

INTRODUCTION TO CONTENT CREDENTIALS

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PROVENANCE (/ˈPRɒV(ə)nəns/):

“THE BEGINNING OF SOMETHING'S EXISTENCE; SOMETHING'S ORIGIN”...

- It's not an arms race
- Edits are good!

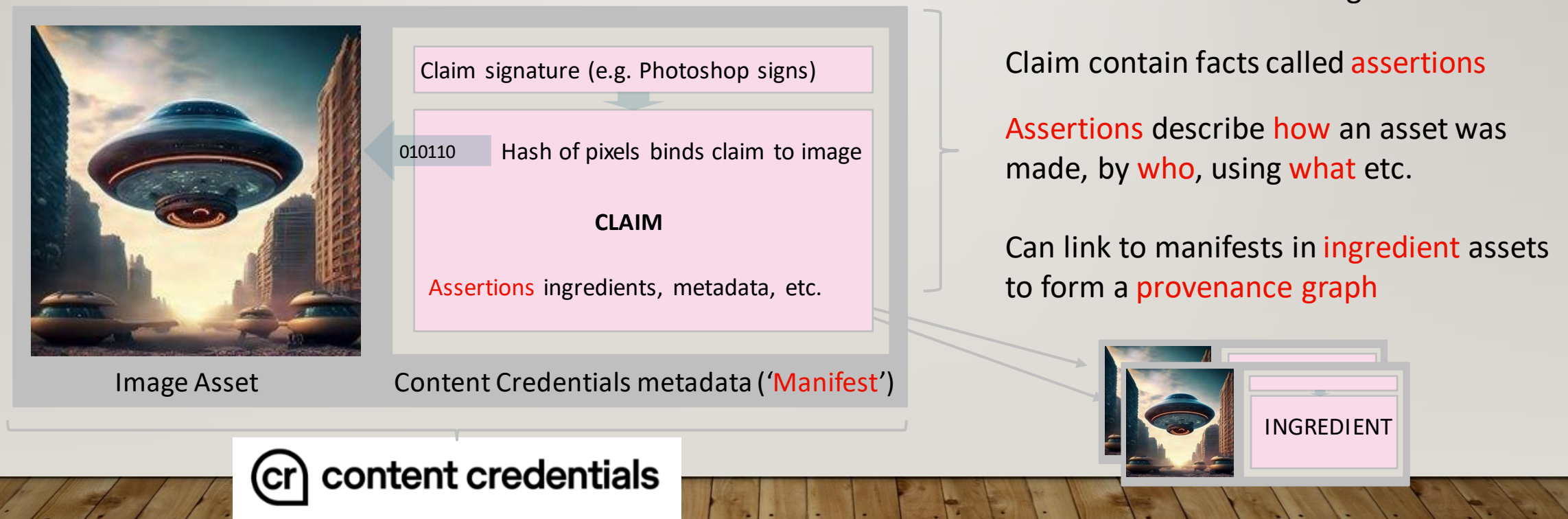


Instead of guessing what is fake, we can provide information about the truth.

C2PA: COALITION FOR CONTENT PROVENANCE AND AUTHENTICITY

Content Credentials establish content provenance and authenticity at scale to give publishers, creators, and consumers the ability to trace the origin of media.

C2PA is a Linux Foundation Joint Development Foundation project specifying provenance metadata



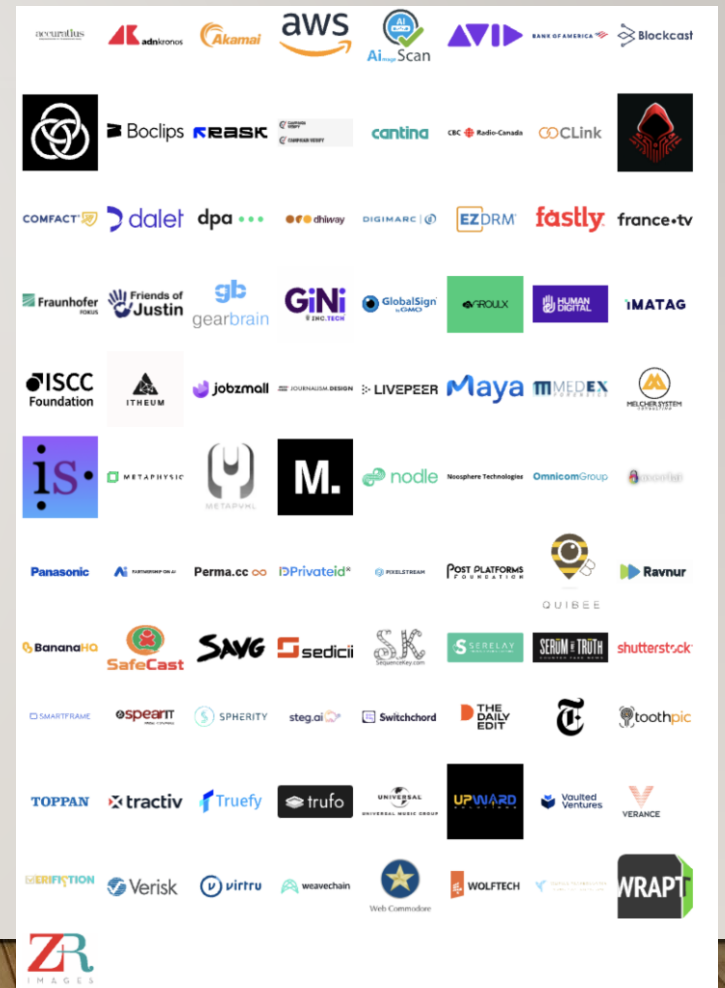
C2PA MEMBERSHIP AND ADOPTION

Content Credentials are implemented in several cameras, creative tools, and content platforms.



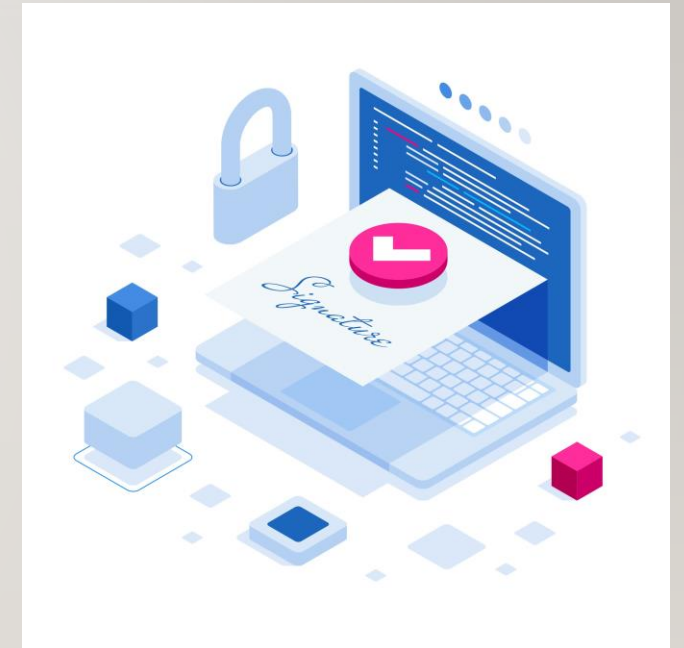
Liaisons

- ISO
- IPTC
- ETSI
- PDF Association



CRYPTOGRAPHY - A TRUST MODEL

- Modelled on the same approach as PDF and the Web
- Cryptographic foundation
 - Hard bindings between metadata and content (e.g., SHA256, SHA3,...)
 - X.509 certificates for signing
 - Certificate authorities and trust lists
 - Hardware attestation for cameras/mobile devices
- Soft bindings allow recovery of stripped metadata




DURABLE CONTENT CREDENTIALS

Browser detects invisible watermarks and **recovers stripped content credentials** from cloud

The image shows a screenshot of a social media profile page for 'Photoblogger292' on a platform like X. The main post features a vibrant image of a computer monitor with a bouquet of colorful flowers appearing to burst out of the screen. A small 'cr' watermark is visible in the top-left corner of the image. Below the image, there is an 'Adobe Firefly' logo. To the right, a 'content credentials' overlay is visible, which is circled in red. This overlay lists several items with their respective owners and dates: 'Adobe Inc.' (Oct 3, 2023) for a computer monitor, a unicorn, a robot, and a well. The text 'Content Credentials recovered' is written to the right of the overlay. The browser's address bar shows 'com/johnaineko'.

IDENTIFICATION OF GENERATIVE AI



Content Credentials
Issued by Adobe Inc. on Oct 5, 2023

This image combines multiple pieces of content. At least one was generated with an AI tool.

Produced by **obidigbo nzeribe**

Social media [Instagram](#), [Behance](#)

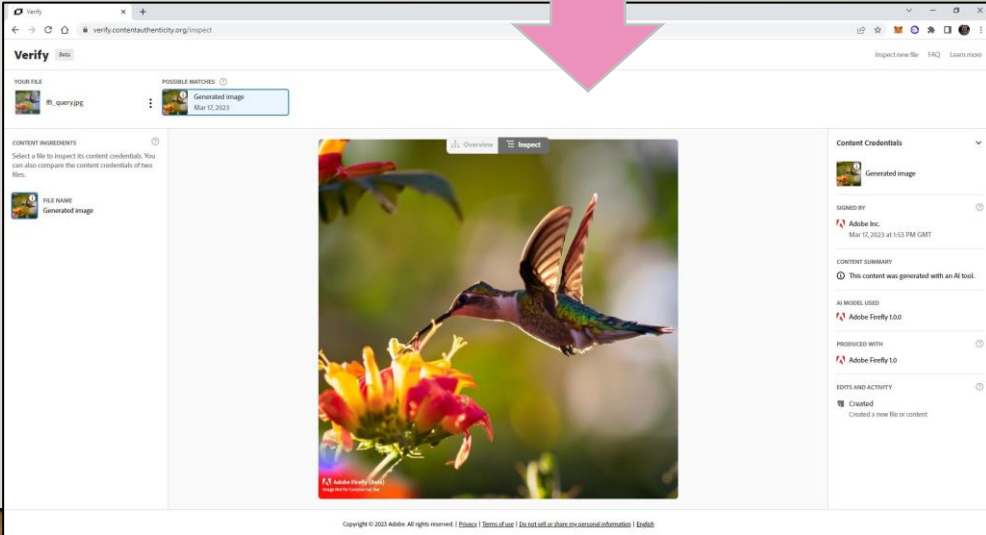
App or device used
Adobe Photoshop 251.0

AI tool used Adobe Firefly

Additional history Yes

Inspect

cr



Verify

verify.contentauthenticity.org/inspect

YOUR FILE

POSSIBLE MATCHES

Generated image
Mar 12, 2023

CONTENT INGREDIENTS

Select a file to inspect its content credentials. You can also compare the content credentials of two files.

Generated image

Generated image

Content Credentials

Generated image

SIGNED BY

Adobe Inc.
Mar 12, 2023 at 4:53 PM GMT

CONTENT SUMMARY

This content was generated with an AI tool.

AI MODEL USED

Adobe Firefly 1.0

PRODUCED WITH

Adobe Firefly 1.0

EDITS AND ACTIVITY

Created
Created a new file or content

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TRAINING AND DATA MINING ASSERTION

- Ability to identify whether a given asset (or collection of assets) can be used in an AI/ML workflow
 - Training for Generative AI
 - Training for other forms of AI/ML
 - Use in inference
 - Use in data mining
- Building on W3C's "Text and Data Mining" CG
 - allowed
 - notAllowed
 - constrained

```
{
  "entries":
    "cawg.ai_training": {
      "use": "allowed"
    },
    "cawg.ai_generative_training": {
      "use": "notAllowed"
    },
    "cawg.data_mining": {
      "use": "constrained",
      "constraint_info": "may only be mined on days whose names end in 'y'"
    }
}
```


EMBEDDED OR REFERENCED

- Content Credentials can be embedded into
 - Images (JPEG, PNG, GIF, WebP, AVIF, HEIC/HEIF, TIFF, DNG, SVG)
 - Videos (MP4, MOV, AVI, BMFF)
 - Audio (FLAC, MP3, WAV, BWF)
 - Documents (PDF, Office, EPUB)
 - Fonts (OTF, TTF)
- They can be stored separately in file systems, the cloud, DLT/Blockchains & referenced by URL, HTTP headers, file system paths and more.

THANK YOU!

