Open Badges 3.0 & W3C Verifiable Credentials

DCC Community Call
December 8, 2022

Kerri Lemoie, PhD
Technology Director, DCC
klemoie@mit.edu
(she/her/hers)

What are Open Badges?

- Recognition system using digital badges for skills and achievements learned **anywhere at anytime**
- Portability: Specified metadata “baked” inside a digital graphic to convey achievement information
- Specified verification methods
    - Hosted & Human
    - Digitally Signed

DCC DIGITAL CREDENTIALS CONSORTIUM

History

Version History:

- OBv.05 (2011 - Mozilla Foundation)
- OBv.1 (2013 - Mozilla Foundation)
- OBv.1.1 - Introduce JSON-LD & First use cases for verifiable credentials (2015 - Mozilla Foundation & Badge Alliance)
- OBv.2 - (2016 - Mozilla Foundation & Badge Alliance)
- OBv.2 (2017 - IMS Global)
- OBv.2.1 - Introduce Badge Connect API (2020 - IMS Global)

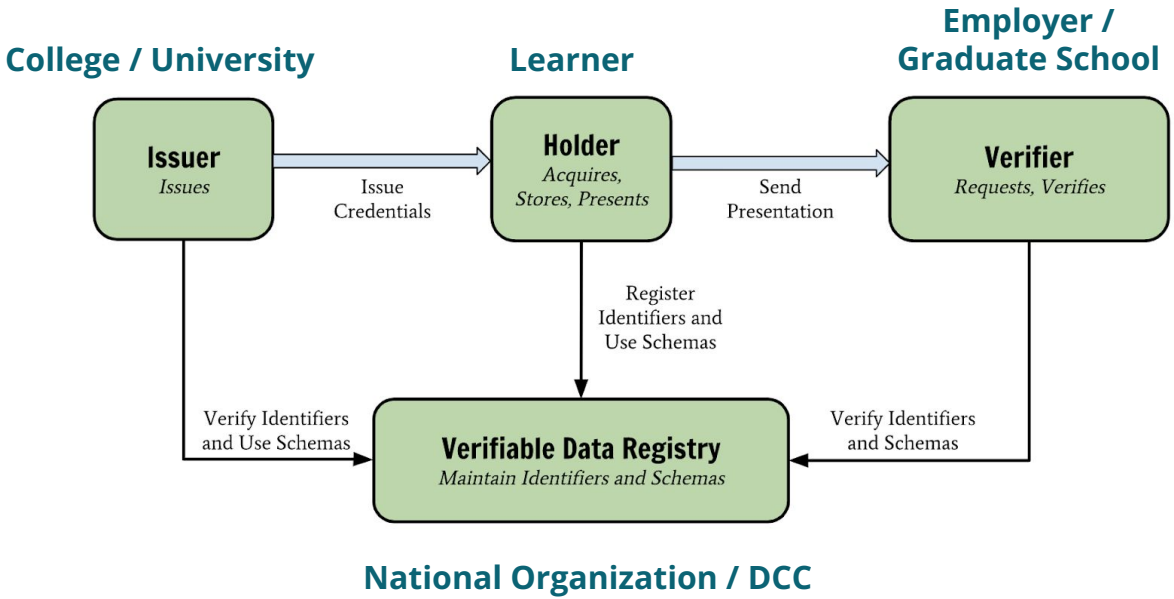
DCC DIGITAL CREDENTIALS CONSORTIUM

W3C Verifiable Credentials

- Standardize cryptographic proof of claims being made on the web
- Data model describing minimum description of a claim:
  - Issuer
  - Issuance Date
  - Credential Subject (the claim - what & who (if needed)
  - Expiration
  - Proof - Info needed to perform verification (digital signature)
  - Credential Status - has it been revoked?
- Doesn’t need a blockchain

DCC DIGITAL CREDENTIALS CONSORTIUM

Verifiable Credentials Ecosystem



Why Open Badges 3.0?

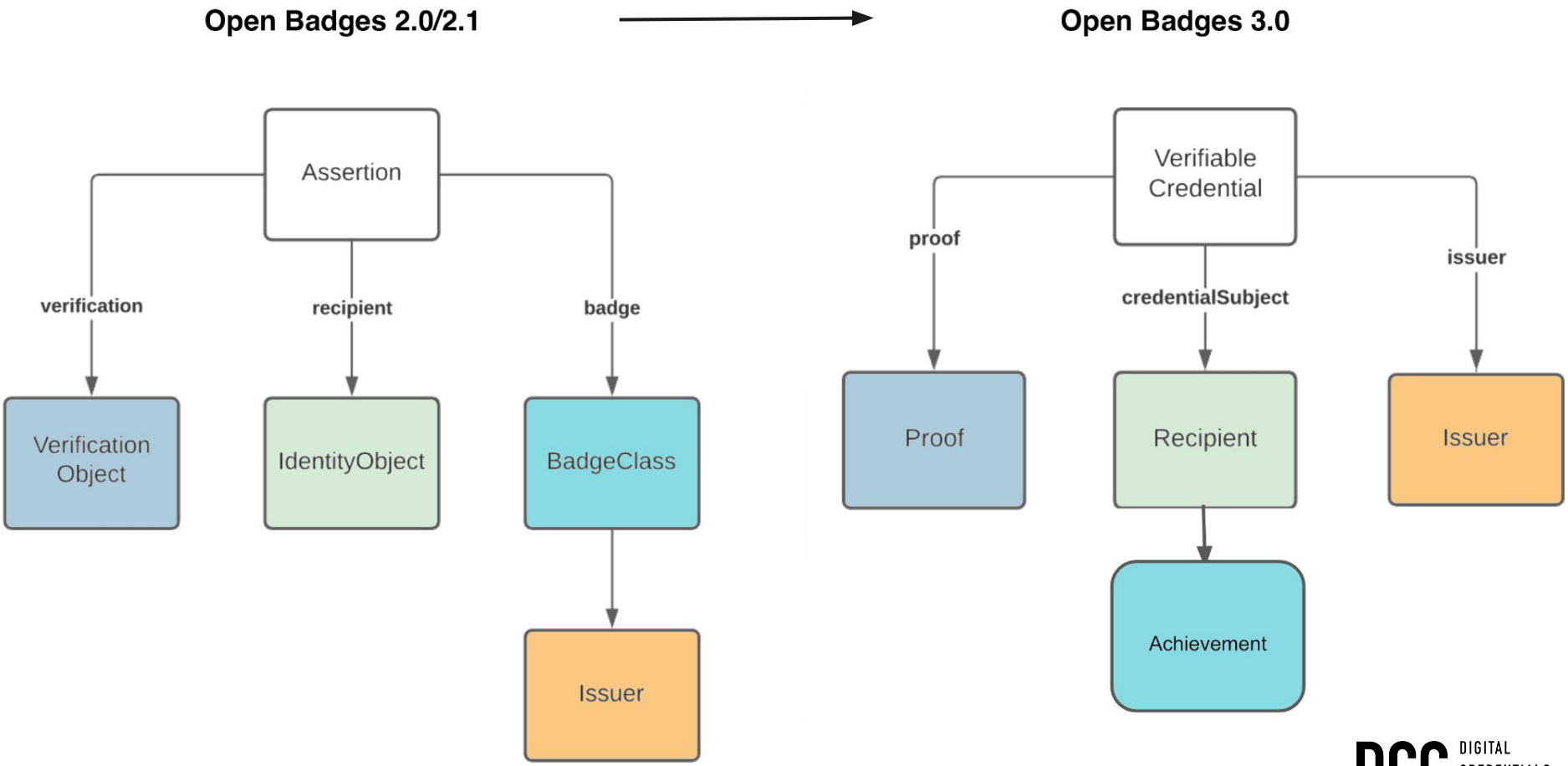
- Verification of 2.0 is meh
  - Web hosting (typical)
    - Unreliable
    - No history of changes to data
    - Trust proxied by domain or platform issuer
  - Digital Signature
    - Specific to requirements by 1EdTech (IMS Global) - not universal
- Opportunity to align with a universally supported verification model
- Learner access & control of badges
- Integrate CLR properties
- Add Achievement Type property

DCC DIGITAL CREDENTIALS CONSORTIUM

Foundational Work

- Open Badges are Verifiable Credentials (2018 White paper by Nate Otto & Kim Hamilton Duffy)
- Add DID support to Open Badges (Feb 2020 IMS Global Issue)
- OB 2.0 Assertion issued to a DID that may also be a valid Verifiable Credentials (Sept 2020) IMS Global Issue)
- Ongoing Verifiable Credentials for Education Task Force (VC-EDU) discussions - influenced charter

DCC DIGITAL CREDENTIALS CONSORTIUM



DCC DIGITAL CREDENTIALS CONSORTIUM

OBv2 vs OBv3

	Open Badges v2	**Open Badges v3**
Verification	Hosted, Signed	W3C VC Cryptographic Model
Data Hosting	Assertion, Badge Class, Issuer Profile	Not required
Learner Identity	Email	Decentralized Identifier & other identifiers (could be email, usernames, etc)
Badge Image	Required	Optional
User Control of Data	No	Yes (wallets)

DCC DIGITAL CREDENTIALS CONSORTIUM

Open Badge 2.0 Example


```
{
  "@context": "https://w3id.org/openbadges/v2",
  "type": "Assertion",
  "id": "https://example.org/beths-robotics-badge.json",
  "recipient": {
    "type": "email",
    "hashed": true,
    "salt": "deadsea",
    "identity": "sha256$c7ef86405ba71b85acd8e2e95166c4b111448089f2e1599f42fe1bba46e865c5"
  },
  "image": "https://example.org/beths-robot-badge.png",
  "evidence": "https://example.org/beths-robot-work.html",
  "issuedOn": "2016-12-31T23:59:59Z",
  "expires": "2017-06-30T23:59:59Z",
  "badge": "https://example.org/robotics-badge.json",
  "verification": {
    "type": "hosted"
  }
}
```

Open Badge 3.0 Example


```
{
  "@context": [
    "https://www.w3.org/2018/credentials/v1",
    "https://purl.imsglobal.org/spec/ob/v3p0/context.json",
    "https://w3id.org/security/suites/ed25519-2020/v1"
  ],
  "id": "urn:uuid:a63a60be-f4af-491c-87fc-2c8fd3007a58",
  "type": [
    "VerifiableCredential",
    "OpenBadgeCredential"
  ],
  "name": “Bachelor Degree for Alice Smith”,
  "issuer": {
    "type": [
      "Profile"
    ],
    "id": "did:key:z6MkilYei2cR3NZsk4BRVr7ZQ6JVSNhRuRpyQWdcCxoGmij7",
    "name": “Name of University,
  },
  "issuanceDate": "2022-05-04T22:20:25.682Z",
  "credentialSubject": {
    "type": [
      "AchievementSubject"
    ],
    "id": "did:key:123",
    "achievement": {
      "id": "urn:uuid:bd6d9316-f7ae-4073-a1e5-2f7f5bd22922",
      "type": [
        "Achievement"
      ],
      “achievementType”: “BachelorDegree”,
      "name": “Bachelors Degree,
      "description": “Holder of this credential has complete the requirements for a bachelor degree in this subject at university”,
      "criteria": {
        "narrative": “Degree requirements include completing specified number of credits and thesis demonstrating knowledge of the subject”
      }
    }
  },
  "proof": {
    "type": "Ed25519Signature2020",
    "created": "2022-11-04T22:20:25Z",
    "verificationMethod": "did:key:z6MkilYei2cR3NZsk4BRVr7ZQ6JVSNhRuRpyQWdcCxoGmij7#z6MkilYei2cR3NZsk4BRVr7ZQ6JVSNhRuRpyQWdcCxoGmij7",
    "proofPurpose": "assertionMethod",
    "proofValue": "zyTQzd7Drih7BfgbEdYY6pVZW8gYxk7aJGuS9qaAu4268i6edwkgWEMFD2Mwf5sjnVEJeZqpvHGcft6vXY4JPK2j"
  }
}
```

CLR & Open Badges?

- Similar model but in multiples:
  - VC Container of VCs / Open Badge containing Open Badges
- Share same data models describing achievements

DCC DIGITAL CREDENTIALS CONSORTIUM

What Now?

- DCC activities
- Specification: https://1edtech.github.io/openbadges-specification/ob_v3p0.html (Candidate Final - piloting)
- Join https://w3c-ccg.github.io/vc-ed/
- Open Badging platforms roadmaps?

Thanks!

Questions?

FAQ: Do Open Badges 3.0 Look different?

- It could. An OBv3 doesn't require an image. It could just be a file containing the data. (*However, many platforms may still use images.*)
- The data looks a different.
- There's a digital signature.
- Can still be displayed on web pages and shared online from issuing platforms. (*Can be displayed from wallets too*)

FAQ: What's a Digital Wallet?

- Mobile or web app that can:
  - Retrieve & store badges
  - Share badges
  - Create & manage identities (Decentralized Identifers)

Learner Credential Wallet

A place to store your learner credentials

Download on the App Store

GET IT ON Google Play

Learner Credential Wallet is an open source mobile wallet developed by the Digital Credentials Consortium, a network of leading international universities designing an open infrastructure for academic credentials.

Learn more about the 2022 Learner Credential Pilot

Frequently Asked Questions

FAQ: What are the major differences for issuers?

- Issuer applications/platforms will digitally sign each badge
- Issuers don’t need to host badge or badge description for verification
- There’s a digital signature - management of keys
- Less data tracking

FAQ: What are the major differences for learners?

- May use wallets to:
  - Create identities
  - Request badges be issued to those identities
- Access & Control
- Privacy
- Stronger verifiability

FAQ: What are the major differences for verifiers?

- New trust model:
  - Issuer identity
  - Data modifications
  - Revoked
- Verifiable request of badges