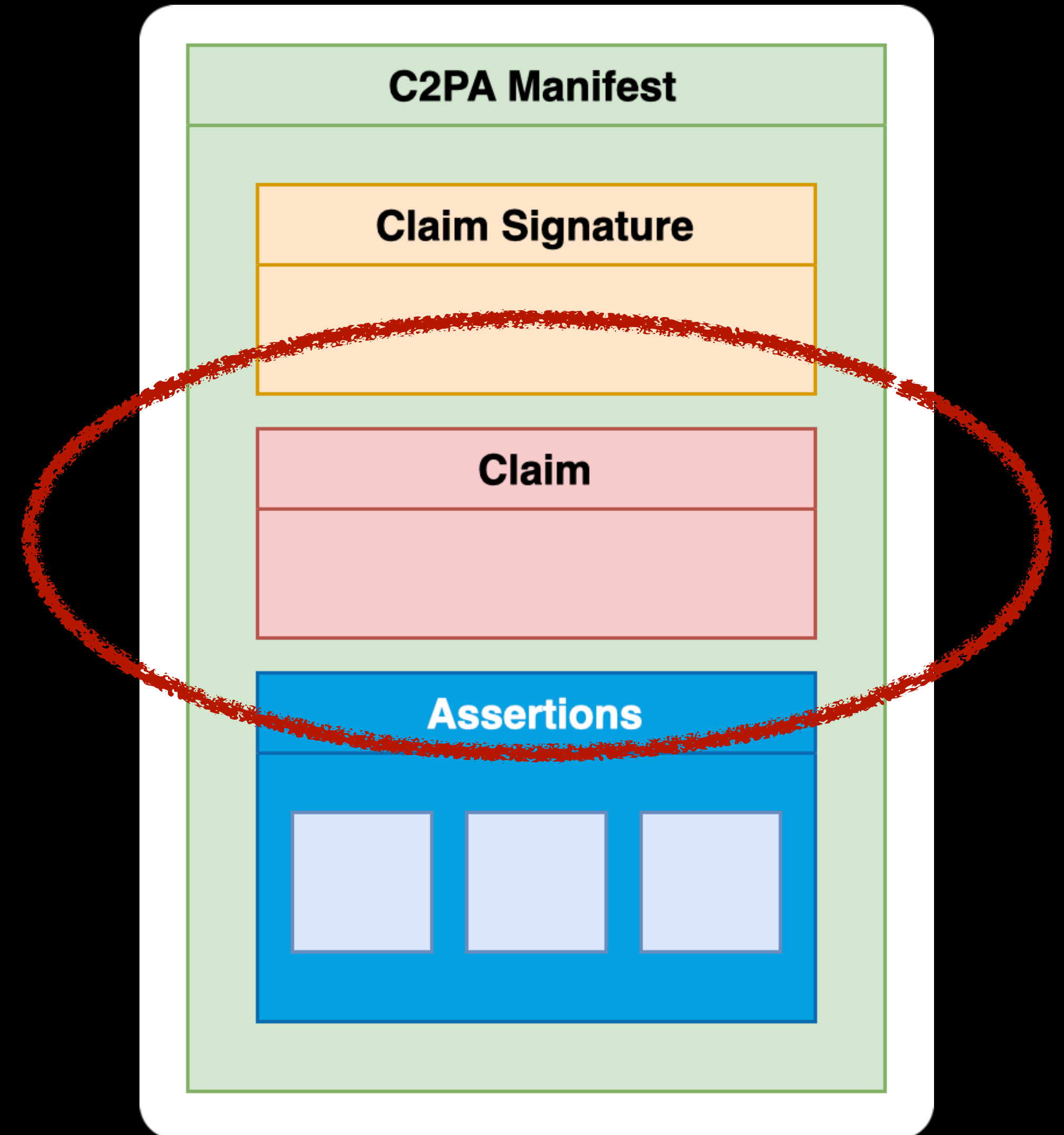
## Introducing CAWG

CAWG (Creator Assertions Working Group)

was created in early 2024 to create technical standards to house metadata that was no longer part of C2PA 2.0 technical standard.

CAWG became a working group within DIF in March 2025.

# What does CAWG do?

Four assertion standards, building on C2PA technical spec:

- **Endorsement** ► Forward permission for CDN-style renditions on C2PA assets

- **Identity** ► Binding digital identity credentials to C2PA assets

- **Metadata** ► Associate user-generated metadata with C2PA assets

- **Training and Data Mining** ► Express permissions regarding AI training and data mining usage

# What does CAWG do?

Four assertion standards, building on C2PA technical spec:

- **Endorsement** ▶ Forward permission for CDN-style renditions on C2PA assets

- **Identity** ▶ Binding digital identity credentials to C2PA assets

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# Identity assertion
in the C2PA data model

A **CAWG identity assertion** is a CBOR data structure (assertion) that can be part of a C2PA Manifest.

A **CAWG identity assertion** is typically meant to indicate subject's **authorization** of or **active participation** in production of the asset.

The actor* described by ...    *${credential}*

using a credential issued by ...    *${issuer}*

produced the content described by ...    *${signer_payload}*

Signed by ...    *${credential holder}*

**C2PA Manifest**

**Claim Signature**

**Claim**
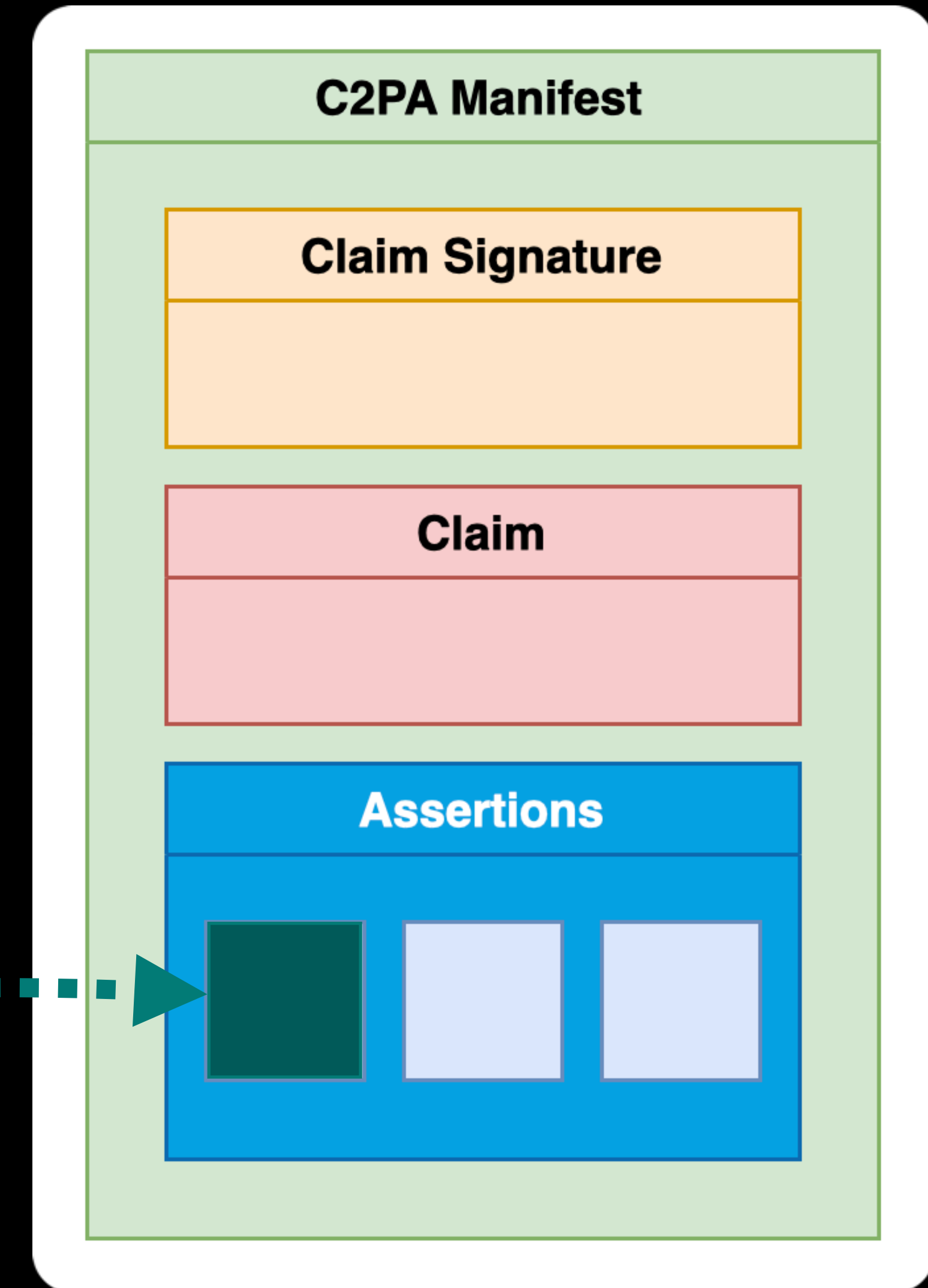
**Assertions**

# Identity assertion
is a framework

The actor* described by ... *${credential}*

using a credential issued by ... *${issuer}*

produced the content described by ... *${signer_payload}*

---

Signed by ... *${credential_holder}*

*actor can be human, non-human, or organization of humans

# Identity assertion
## Overview

Identity assertion allows a credential holder to sign a **signer_payload** data structure which contains:

- Tamper-evident references to one or more other assertions in the same C2PA Manifest (including hard-binding assertion)

- Role of credential subject with regard to the content
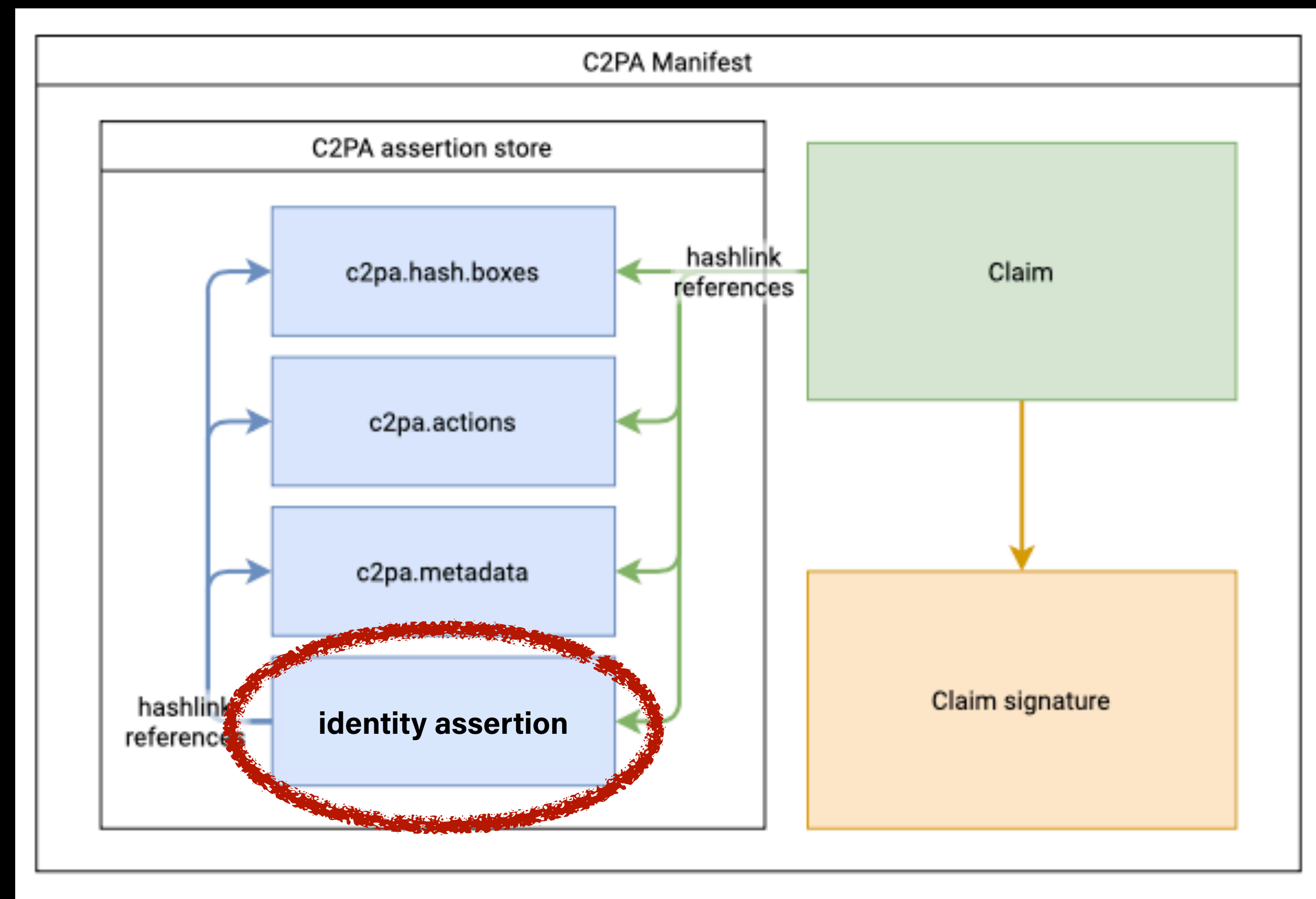
New trust signal separate from C2PA claim generator.

# Identity assertion

## CBOR-DIAG example

```
{
  "signer_payload": {
    "sig_type": "cawg.x509.cose",
    "referenced_assertions": [
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'U9Gyz05tmpftkoEYP6XYNsMnUbnS/KcktAg2vv7n1n8=' },
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'G5hfJwYeWTlflxOhmfCO9xDAK52aKQ+YbKNhRZeq92c=' },
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'Yzag4o5jO4xPyfANVtw7ETlbFSWZNfeM78qbSi8Abkk=' }
    ],
    "role": ["cawg.creator"],   // optional
  },
  "signature": b64'....',         // COSE signature using embedded X.509 certificate
  "pad1": b64'....',              // zero-filled pad buffer
  "pad2": b64'....'              // zero-filled pad buffer
}
```

# Identity assertion
## CBOR-DIAG example

```
{
  "signer_payload": {
    "sig_type": "cawg.identity_claims_aggregation",
    "referenced_assertions": [
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'U9Gyz05tmpftkoEYP6XYNsMnUbnS/KcktAg2vv7n1n8=' },
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'G5hfJwYeWTlflxOhmfCO9xDAK52aKQ+YbKNhRZeq92c=' },
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'Yzag4o5jO4xPyfANVtw7ETlbFSWZNfeM78qbSi8Abkk=' }
    ],
    "role": ["cawg.creator"],    // optional
  },
  "signature": b64'....',        // COSE enveloped Verifiable Credential (more later)
  "pad1": b64'....',             // zero-filled pad buffer
  "pad2": b64'....'              // zero-filled pad buffer
}
```

# Identity assertion
## CBOR-DIAG example

```
{
  "signer_payload": {
    "sig_type": "cawg.(whatever)",
    "referenced_assertions": [
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'U9Gyz05tmpftkoEYP6XYNsMnUbnS/KcktAg2vv7n1n8=' },
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'G5hfJwYeWTlflxOhmfCO9xDAK52aKQ+YbKNhRZeq92c=' },
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'Yzag4o5jO4xPyfANVtw7ETlbFSWZNfeM78qbSi8Abkk=' }
    ],
    "role": ["cawg.creator"],   // optional
  },
  "signature": b64'....',       // signature over signer_payload
  "pad1": b64'....',            // zero-filled pad buffer
  "pad2": b64'....'             // zero-filled pad buffer
}
```

# Identity assertion
## CBOR-DIAG example

```
{
  "signer_payload": {
    "sig_type": "cawg.(whatever)",
    "referenced_assertions": [
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'U9Gyz05tmpftkoEYP6XYNsMnUbn5
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'G5hfJwYeWTlflxOhmfCO9xDAK52aKO+YbKNhPZeg92c=' }
      { "url": "self#jumbf=c2pa/urn:uuid:F9168C5E-CEB2-4faa-B6BF-329BF39FA1E4/c2pa.assertions/c2
        "hash": b64'Yzag4o5jO4xPyfANVtw7ETlbFSW7NfeM78qbSi8Abkk=' }
    ],
    "role": ["cawg.creator"],    // optional
  },
  "signature": b64'....',        // signature over signer_payload
  "pad1": b64'....',             // zero-filled pad buffer
  "pad2": b64'....'              // zero-filled pad buffer
}
```

**referenced_assertions MUST:**

▸ Also appear in the C2PA Manifest (either in created_assertions or gathered_assertions)

▸ Include the same hard-binding assertion used in the C2PA Manifest

**Identity assertion**

How do content creators want to be identified in ~~2024~~ 2025?

## **Identity assertion**
Institutional news media

The actor described by … X.509 certificate

using a credential issued by … certificate authority

produced the content described by … ${signer_payload}

Signed by … certificate holder

(CAWG identity assertion 1.0 – ratified August 2024)

# Identity assertion
Individual content creators

- Instagram

- Twitter

- Other social media

- Web site

- Identity document (mDL or physical drivers license, etc.)

**Problem:** These credentials can generally be *observed* or *gathered* temporarily, but they generally don't have autonomous signing capability.

# Identity assertion
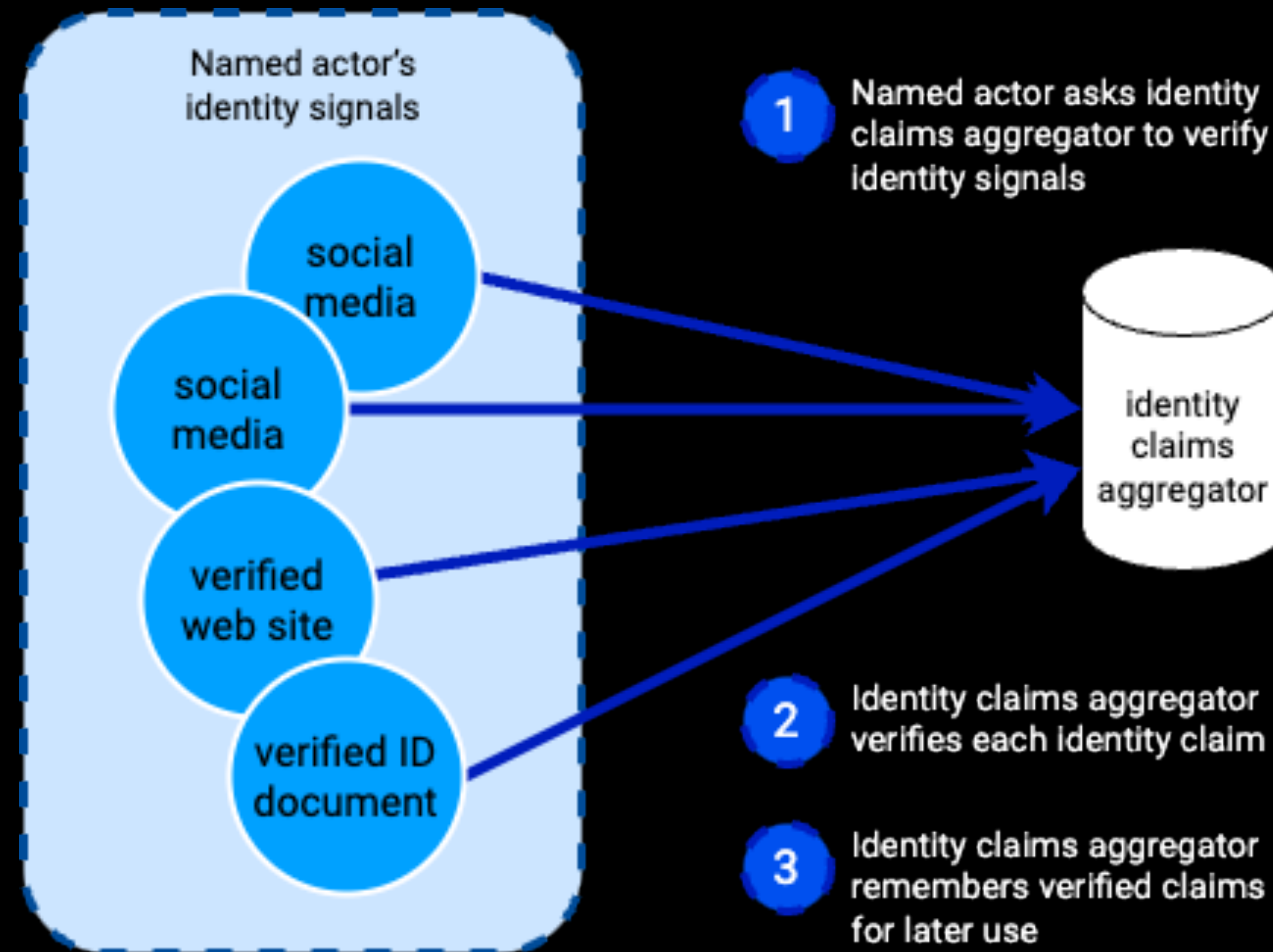Individual content creators

- Instagram

- Twitter

- Other social media

- Web site

- Identity document (mDL or physical drivers license, etc.)

**Solution:** Describe how a platform vendor can *aggregate* these identity signals and attest to them on behalf of their customer.
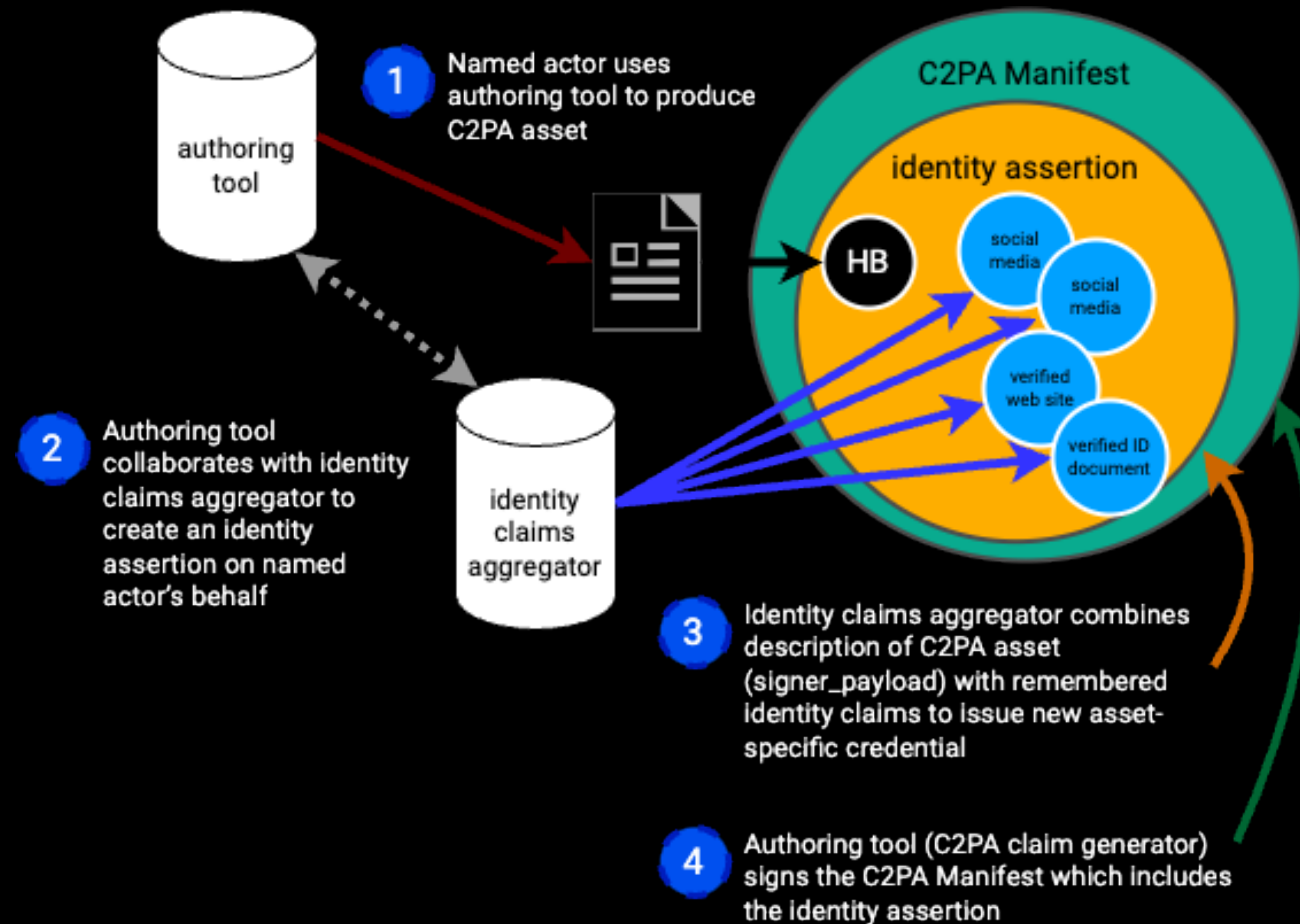
# Identity assertion
## Creating content



**1** Named actor uses authoring tool to produce C2PA asset

**2** Authoring tool collaborates with identity claims aggregator to create an identity assertion on named actor's behalf

**3** Identity claims aggregator combines description of C2PA asset (signer_payload) with remembered identity claims to issue new asset-specific credential

**4** Authoring tool (C2PA claim generator) signs the C2PA Manifest which includes the identity assertion

authoring tool

identity claims aggregator

C2PA Manifest

identity assertion

HB

social media

social media

verified web site

verified ID document

# Identity assertion
Individual content creators

The actor described by … VC with aggregated ID signals

using a credential issued by … identity claims aggregator

produced the content described by … ${signer_payload}

---

Signed by … identity claims aggregator

(CAWG identity assertion 1.1 draft – in progress now)

# Connect the dots

My challenge to you:

Introduce me to content creators who have access to autonomous signing credentials and know how to use them.

**Identity assertion**

Who's next?

The actor described by … ???

using a credential issued by … ???

produced the content described by … ${signer_payload}

───────────────────────────────────────────

Signed by … content creator for themselves, ideally

**Come help us build content provenance standards!**

CAWG is part of ⣿ DIF

Meetings are every other Monday at:

- NA/EU: 0800 Pacific / 1100 Eastern / 1500 UTC

- APAC: 1800 Pacific / 0100* UTC / 0630* India

Next meeting: 21 April*

* APAC times are in the following Tuesday

⚙️ **Come help us build content provenance standards!**

We're looking for one or maybe two co-chairs.

Election coming later this month.

Please contact Kim or me if interested.