



JPEG Trust

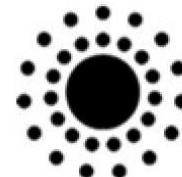
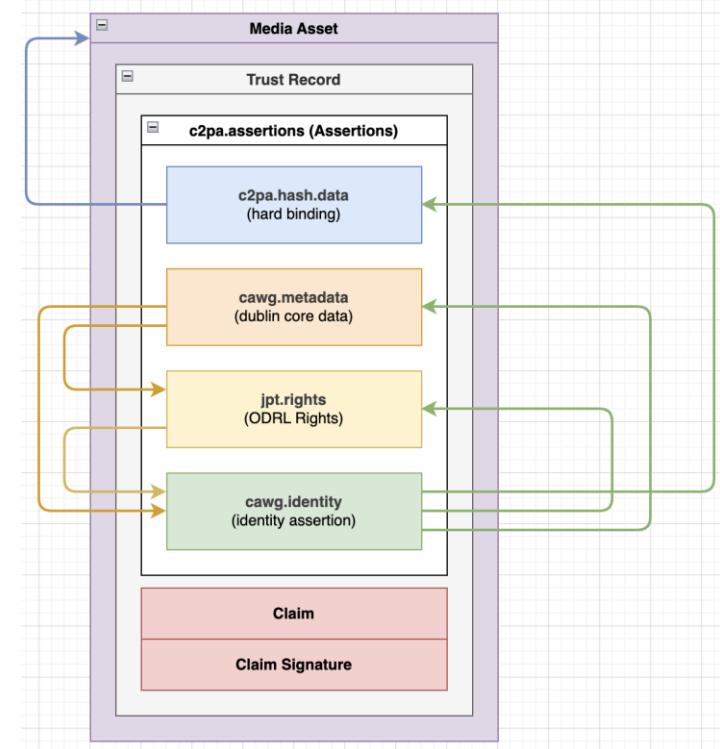
Leonard Rosenthal, Sr. Principal Architect, Content Authenticity
Chair, Technical Working Group, C2PA
Project Leader, JPEG Trust Parts 1 & 2



JPEG Trust (ISO 21617-1, 2nd Ed)

Bringing together Authorship, Ownership, Rights

- C2PA
- cawg.Identity
- cawg.Metadata (Dublin Core)
 - Describe role(s) involved in the production of the asset
- jpt.rights (ODRL)
 - Define a set of rights & reservations on usage



Dublin Core™
metadata
element set



Open digital
rights language
(ODRL)

{

```
"@context" : {"dc" : "http://purl.org/dc/elements/1.1/"},  
"dc:creator" : ["Stéphane de Sakutin", "self#jumbf=c2pa.assertions/cawg.identity"],  
"dc:identifier" : "AFP_8XZ4ZA",  
"dc:title" : "Address to the nation",  
"dc:subject" : ["France", "Politics", "New Year"],  
"dc:description" : "This photograph shows a television screen broadcasting French President Emmanuel Macron delivering his New Year wishes during an address to the nation from the Elysee Palace, in Paris, on December 31, 2020.",  
"dc:publisher" : "https://u.afp.com/5t5x",  
"dc:contributor" : ["Jeanne Parexemple", "self#jumbf=c2pa.assertions/cawg.identity_1"],  
"dc:date" : "2020-12-31T20:14:00Z",  
"dc:type" : "Image",  
"dc:source" : "France 2 broadcast",  
"dc:language" : "fr-FR",  
"dc:relation" : ["AFP_8XZ4ZF", "AFP_8XZ4YT"],  
"dc:coverage" : ["Paris", "Elysée Palace"],  
"dc:rights" : "self#jumbf=c2pa.assertions/jpt.rights"}
```

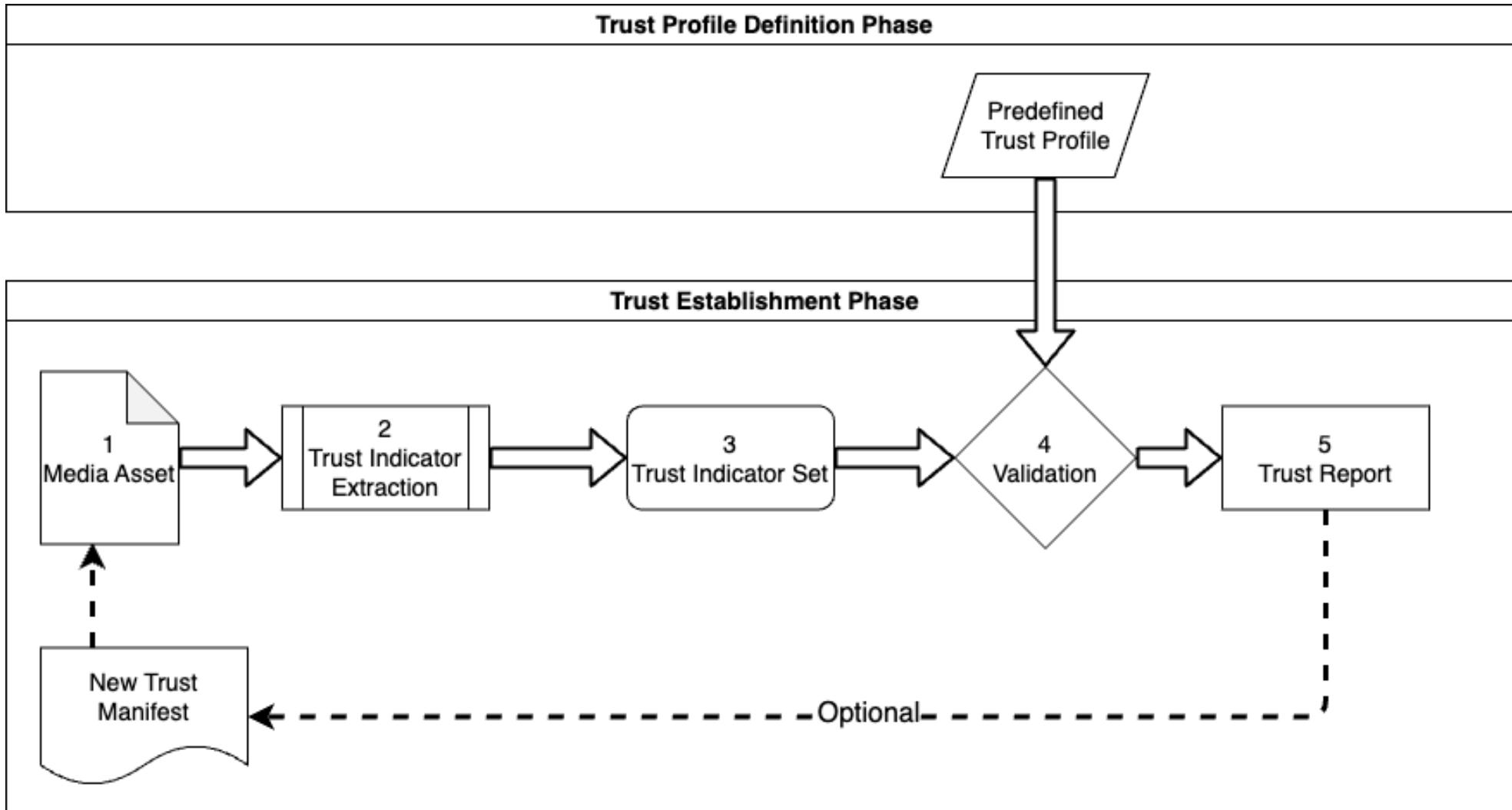
Adobe



utile pour notre pays
Vive la République, vive la France!

JPEG Trust Part 2: Trust Indicator Sets, Profiles & Reports

aka: How to do validation/conformance w/o a formal program



JPEG Trust Indicators (JSON)

```
{  
  "@context": [ "https://jpeg.org/jpegtrust/" ],  
  "manifests": [ {  
    "claim.v2": {  
      "alg": "sha256",  
      "claim_generator_info": [ { "name": "Joe's Camera App" } ],  
      "signature": "self#jumbf=c2pa/urn:c2pa:e8ea7712-2bc8-4ca0-848d-67b19434913f/c2pa.signature",  
      "dc:format": "image/jpeg",  
      "signature_status": "claimSignature.validated",  
      "assertion_status": {  
        "cawg.metadata": "assertion.hashedURI.match",  
        "c2pa.hash.data": "assertion.hashedURI.match"  
      },  
      "content_status": "assertion.dataHash.match"  
    },  
    "assertions": {  
      "c2pa.hash.data": {  
        "alg": "sha256",  
        "hash": "Auxjtmax46cC2N3Y9aFmB09Jfay8LEwJWzBUTZ0sUM8gA=",  
        "exclusions": [ { "start": 9960, "length": 4213 } ]  
      },  
      "c2pa.actions.v2": {  
        "actions": [  
          {  
            "action": "c2pa.created",  
            "when": "2023-02-11T09:00:00Z",  
            "softwareAgent": { "name": "Joe's Camera App" },  
            "digitalSourceType": "https://cv.iptc.org/newsCodes/digitalSourceType/digitalCapture"  
          }  
        ]  
      },  
      "c2pa.metadata": {  
        "@context": { "exif": "http://ns.adobe.com/exif/1.0/" },  
        "exif:GPSLatitude": "39.918522630419034",  
        "exif:GPSLongitude": "116.39726729279847",  
        "exif:GPSAltitude": "100963/29890",  
      }  
    } ],  
    "content": {}  
}
```

JPEG Profile. (YAML)

```
---
metadata:
  name: Experimental Camera Profile
  issuer: JPEG Trust Committee
  date: 2025-07-05T10:20:25.844Z
  version: 2.0.0
  language: en

---
# Section 1

- id: generalInfo
  description: Section 1 - General Information
  title: General Information
  report_text: This section provides information about general stuff

- # check for content modification
  id: content
  description: content is unmodified
  expression: >
    manifests[0].claim.v2.content_status == "assertion.dataHash.match"
  report_text:
    "true":
      en: This content has not been modified
    "false":
      en: This content has been modified

- # See if the asset has been modified after creation
  id: declaration_only
  description: is there a declaration and no manifests present?
  expression: contains(keys(@), "declaration") && !contains(keys(@), "manifest")
  report_text:
    "true":
      en: No modifications took place after it was created
    "false":
      en: This media asset was modified after creation, but with full provenance

- # Is Generative AI?
  id: aigc
  description: Is AIGC?
  expression: >
    contains(declaration.assertions.c2pa.actions.v2.actions[0].digitalSourceType, "trainedAlgorithmicMedia")
  report_text:
    "true":
      en: This media asset was produced by generative AI
    "false":
      en: This media asset was not produced by generative AI
```

JPEG Trust Report

- Results of processing the Trust Indicators by the Profile expressions
- Default output format is YAML, but also supports JSON (for machine readability)
- HTML (and even something like PDF) are also possible for humans
- Can be put back into an C2PA Update Manifest
 - `jpt.report` assertion (with either the YAML or JSON)



JPEG Trust Part 3: Watermarking

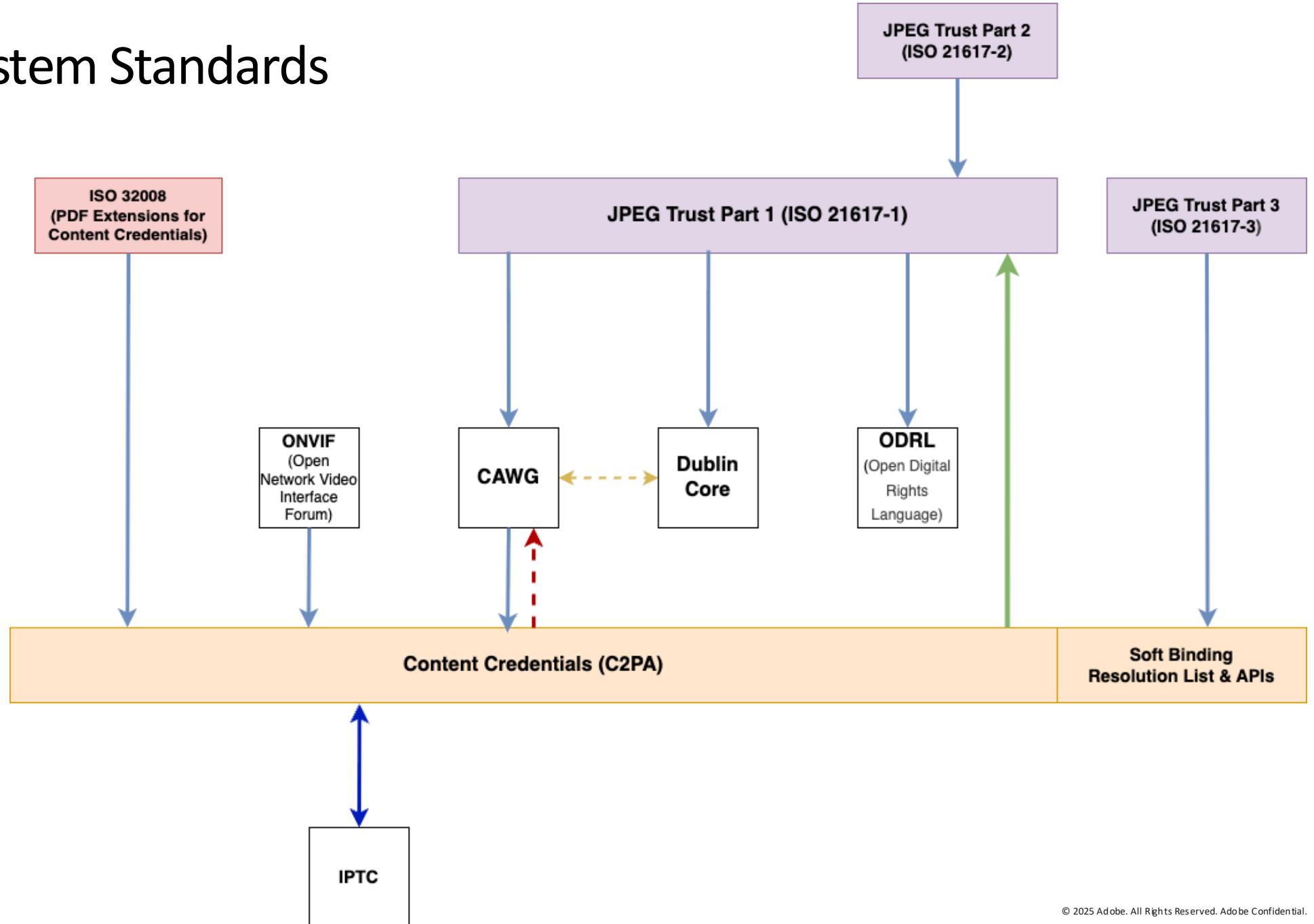
aka: How to get grant money for your academic project



JPEG Trust Part 4: Implementations

- Currently a Java-based "reference implementation" from UPC (Universita Politecnica de Catalunya)
 - Fully supports C2PA and then adds JPEG Trust parts 1 & 2.
- Also looking to add my Javascript implementations of Part 2 as well.

C2PA Ecosystem Standards



Questions



Adobe