Decentralized Identifiers and Web of Things

2020 W3C WoT VF2F

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- Co-Inventor and primary W3C spec Editor for Decentralized Identifiers, Verifiable Credentials, and JSON-LD
- Co-Founder of Veres One (DID Method)
- 10+ Years in Web Standards
- Customers in Finance, Government, Education, and Healthcare

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Anatomy of a Verifiable Credential

- <IDENTIFIER>
  - license: I1234562
  - hair: BLK
  - name: ALEXANDER JOSEPH
  - address: 2570 24th STREET ...
  - date of birth: 08/31/1977
  - issued by: California DMV
  - digital signature: MIIB7ZueKqp...

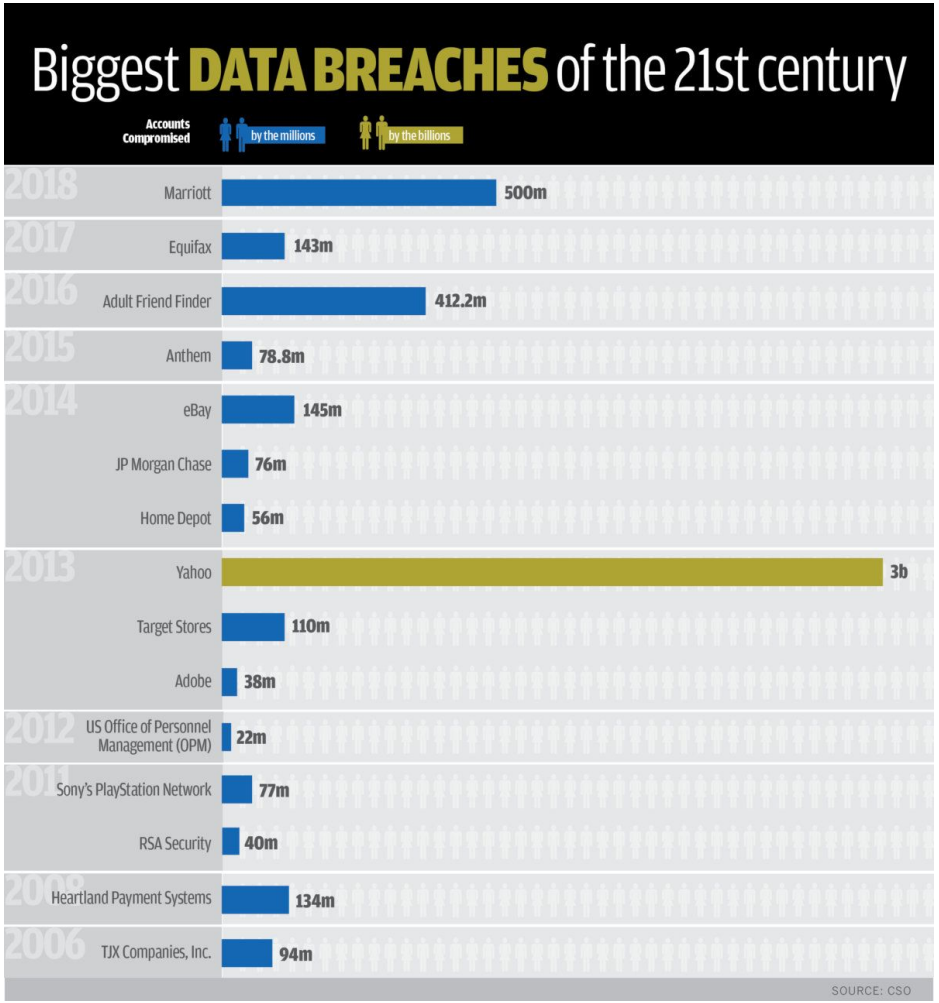
Which identifiers do we use today?

jdoe@bigcorp.com

555-867-5309

https://flitter.com/jdoe

Why is this a problem?



What is missing?

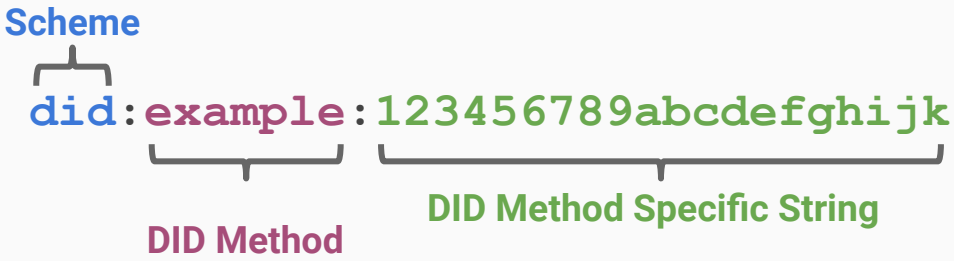
Many portable identifiers for any person, organization, or ***thing*** that do not depend on a centralized authority, are protected by cryptography, and enable privacy and data portability.

Decentralized Identifiers

A new type of URL that is:

- globally unique,
- highly available,
- cryptographically verifiable,
- with no required central authority.

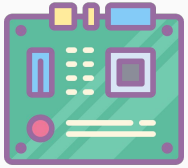
What does a DID look like?



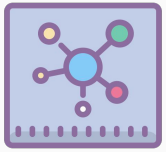
Example:

`did:v1:nym:z279u9eqhDa9CQMLYr8KRJRGcGAsTku4nQsipLDnHszaFaXV`

Web of Things and DIDs



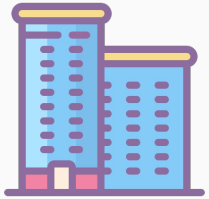
IoT Device



IoT Gateway

WoT Service Provider

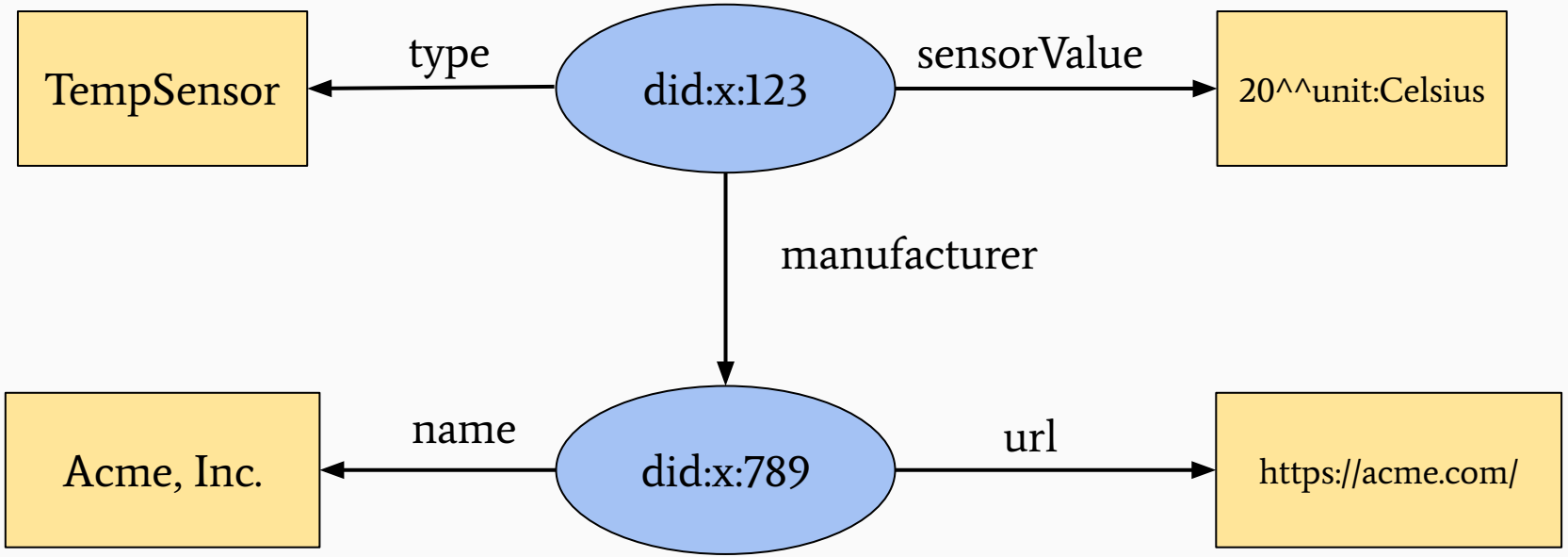
Manufacturer



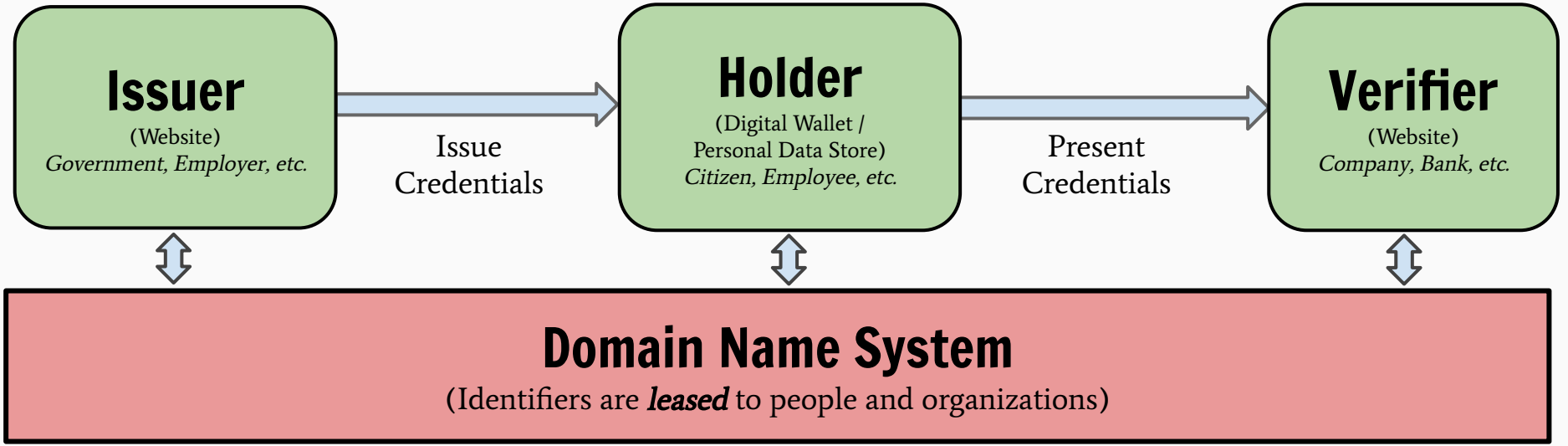
Legal Controller

DIDs Resolve to DID Documents

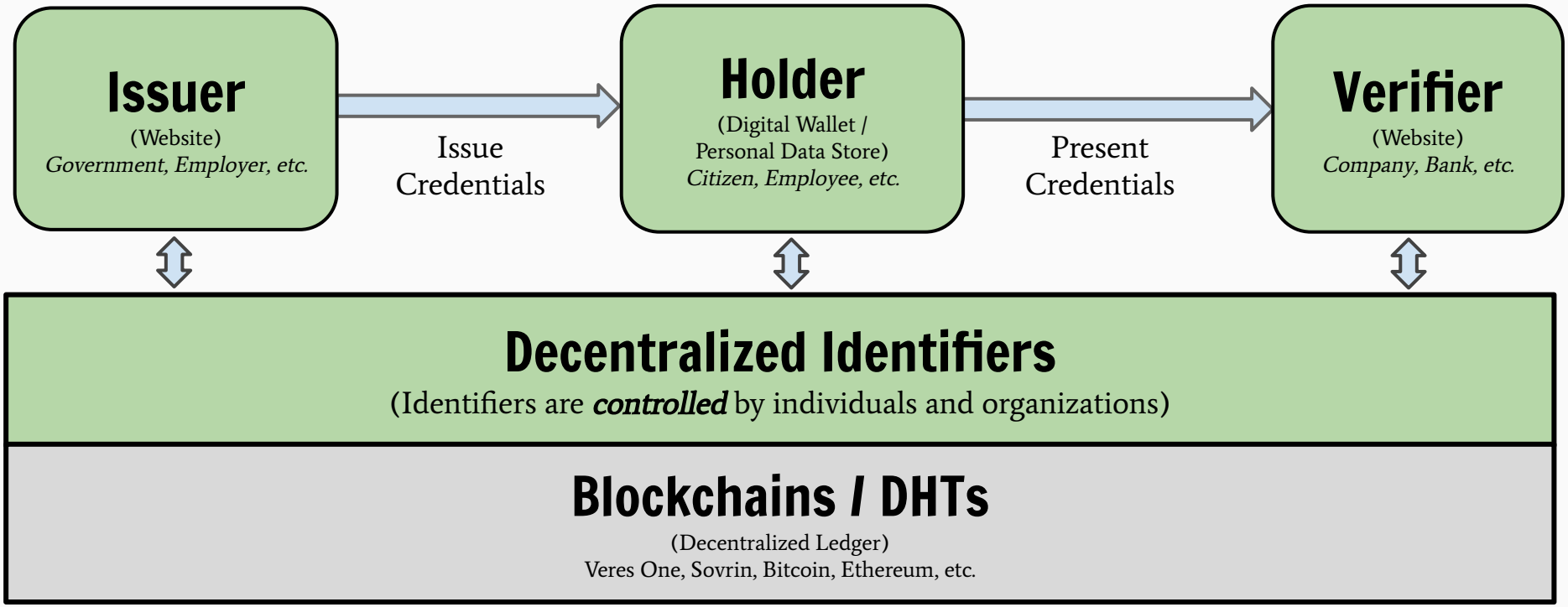
We use DIDs in Verifiable Credentials



Web Identifiers Today



Decentralized Identifiers



W3C Working Draft

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Decentralized Identifiers (DIDs) v1.0

Core architecture, data model, and representations

ReSpec

W3C Working Draft 12 March 2020

This version:
https://www.w3.org/TR/2020/WD-did-core-20200312/

Latest published version:
https://www.w3.org/TR/did-core/

Latest editor's draft:
https://w3c.github.io/did-core/

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https://www.w3.org/TR/2019/WD-did-core-20191209/

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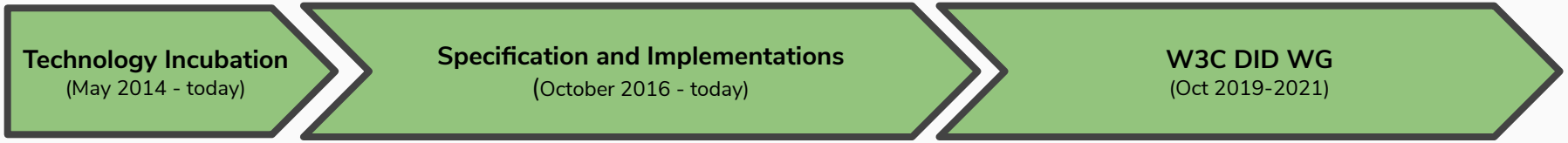
Participate:
GitHub w3c/did-core
File a bug
Commit history
Pull requests

Decentralized Identifiers Status

Roadmap



Weekly Community Group Participants: **15-28 / 345**

Spec/Issue Regular Contributors: **32**

Known Implementing Companies: **51!!!**

Join the DID WG

Other WoT - DID Related Specs

- Verifiable Credentials
  - Enables WoT devices to assert cryptographically verifiable statements.
- Encrypted Data Vaults
  - Protected data in transit and at rest.
- Linked Data Proofs
  - Cryptographically sign/protect JSON-LD data using DIDs.
- Authorization Capabilities (ZCAPs)
  - Cryptographic authorization and delegation to protected services.
- HTTP Message Signatures
  - Perform simple cryptographic authentication over HTTP.