Decentralized Identity for a Decentralized World

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Today

Your Identity == App(username, password)
However

Your Identity  >  App(username, password)
Identity is everything you do

Your Identity ➔ App(username, password)
But our identities are strewn across apps and services

Your Identity ➔ App(username, password)
As a result, our identities are at risk

Unauthorized use or personal data

Endless breaches of personal data

Billions spent on audits

Your Identity ⚠ App(username, password)
Customer needs and asks

**Individuals**
- Privacy and control of my identity and data
- Protection from hacks
- Protection from breaches

**Organizations**
- Trust, but Verify
- Collaborate with everyone
- Reduce risk for GDPR, KYC/AML

**Governments**
- ID for cross border & agency
- Digital ID for refugees
- Social and financial inclusion for everyone
User in control

- purchases
- achievements
- education
- interests
- play
- work
- citizenship

username

•••••••
User in control

username

password
Incubation Hypothesis for Decentralized ID

Each of us needs a digital identity we own, one which securely and privately stores all elements of our digital identity.

This self-owned identity must seamlessly integrate into our lives and give us complete control over how our identity data is accessed and used.
Demo

Own and control your Identity
The User Agent generates keys

User

Identity Hub

Universal Resolver

User Agent

Bitcoin via Blockstack

Ethereum via uPort

Sovrin via Sovrin ledger
Alice creates a Digital ID on the blockchain via Blockstack, Ethereum via uPort, and Sovrin via Sovrin ledger.
The Blockchain returns Alice’s Decentralized ID (DID) identifier

- **Bitcoin** via Blockstack
- **Ethereum** via uPort
- **Sovrin** via Sovrin ledger
…and stores them in Alice’s Identity Hub
Alice signs in using her student credentials

Identity Hub

Universal Resolver

User

User Agent

University

User credentials: user@edu

Password: ********

Blockchain systems:
- Bitcoin via Blockstack
- Ethereum via uPort
- Sovrin via Sovrin ledger
and requests a digital diploma
The University requests Alice’s Digital ID

User

Universal Resolver

Identity Hub

User Agent

University

Please send your Digital ID

Bitcoin via Blockstack

Ethereum via uPort

Sovrin via Sovrin ledger
The User Agent discloses the Digital ID to the University

User

Identity Hub

Universal Resolver

User Agent

University

- **Bitcoin** via Blockstack
- **Ethereum** via uPort
- **Sovrin** via Sovrin ledger
Making DID-based compatible with existing claims

Identity Experience Framework (IEF) enables app developers to transform claims across identity systems. Details available [here](#).
The University sends a digital diploma signed with its digital ID.

The University sends a digital diploma signed with its digital ID.
The User Agent signs and stores it in Alice’s identity hub.
In Summary...

- **Universal Resolver**: For a variety of chains. Registration. Resolution.
- **User Agent**: + service end-point on-chain. Keys generated & stored locally. Data encrypted at edge.
- **W3C Decentralized Identifiers**: DID Authentication.

**DID Authentication**

**People, Apps, and Devices**

**Distributed Systems**

**Blockchains and Ledgers**

- **Bitcoin** via Blockstack
- **Ethereum** via uPort (coming soon)
- **Sovrin** via Sovrin ledger

**In Summary**...
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- **Identity Hub**
  - Stage: Designs in progress

- **Universal Resolver**
  - Stage: Alpha Implementation

- **User Agent**
  - Stage: Working Implementations

- **DID Authentication**
  - Stage: Designs & Prototypes

- **W3C Decentralized Identifiers**
  - Stage: Working Implementations

**Blockchains and Ledgers**

- **Bitcoin** via Blockstack
- **Ethereum** via uPort
- **Sovrin** via Sovrin ledger
- **Sovrin ledger** coming soon

**Universal Resolver**

**Join, Collaborate, Contribute**
The next 3 steps to making the ecosystem real

1. **Ease of use**
   - Registration
   - Key management
   - Zero-knowledge-proof
   - Compatibility
   - Recovery and revocation
The next 3 steps to making the ecosystem real

1. **Ease of use**
2. **Performance & Scale**
   Consistent experience that scales globally including 10s to 100s of thousands per second.
The next 3 steps to making the ecosystem real

1. Ease of use
2. Performance & Scale
3. Join, collaborate, and contribute

Including OAuth, FIDO, JWT, devices, and more
The next 3 steps to making the ecosystem real

1. Ease of use
2. Performance & Scale
3. Join, collaborate, and contribute

Thank you.

OwnYourIdentity@microsoft.com