

Standards for a Self-Sovereign Technology Stack: The Example of Trustee

Interoperability and Decentralisation

MyData 2018

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- Trustee is a tool for sharing and storing health data
- Made by HIE of One
- Free Software
- A prototype of decentralized governance
- One Trustee per person
- Standards-driven
- Health records for homeless people in Atlanta, Georgia

Self-Sovereign

- Personal devices that operate together
- Decentralized groups that bundle policies and compete for people
- No vendor lock-in or walled garden
- User-financed
- Public blockchain model

The Technology Stack

Private / Personal

- Person
- Mobile (biometric)
- Agent (delegation, semi-autonomous)
- Storage



Blockchains / Communal

- Identifiers (write-once, read-many)
- Credentials (verifiable)
- Timestamps (merkelized)
- Finance (network effect)



ethereum



bitcoin


Demo

- Trustee
- uPort
- Health Record
- Consent Table
- Directory

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Scan QR code with uPort Mobile App



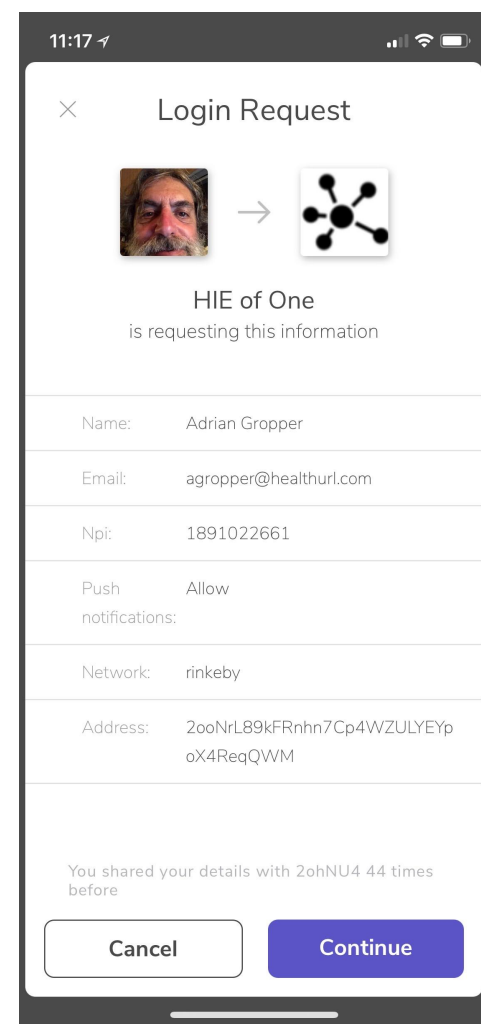
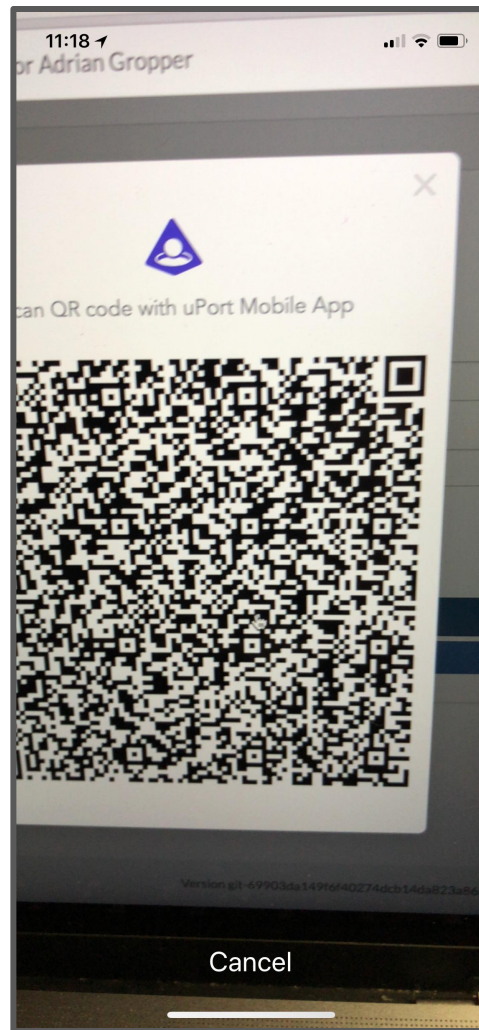
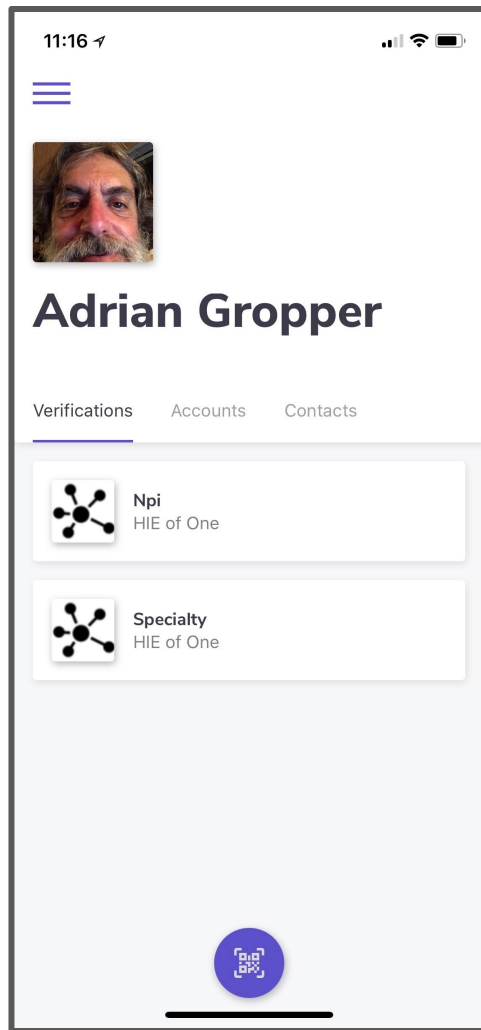
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Adrian Gropper

DOB: June 15th, 1952

Age: 66 Years Old

Gender: Male

Search Chart... 

-  Demographics
-  Conditions 0
-  Medications 2
-  Supplements 0
-  Immunizations 0
-  Allergies 0
-  Alerts 0
-  Orders 0
-  Encounters 0
-  Documents
-  Results
-  Messages
-  Forms
-  Social History
-  Family History
-  Care Opportunities
-  Coordination of Care
-  Billing
-  Payers

Adrian Gropper, 66 Years Old, Male

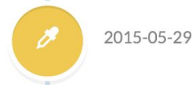


Timeline

New Medication

Omeprazole 20 MG Delayed Release Oral Capsule 20 MG, TAKE ONE CAPSULE(S) DAILY; Obtained via FHIR from Weill Cornell Medicine for N/A

[Read more](#)



2015-05-29

2011-04-06




New Medication

Vitamin B 12 1 MG Oral Tablet 1 MG, 1 TABLET DAILY; Obtained via FHIR from Weill Cornell Medicine for N/A

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Nosh

Tasks

Messaging0

Schedule

Adrian Gropper

Adrian Gropper

DOB: June 15th, 1952

Age: 66 Years Old

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Search Chart...

Demographics

Conditions0

Medications2

Supplements0

Immunizations0

Allergies0

Orders0

Encounters0

Documents

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Care Opportunities


Coordination of Care

Billing

Payors

Adrian Gropper, 66 Years Old, Male

Consent Table



Timeline


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Medicine for N/A

Read more

Consent Table

2011-04-06






New Medication













Vitamin B 12 1 MG Oral Tablet 1 MG, 1 TABLET DAILY;
Obtained via FHIR from Weill Cor













10

Consent Table

Click on a  or  to change the policy. Click on a **policy name** for for information about  designates a SMART-on-FHIR resource which has the following limitations:

- No Refresh Tokens
- No Dynamic Client Registration
- and No User-Managed Access - therefore you cannot change access polices for t

Resource	UMA	
Directory - HIE of One		
Patient NOSH for Adrian Gropper		
 Weill Cornell Medicine	  	
 Medicare Benefits		
Connect to your hospital EHR Account		
Connect to your Medicare Benefits Account		
Connect to additional resources		

Resource	UMA	Dir	Directory - HIE
Directory - HIE of One			UMA-Direct
Patient NOSH for Adrian Gropper			
 Weill Cornell Medicine			
 Medicare Benefits			
Connect to your hospital EHR Account			
Connect to your Medicare Benefits Account			

Search Directory



Participating Patients

+ ADD A PATIENT

Filter Results...

Name	Resources	Last Activity
Pending Trustee Creation		
Pending Trustee Creation		
Pending Trustee Creation		
as5-gmail.com	Patient NOSH for Adrian Gropper	2 weeks 3 days 7 hours 21 minutes 44 seconds ago
shihjay2	Patient NOSH for Michael Chen	2 weeks 4 days 13 hours 37 minutes 22 seconds ago
Edie	Patient NOSH for Edith Pargh	1 week 5 days 13 hours 10 minutes 33 seconds ago
	Patient NOSH for Daniel van Leeuwen	1 week 4 days 13 hours 11

as5-gmail.com

Patient NOSH for Adrian Gropper

2 weeks 3 days 7 hours

Trustee

Trustee is a semi-autonomous **agent** that exerts power over how one person's networked data is used by others. It's built around a standards-based authorization server.

At the authorization server, would-be users of one's data present standards-based **credentials** along with their standardized data request.

In our example, a doctor presents their **blockchain-secured** licenses to a Trustee that manages a standard health record.

Decentralized Governance

A **large academic medical center** is eager to test new tech for a homeless health record. Credit the allure of blockchains and a desire to better control their health records vendor.

Shifting from a purely institutional technology mindset to sharing control with technology that is **decentralized and community-driven** and self-sovereign patients is mostly an exercise in risk management.

Technologies like Trustee, possibly featuring decentralized governance and personal agency, will soon be handling the health records of more than **500 million Indian citizens**.

Conclusion

- Trustee provides an example of decentralized governance
- Also an example of self-sovereign technology for each user
- Trustee itself will be used for Homeless Health Records in Atlanta, GA
- Similar technologies will likely be used in India
- These principles apply to personal data, anywhere, the GDPR we want