Identity and Blockchain

at the TechConnex Blockchain Peer Group

By Marc Lijour

March 26, 2019

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or find in the folder 2019 TechConnex - Blockchain Peer Group at

https://github.com/marclijour/presentations

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The Trust Machine

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But how does it work?

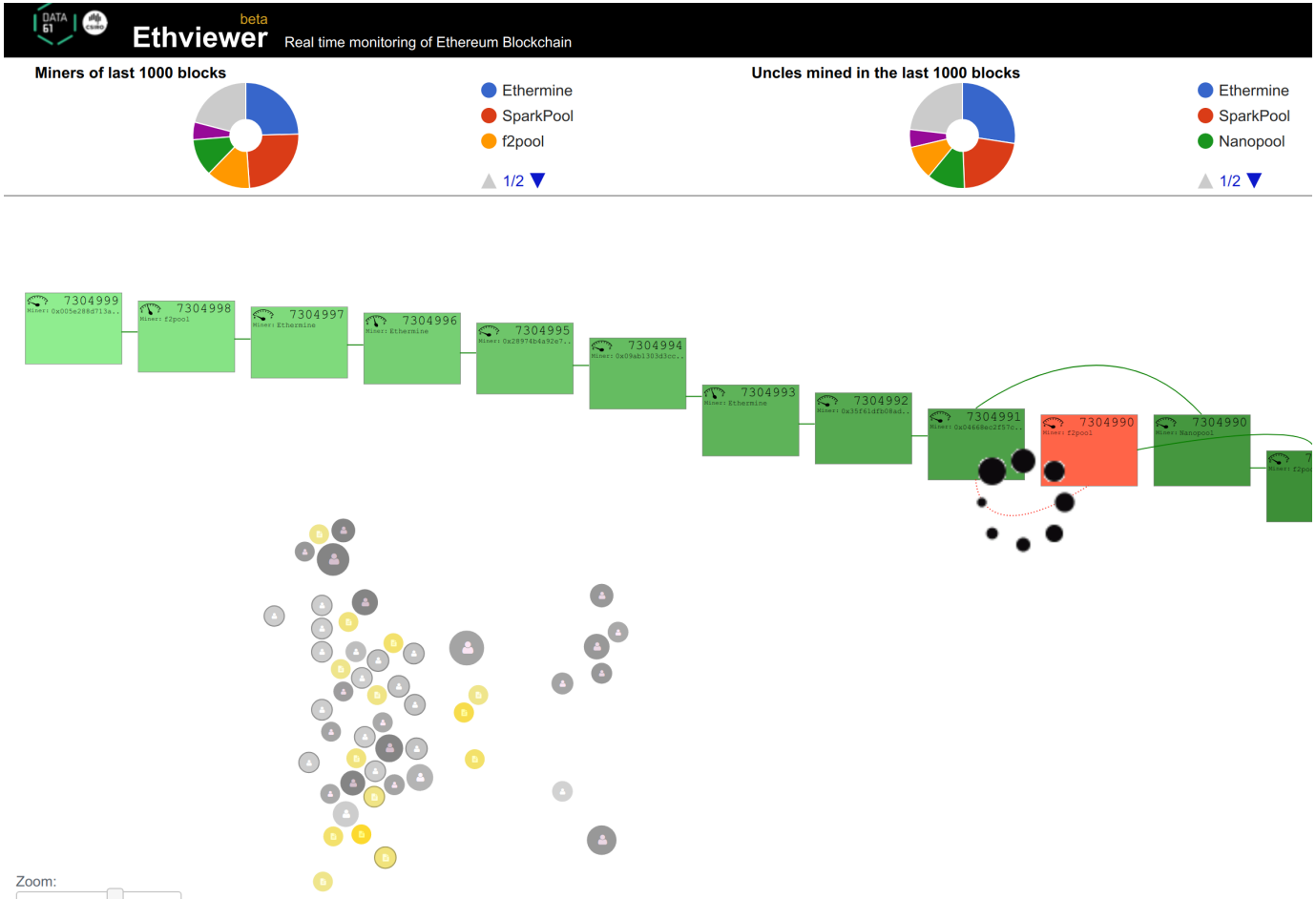

Figure: Source : http://ethviewer.live

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Reference books

Blockchain in practice

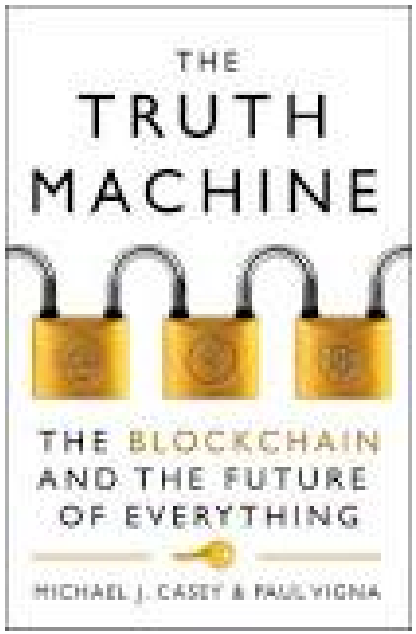

Figure: Book from Vigna and Casey, 2018

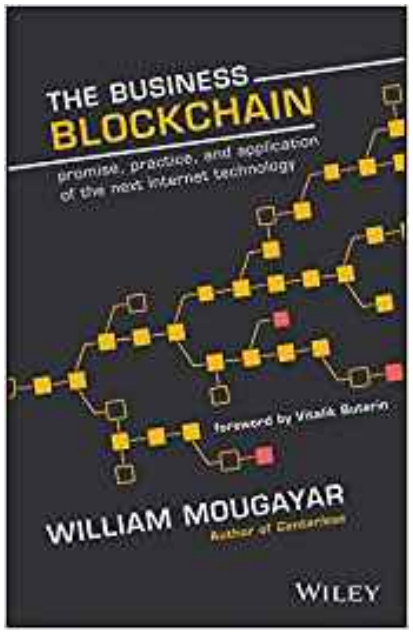

Figure: Book from Mougayar, 2016

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Ultimate references

The must-read white paper from legendary Satoshi Nakamoto: *Bitcoin: A Peer-to-Peer Electronic Cash System* (2008),

the Ethereum white paper from home-town Toronto Vitalik Buterin: *A Next-Generation Smart Contract and Decentralized Application Platform* (2013),

and the yellow paper authored by Prof. Gavin Wood: *Ethereum: A secure decentralised generalised transaction ledger* (2014).

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Digital identity

"On the Internet, nobody knows you're a dog."

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Digital identity Management Paradigms

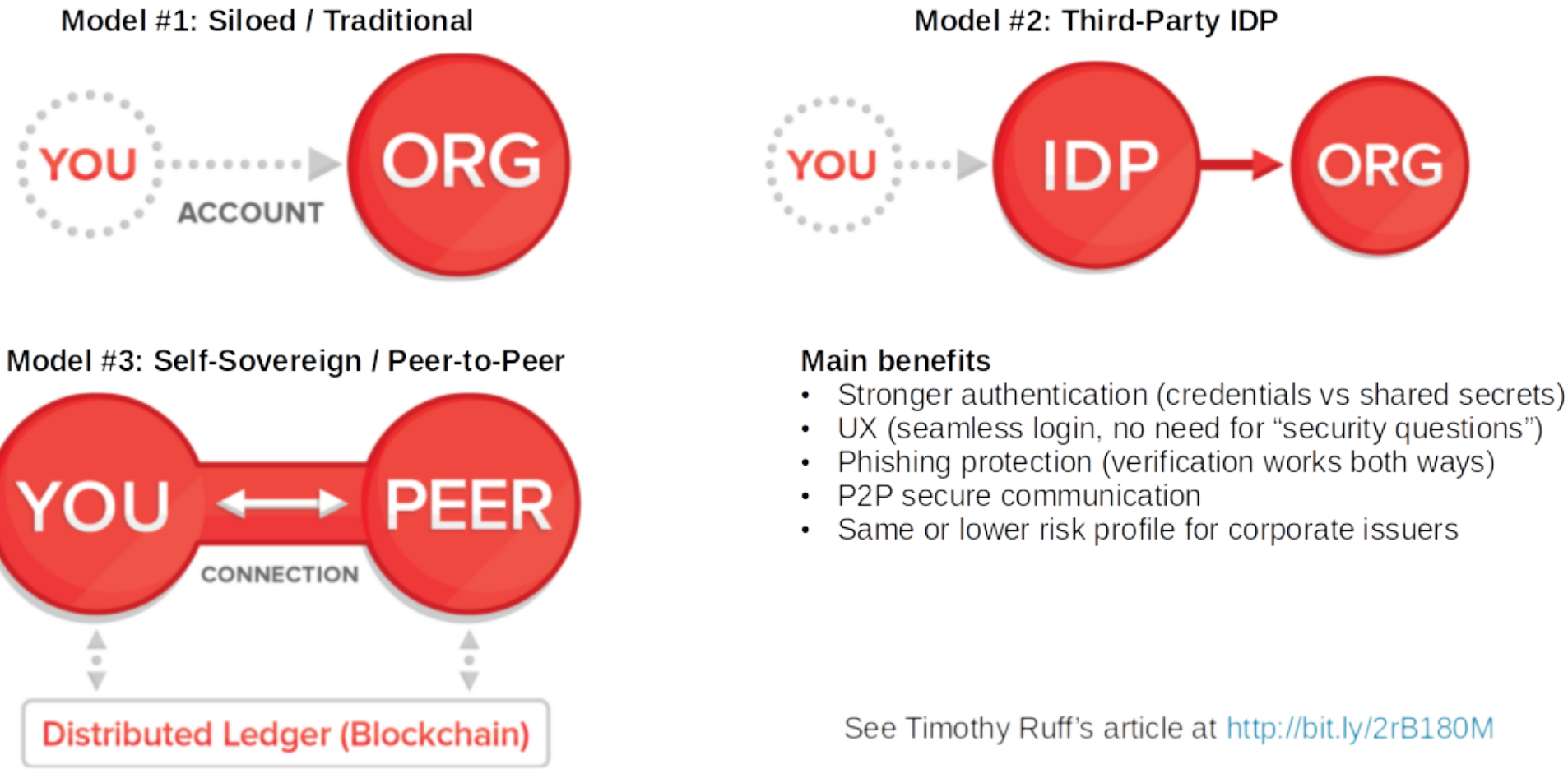

Figure: extract from Ruff, 2018

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Ten Principles of Self-Sovereign Identity

From Web of Trust, 2016

1. Existence
2. Control
3. Access
4. Transparency
5. Persistence
6. Portability
7. Interoperability
8. Consent
9. Minimilization
10. Protection

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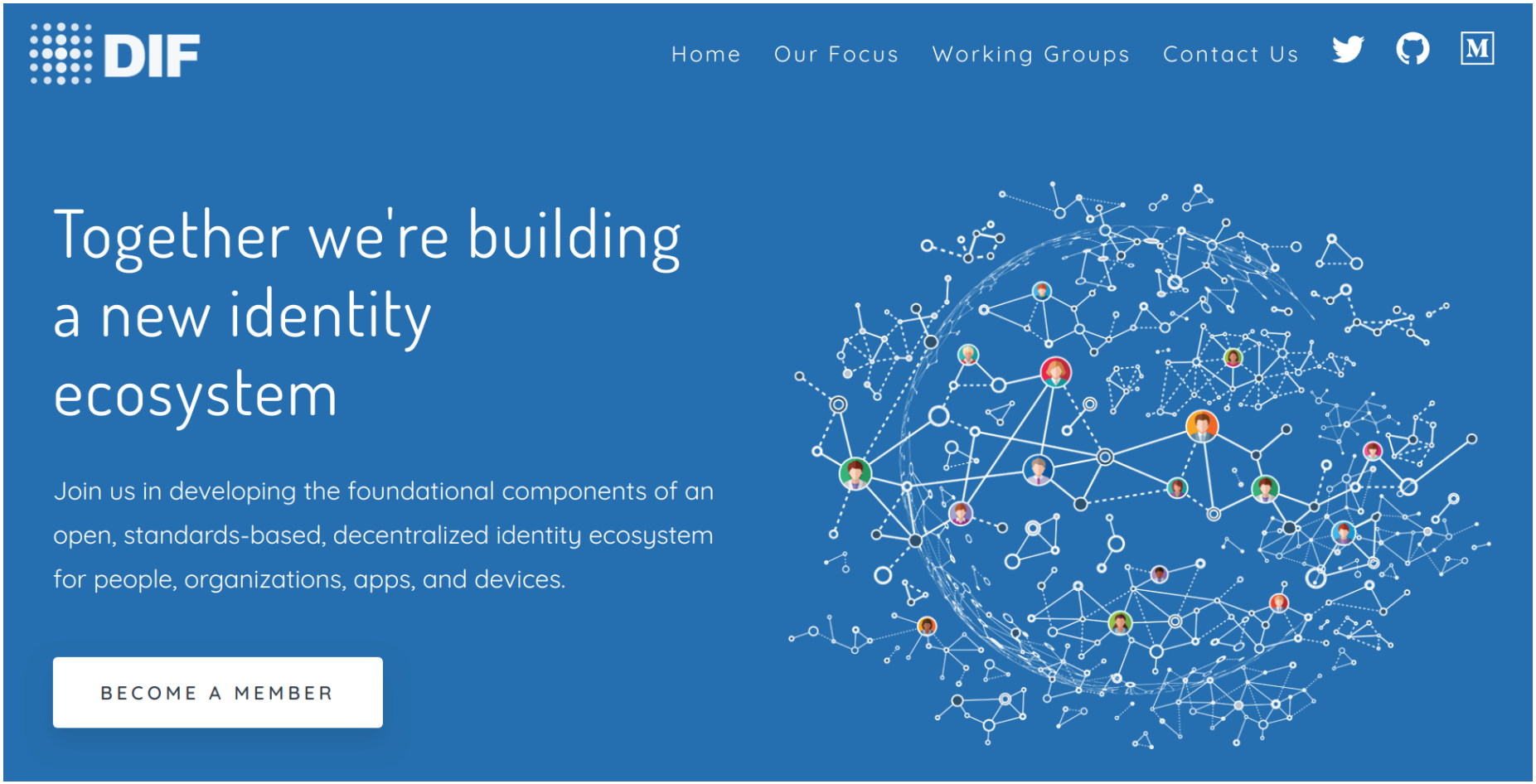
Decentralized Identity Foundation

https://identity.foundation



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Digital Identification and Authentication Council of Canada (DIACC)

https://diacc.ca

Digital Identity Ecosystem Principles

The Digital Identification and Authentication Council of Canada (DIACC) believes it is imperative that Canadian institutions protect and promote Canadian values and perspectives as the digital economy develops. The DIACC leverages the following Canadian and universal principles as guidance with regard to initiatives that support our mission and vision.

Principles of a digital identity ecosystem for Canada, and solutions within:

1. Robust, secure, and scalable
2. Implement, protect, and enhance Privacy by Design
3. Inclusive, open, and meets broad stakeholder needs
4. Transparent in governance and operation
5. Provide Canadians choice, control, and convenience
6. Built on open, standards-based protocols
7. Interoperable with international standards
8. Cost effective and open to competitive market forces
9. Able to be independently assessed, audited and subject to enforcement
10. Minimize data transfer between authoritative sources and will not create new identity databases

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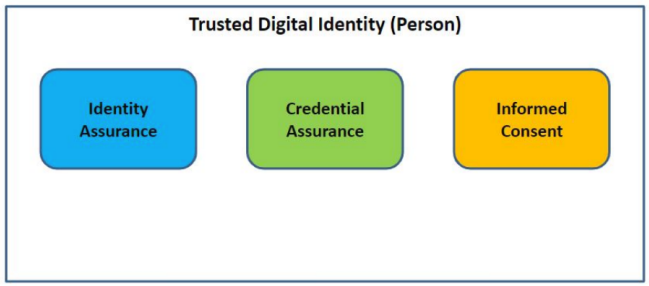
Pan-Canadian Trust Framework — Cadre de Confiance pancanadien

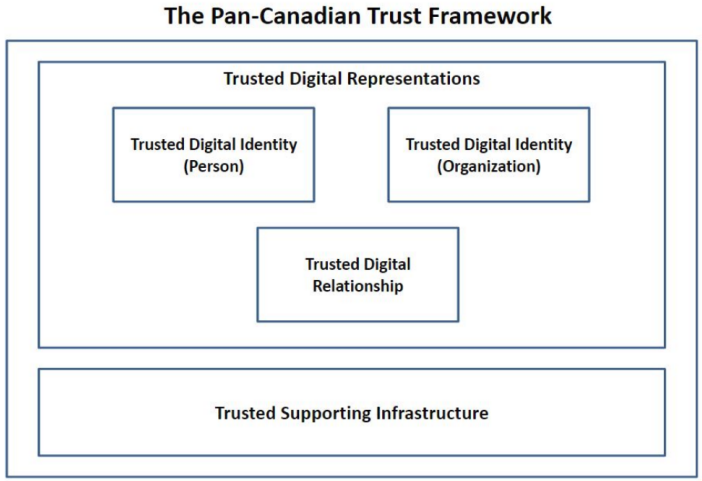
https://canada-ca.github.io/PCTF-CCP/

PCTF-CCP

Pan-Canadian Trust Framework | Cadre de Confiance Pancanadien

View the Project on GitHub
canada-ca/PCTF-CCP





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Ethereum

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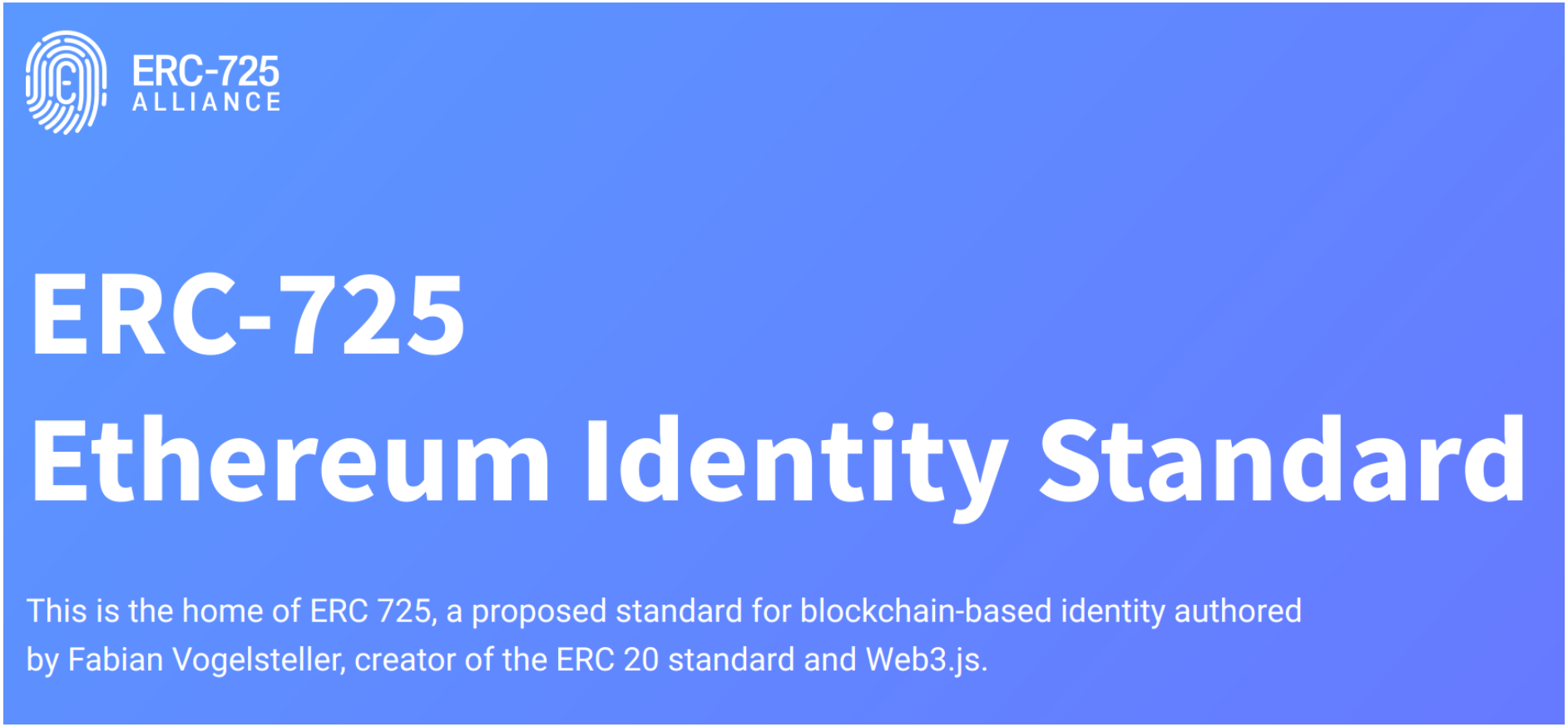
ERC-725 – Ethereum Identity Standard

https://erc725alliance.org



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ERC 735 – Claim Holder

https://github.com/ethereum/EIPs/issues/735

ERC: Claim Holder #735

Open **frozeman** opened this issue on 9 Oct 2017 · 67 comments

frozeman commented on 9 Oct 2017 • edited ▾ Member

```
EIP: 735
Title: Claim Holder
Author: Fabian Vogelsteller (@frozeman)
Type: Standard
Category: ERC
Status: Discussion
Created: 2017-10-09
```

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uPort stack vs ERC-725

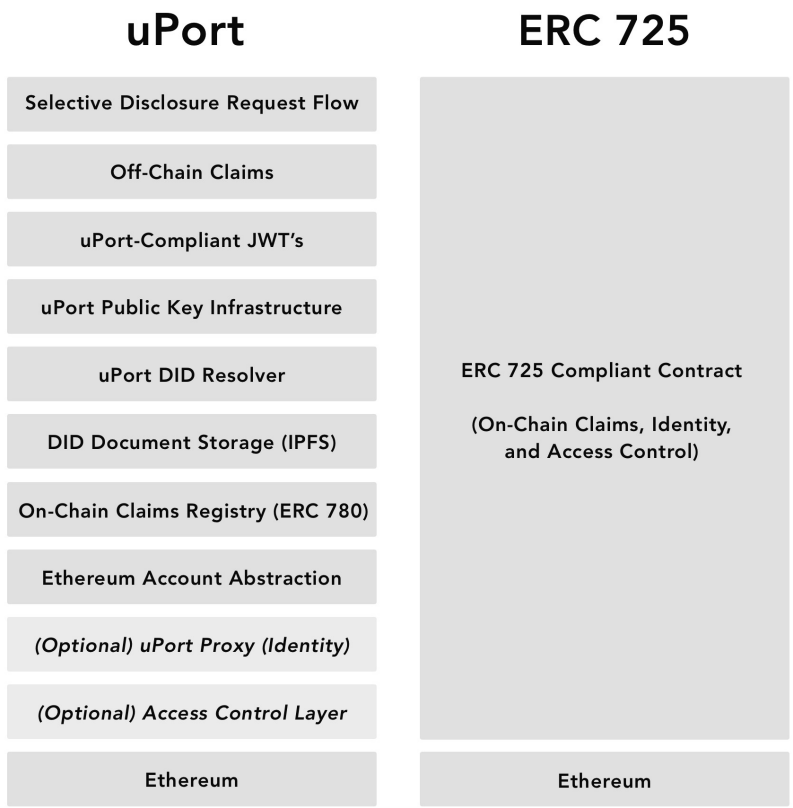

Figure: from Braendgaard, 2018

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ERC 780 – Ethereum Claims Registry

https://github.com/ethereum/EIPs/issues/780

ERC: Ethereum Claims Registry #780

Open **oed** opened this issue on 29 Nov 2017 · 61 comments

oed commented on 29 Nov 2017 • edited

```
EIP: <to be assigned>
Title: ERC: Ethereum Claims Registry
Author: Joel Torstensson <oed@consensys.net>
Type: Standard
Category: ERC
Status: Discussion
Created: 2017-11-29
```

Abstract

This text describes a proposal for an **Ethereum Claims Registry** (**ECR**) which allows persons, smart contracts, and machines to issue claims about each other, as well as self issued claims. The registry provides a flexible approach for claims that makes no distinction between different types of Ethereum accounts. The goal of the registry is to provide a central point of reference for on-chain claims on Ethereum.

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ERC 1056 – Lightweight Identity

https://medium.com/uport/erc1056-erc780-an-open-identity-and-claims-protocol-for-ethereum-aef7207bc744

ERC: Lightweight Identity #1056

Open **oed** opened this issue on 3 May 2018 · 21 comments

oed commented on 3 May 2018

```
EIP: <to be assigned>
Title: ERC: Lightweight Identity
Author: Pelle Braendgaard <pelle.braendgaard@consensys.net>, Joel Torstensson <oed@consensys
Type: Standards Track
Category: ERC
Status: Draft
Created: 2018-05-03
```

Simple Summary

A registry for key and attribute management of lightweight blockchain identities.

Abstract

This ERC describes a standard for creating and updating identities with a limited use of blockchain resources. An identity can have an unlimited number of `delegates` and `attributes` associated with it. Identity creation is as simple as creating a regular key pair ethereum account, which means that it's fee (no gas costs) and all ethereum accounts are valid identities. Furthermore this ERC is fully DID compliant.

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The SSI Stack for portable identities

From Terbu, 2019

Layer	Examples
Application	Selective disclosure, music app, rideshare service, extensions, etc.
Implementation	DIF Hubs, Indy Agents, uPort app, etc.
Payload	JSON-LD, JWT, CWT
Encoding	ProtoBuf, Cap'n Proto, MessagePack, JSON, CBOR, etc.
Encryption	Ciphersuites, JWE, etc.
DID AuthN	Key ownership, verification, challenge/response, etc.
Transport	QR Code, HTTP, BLE, NFC, FTP, SMTP, etc.
DID Resolution	DID -> DID Doc / service and key resolution
DID Operations	CRUD support for a DID Doc
Storage	Optional, separate storage of DID metadata, e.g., IPFS
Anchor	Bitcoin, Ethereum, Veres.One, Sovrin, etc.

Figure: *based on the results of the workshop (...) provided by Kyle Den Hartog (Evernym) and Daniel Buchner (Microsoft)*

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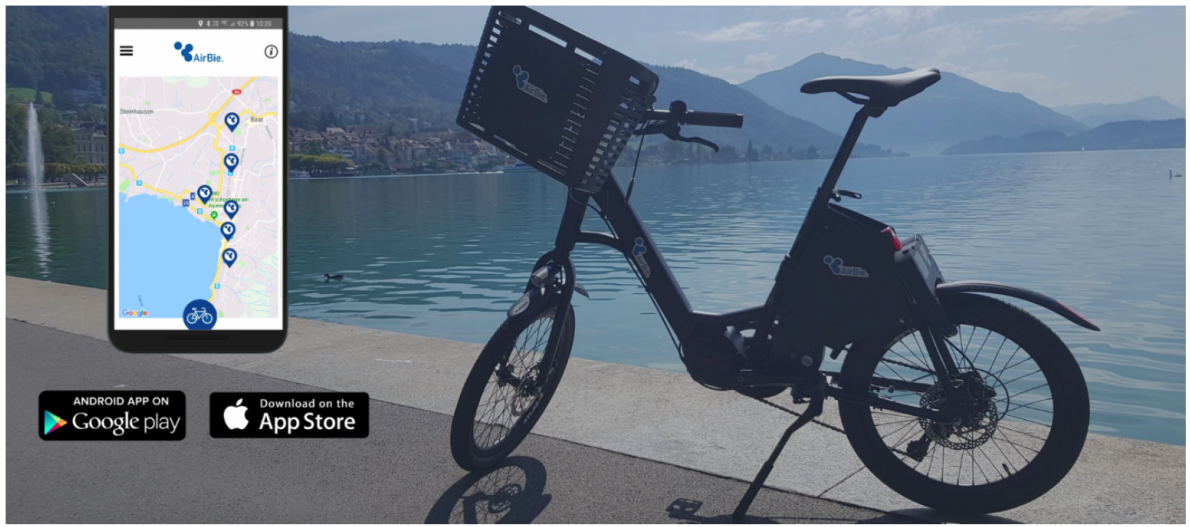
The first e-bike service worldwide powered by decentralized identity

See full article from Nawfal, 2018

AirBie, a crypto bike-sharing service, just launchedthe first e-bike service worldwide powered by decentralized identity



Last November, the Swiss city of Zug officially launched its Zug eID, an opportunity for its residents to register for a decentralized, digital identity powered by uPort.

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Shyft Network

https://shyft.network

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KABN — Blockchain Identity

https://medium.com/@secdegulleri/kabn-blockchain-identity-daf70ee0eb4

KABN NETWORK

KABN is a financial service platform with neo banking type solutions which has received approval by Visa to launch its crypto-linked card and banking walletprogram.

KABN has its private Network which is an integrated suite of financial services that includes the ***Pegasus Flyte Visa Card***, an approved crypto-linked prepaid **Visa** card and mobile integrated multi-currency banking wallet; **KABN KASH**, a robust loyalty & engagement program and the network anchor, *KABN ID*, a patent pending, Always On, GDPR compliant, blockchain & biometrically based, identity verification and validation platform. **KABN ID** is free to use service for consumers & provides continuous monitoring and proof of identity online and in conventional marketplaces.

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Polymath and KABN consortium announcement

https://ncfacanada.org/
polymath-and-kabn-announce-consortium-to-accelerate-the-creation-distribution-and-m

Polymath and KABN Announce Consortium to Accelerate the Creation, Distribution, and Management of Digital Securities Across Multiple Jurisdictions and Platforms

Share / Save

Polymath / **KABN** release | March 11, 2019

TORONTO & SAINT MICHAEL, Barbados & GIBRALTAR--(**BUSINESS WIRE**)--Polymath (**www.polymath.network**), the global leader in software solutions that enable assets to be digitized, distributed, fractionally owned, and ultimately liquidated, has formed a consortium in close collaboration with KABN (**www.kabn.network**), a global financial services platform that has developed, among its suite of products, a patent pending, blockchain based, GDPR compliant, ***Always On***, global identification and accreditation as a support service for investors and other types of contributors.

Polymath is leading the effort to make it easier for organizations to create digital securities from traditional assets through partnerships and a community that supports a transparent and compliant process for issuers and investors. Through its extensive service provider network with firms like KABN, Polymath provides security token issuers with access to top quality service providers.

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Sovrin – Hyperledger Indy

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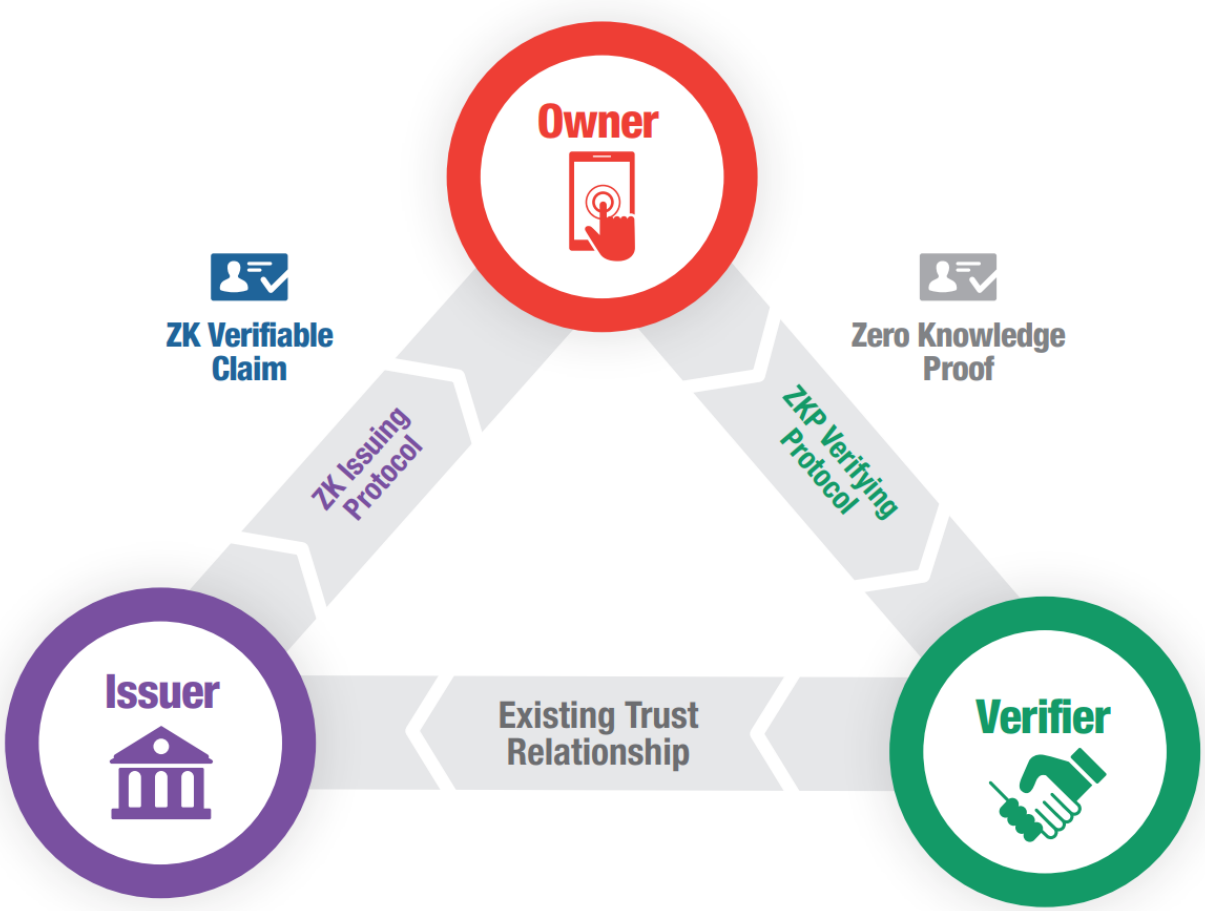
Self-Sovereign Identity

Extract from the white paper from The Sovrin Foundation, 2018



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The Verifiable Organizations Network (VON)

https://vonx.io

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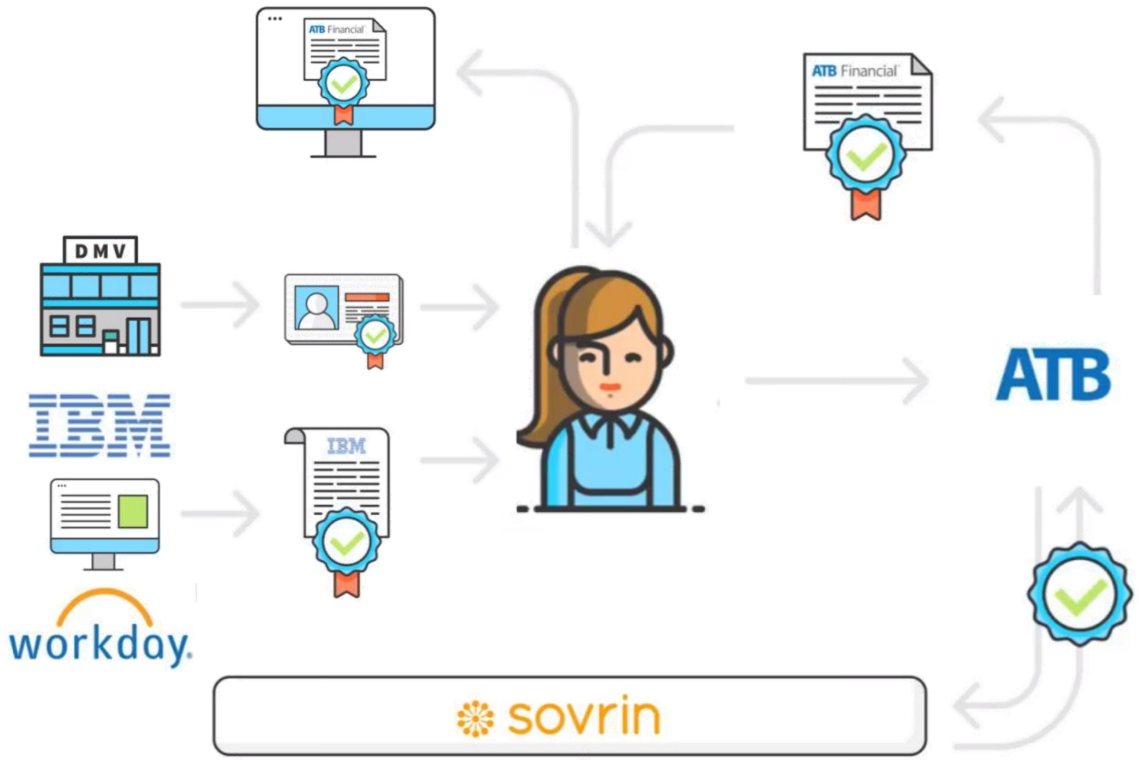
SSI in Alberta



PoC: ATB, Evernym, IBM, Workday:

- Issuing Employment and Drivers License creds
- Sharing with ATB for account opening
- Issuing of Bank account cred

Demonstrating controller/processor employment cred, bank account opening, and account login

SSIMeetup.org

Figure: from Brown, 2019

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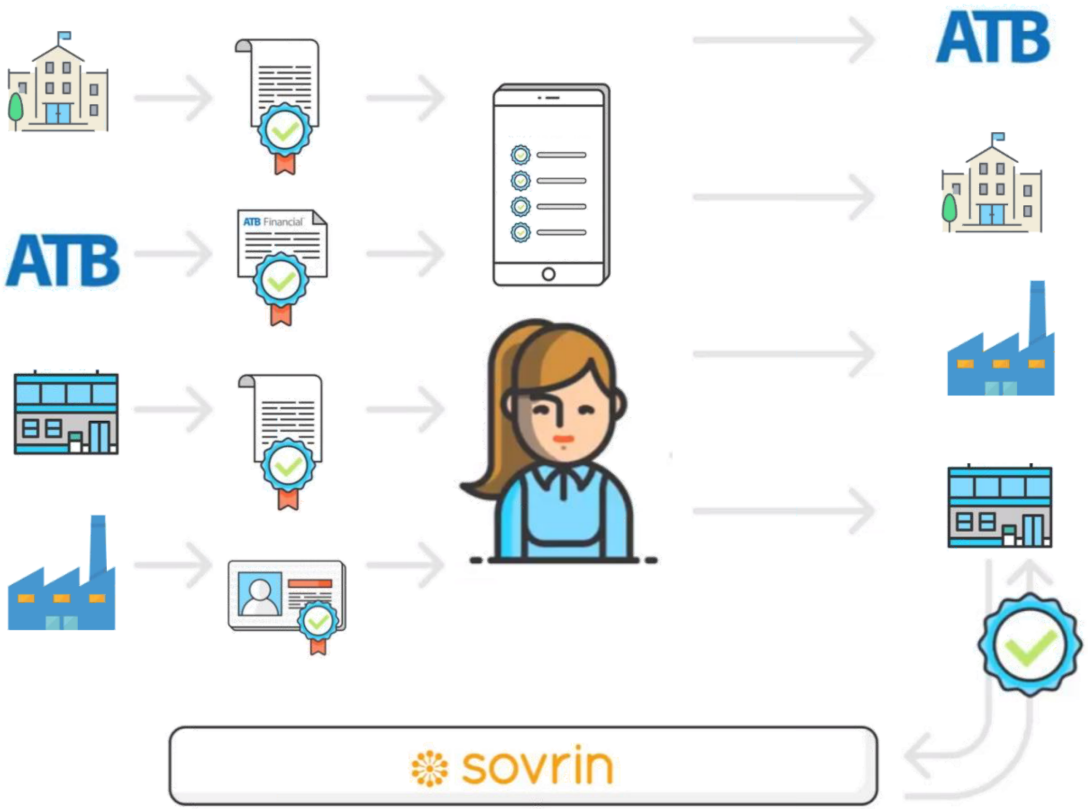
SSI in Alberta



Alberta Credentials Ecosystem:

ATB in leading the engagement of universities, telcos, utilities, insurance, municipal gov and provincial gov

Looking to build out a robust ecosystem issuing and verifying diverse set of credentials

IMEETUP Self-Sovereign Identity SSIMeetup.org

Figure: from Brown, 2019

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The State of Digital Wallets

Darrell O'Donnell, P.Eng.
President & CEO
Continuum Loop Inc.

@darrello

continuumloop

The State of Digital Wallets

Preview of Market Report :
Where the Digital Wallet market is and where it is headed.

IMEETUP Self-Sovereign Identity SSIMeetup.org

Figure: get the draft here:
https://www.continuumloop.com/get-digital-wallet-report

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Other Solutions

We can't cover everything in a single session. There are many other good topics of conversation:

- Civic
- Midata
- 3box
- ...

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Thank you!

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Twitter: @marclijour

www.metameshgroup.com

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