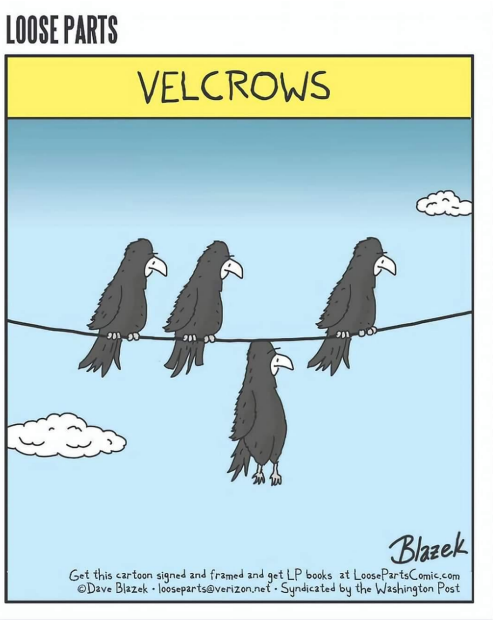
OBADA

the **O**pen

Blockchain for

Asset **D**isposition

Architecture



DAO meeting

April 7, 2022

4/7 Agenda

Agenda

Existing Business

- Administrative
- Finance Update

(20 min) New Business

- Cosmos Production Launch
  - Final MVP Development Plan

Foundation Teams

- ISO Standards Team (Foundation)
- Marketing Team: G
- Documentation Team (Forum)

DAO Tech Teams (implementation)

- Node Installers
- PoC 1: Physical Layer (USB Stick)
- PoC 2: Trust Anchors
- PoC 3: Inventory Systems “Carfax”

Documentation: The Forum Q&A

Administration

- Attendance
- Legal Clauses
- Announcement of any Proxy votes for this meeting
  - To indicate a proxy vote, please email Mark/Rohi prior to the meeting with whom your proxy vote will be. Proxy voters must be DAO members.
- Approval of March 3, 2022 minutes
  - 1st: Jason; 2nd: Omar Minutes approved without dissent.
- Finance Update

Finance Team Update

Finance & Accounting (Joe)

Finance Team

- Jen, Joe, Neil, Rohi

Founding and Round A1 (2020/2021)

- $45,000 raised from 9 members

Round A2 (2022)

- $70,000 raised from 14 members
- $62k remains

Round B (mid-2022)

- $385,000 from ~77 members

2022 (Round A2) Budget: $70,000

- Tech (Platform Development) $30K-$40K
  - Back-end Dev- $20K
  - Front-end Dev - $5K
  - Tech Writer - $5K
- Governance (Legal/Accounting) $10K
- Operations/Facilitator $10K
- Reserve $10K-20K
- Overhead ~$5k year (Hosting, Dues, Email, etc)

To Do: Accounting (Aprio) / Legal (Montague)

- File taxes for OBADA orgs
- Refile corp docs
- Ratify Platform agreement

DAO Membership Attendance 4/7/22 meeting

Techreuse	Charles Brennick	CELX Advisory, LLC	Guennael Delorme
Good Point Recycling	Robin Ingenthron	E-Reuse Services Inc.	Sarah Kim
Tradeloop	Rohi Sukhia; Adam Cirrone	iFixit	Kyle Wiens
Rhapsody Ventures	Vincent Lui	JT Environmental Consulting, Inc.	Jason Teliszczak
The Broker Site	Brian Altman; Pepe Bermudez	The Repair Association	Gay Gordon-Byrne
World Data Products, Inc.	Neil Vill	XS International, Inc.	Todd A Bone
USODY	David Franquesa	Dynamic Lifecycle Innovations	Bobbie Suhr
ASCDI	Joseph Marion	Eagle Advisors, LLC	Dirk Wray/Seve Romo
Network Commerce International	Billy Marion- Joe Marion	First Class Networks	Craig Rabe
U Nevada	Ron Lembke	Greentec	Tony Perrotta
DMD Systems Recovery, Inc.	Aaron Zeper	Quantum Lifecycle Partners LP	Gary Diamond; Afshin Tabrizi
Facilitator	Mark Schaffer	Unduit	Omar Javed

Tech Teams

https://docs.google.com/spreadsheets/d/1X3CkorSN7SRGYELwJERXgjc27GLUWjpp-ekYl1HCMjg/edit?usp=sharing

Node Installation Team

Goal	Install the Full Core and/or Local Playground to your local server.
Status	02-18-22: Ready to deploy. No further support from OBS needed.
OBS Resources	No longer needed
Documentation	(insert link to video, github docs)
Team Leader	TBD Nevin

Team	Company	Tech Contact	Role	Status
1	WDPI	Nevin	implementer	done
2	Tradeloop	Rohi / Brian	implementer	needs update
3	TBS	Brian	implementer	
4	ASCDI / NCI	Dennis	implementer	
5	Usody	David	implementer	
6	UNR	Michael	implementer	
		Adam Clark		

PoC 1: Device Interface Team (a.k.a. "device fingerprint tean

Goal	Create OBIT from device firmware (fingerprint). Use API to post drive
Status	02-18-22: OBADA code is done. Andrii assisting integration.
OBS Resources	Andrii assisting team
Documentation	(insert link to video, github docs)
Team Leader	David from Usody

Team	Members	Tech Contact	Role	Status
1	Usody	David	implementer	in development
2	TechReuse	Charles	implementer	in development
3	Greentec	TBD	tester	
4	Unduit	TBD	tester	

PoC 2: Server Interface Team (a.k.a. "Carfax Team")

Goal	Connect your inventory system via API to manage OBITs
Status	02-18-22: OBADA APIs are done.
OBS Resources	Andrii will be needed to assist integration
Documentation	(insert link to video, github docs)
Team Leader	TBD

Team	Members	Tech Contact	Role	Status
1	Usody	David	implementer	
2	TechReuse	Charles/TBD	implementer	
3	Tradeloop	Rohi/Brian	implementer	
4	TBS	Brian		
5	WDPI	Nevin		
6	Eagle Advisorts	TBD		
7	GPR	TBD		
8	Greentek	TBD		
9	DMD Systems	TBD		
10	Unduit	TBD		

PoC 3: Trust Anchor Team

Goal	Issue and resolve Proof of Identity for users via JWT Tokens
Status	02-18-22: OBADA APIs are done.
OBS Resources	Andrii will be needed to assist integration
Documentation	(insert link to video, github docs)
Team Leader	TBD Dennis

Team	Members	Tech Contact	Role	Status
1	ASCDI	Dennis	implementer	
2	Tradeloop	Rohi/Brian	implementer	
3	TBS	Brian	implementer	

Antitrust Statement

Because this meeting involves representatives of competing businesses, it is important that I get everyone's agreement before we begin so that the meeting will be conducted in full compliance with antitrust laws. We must avoid any comment or action that encourages joint action by participating firms to restrict their competition.

Patents/IP

Participants shall inform OBADA of the identity of each holder of any potential IP or Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents

Participants should inform OBADA of the identity of any other holders of potential Essential Patent Claims

Communicating to OBADA

Cause an Letter of Assurance (LOA) to be submitted to OBADA; or

Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or

Speak up now and respond to this Call for IP and Potentially Essential Patents If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to OBADA

DAO 2022 TIMELINE (Mark)

1H 2022: "Progressive Decentralization"

- DAO is current run by foundation, facilitated by Mark Schaffer

To do

- Governance
  - Online DAO voting
- Tech Teams
  - "ITAD Services Demo" on Cosmos Testnet
- Standard & Legal Docs
  - Draft of Standard
  - Platform Agreement
- Marketing
  - Plan for Round B Rollout

2H 2022: "Sufficient Decentralization"

- Launch Round B
  - ~77 more DAO members for 100 total
  - Issue 16,000,000 OBD tokens total

2023: Production Launch

- Issue the final 16,000,000 OBD tokens at $1 each for general users

Development Plan
Cosmos Production version

PoC Continuation

PoC 1: Connect Devices

- Complete it.

PoC 2: Trust Anchor

- Integrate it into client systems
- Implement verification requests:
  - i.e. how to handle “Dear ASCDI, this is the FBI. Who owns this device?”

PoC 3: Server

- Server Helper App w/ CSV
- Storing private keys simply
  - Improve security later
- Integrate to inventory systems.

Production Version Development

Necessary System Functions

- **Gas Mechanism**
  - Fees, collection, distribution of collected gas
  - Requires OBD Token System to be set up
- **Nodes and PoA Consensus**
  - Some ID for node rights (most likely a Trust Anchor function)
  - PoA Consensus mechanism must be worked out.
- **Securing private keys in an inventory system**
  - Need to ensure security

Required (Minimum Viable) Features

- **A metadata schema.**
  - So computers can read/ search the data.
- **A method to encrypt the obit data.**
- **A "valet key" method.**

FUTURE / Other

- DID Registry / Interoperability
  - To be compliant to the pNFT standard

Data Schema

The Need for a Metadata Schema

Our OBIT is like a box of files

- with no labels!

The files could be anything

- Pictures
- Business Documents
- Service Records
- Proof of Events

Example problem this creates

Q: Has the drive been wiped?
A: I dunno, read through every file and see what's in there!

Proposed Solution: Stick a file list to the box

Metadata - File List

File 1: Functionality Report signed by Usody
Result: Tested Good

File 2: Drive Wipe Certificate signed by Techspec
Result: Wiped to NIST 82100

File 3: Service Records signed by World Data
Result: Added 8GB memory

ISSUE: This list must be small, to store it on-chain

Outside the box
- So you can tell what is inside

And “in" the obit.
- So you can tell what is inside.

Now we can query the obit
- without trying to read each document
- *enabling zero-knowledge proofs*

Metadata could be reproduced in a QR code
- If kept to 4296 characters
- 12N can help
- We’ll need to create ID’s for each item.

4) Now we have Cosmos, but no "Server Helper".

So now we have a "real" blockchain with Cosmos. But it does NOT include the functions of the server helper. So we are discussing trying to connect Cosmos to an inventory system, which will be a nightmare without the Server Helper. How did we forget that we have this?

And now we ALSO have to add a wallet to support the "real" blockchain.

OBADA Open Blockchain for *Asset Disposition* Architecture

Cosmos Implementation

No Server Helper, no DID Registry. Needs a wallet somewhere.

```
Cosmos NFT

{
  "class_id": "OBT",
  "ID":  "did:obit:12345",
  "uri": "",    (FUTURE: link to OBIT Registry)
  "uri_hash": "",
  "data": {

      The OBIT  (per DID method)
      • On-chain data
          o  encrypted keystore
          o  On-chain metadata
      • Links to data
      • Roothash

  }
}
```

The OBiT data is wrapped inside a Cosmos NFT.

No DID Registry is used.

3

The OBIT

- Links to Data (link1, link2.. link n)
- Keystore (key1, key2.. key n)
- Metadata (info1, info2.. Info n)
- metadata_schema_used="obada" or "iso"

Or alternatively

The OBIT

- Links
  - link 1; key1; metadata1,
  - Link2; key2; metadata2,
  - …

To do this, we need to ratify two “lookup tables”.

Two Lookup" tables.

1. **Maybe “Link Purpose”**
   a. **Document Types (“Data Object”)**
   b. **or “Link Type” = http, ftp, did, gopher**
      1. Proof of Data Destruction
      2. Functionality Report
      3. Image of Asset

2. **Document Results (“results codes”?**
   1. Data Destruction (NAID get codes)
      a. Drive Wipe Success
      b. Drive Wipe Failure
      c. Drive Wipe Other
      d. Wipe Method = NIST 1002
      e. Wipe Method = DOD 198282
   2. Service Record (use SIA codes?)
      a. Replaced CPU
      b. Device works OK
      c. whatever

Proposal

1) We start with the two tables on the left.
   a) Add one thing at a time, as we implement them
   b) Is there some standard?
2) **This is a job for 12N**
   a) Implement as 12N data
3) Target 4129 characters of metadata
   a) which means it will fit in a QR

Propose: the Documentation committee picks up responsi

- **MainIV to coordinate with PoC 1**

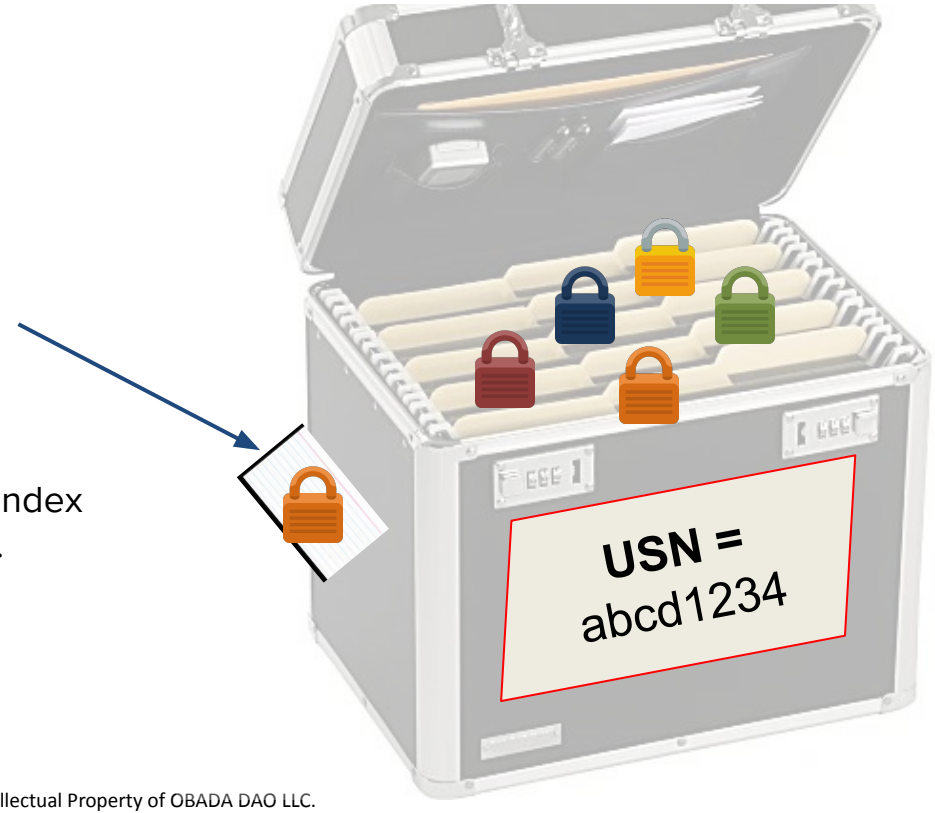
ISSUE: One OBIT = MANY passwords

<u>Each file</u> can have its own password

- One obit = MANY passwords.
- How should people store them?

One solution: on-chain "Keystore"

- Encrypt each password with a "master password"
- List all the encrypted passwords on an index card and attach it to the side to the box.
- **Now a single password can be used!**
  - **Call it the "Data Key"**



Encryption of Data

Data Key (define term?)

- Opens all obit data
- Encryption method up to the client
- Simple PoC implementation is to use the Cosmos key as the Data Key (same key)

But Transferring data is non-trivial

- The receiver must receive unencrypted data.
  - But the sender can't send them the passwords.
- They must then re-encrypt it using their own keys.
- **It's most likely going to be a two-step solution**
  - Valet key method?
  - Needs to be flushed out.

pNFT

- Controlled via **Cosmos Private Key**

OBIT DATA

- Controlled via new **Data Key**
- On-chain metadata
- Links to data objects
- **Keystore** (data key1, key2, key3)

ISO AHG3

“The pNFT Standard”

Representing physical assets as NFTs (non-fungible tokens)

update

The three sections of the pNFT Standard *Now with semi-official words!*

1.0 A data model which consists of deterministic, reproducible formulas to create a unique identifier for a unique physical asset, and to cryptographically tie this identifier to data about the asset.

- *i.e. "how to create the digital representation of a physical asset."*

2.0 Real-world processes for machines, humans, and trust anchors to provide digital proof of real-world events, facts, and information about, or related to, a specific physical asset.

- *i.e "how to verifiably tie the physical asset to its digital representation."*

3.0 A protocol to provide standard ways to access the digital representation in a decentralized registry, and for using the representation in a supply chain system or as a primitive component to enable pNFTs.

- *i.e. "how to make the digital representation interoperable across different systems."*

AHG3 Update

Committee: Rohi, Mark, Ron, Leandro, Jason

- The first AHG 3 meeting on April 13 (next Wednesday)
- We've had several pre-meetings to prepare. Our first-meeting strategy is to NOT advocate any solution. To instead lead them through our thought process.

Presentation Overview

1. Problems our industry faces, and how blockchain can help.
2. How any solution could be used by any other industry that deals in unique physical assets
3. The three specific things that need to be standardized to enable any blockchain solution, and to make sure they are interoperable.

Marketing Team Update

Marketing / Adoption (G)

- Many thanks to everyone who has shared their company blurb & logo. Here are the ones I have so far:
  - DMD (Aaron Zepper)
  - TechReuse (Charles Brennick)
  - JT Environmental Consulting, Inc (Jason Teliszczak)
  - TheBrokerSite.Com (Brian Altman)
  - UNevada (Ron Lembke)
  - ASCDI (Joe Marion)
  - Equipment Trading Network (Joe Marion)
  - XSi (Todd Bone)
  - E-Reuse Services (Sarah Kim)
  - Greentec (Tony Perotta)
  - Eagle Advisors, LLC (Seve Romo)

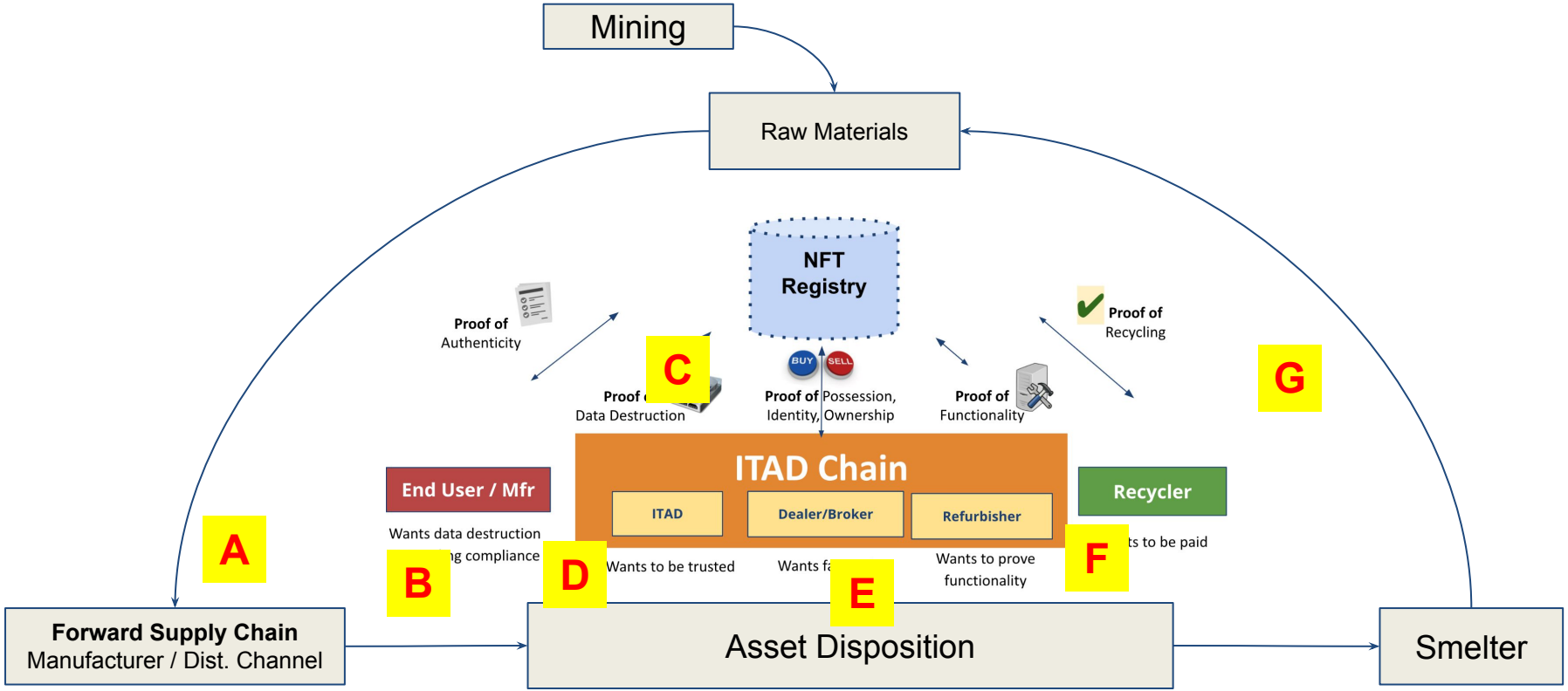
- Apologies if you have sent to me and your name isn't here. Resend / let me know, I'll get it right
- Obviously, if you haven't sent me the information… you know what to do :) guennael@CELXadvisory.com
- These logos & blurbs are designed to go on the OBADA.io website, in the DAO Members section
  - https://www.obada.io/foundation/dao/members/
  - Will be added shortly when Adam comes back from paternity leave

What else is the Marketing committee up to? (G)

- We are developing scenarios and creating case studies
- Will be used to help tell our story and go after Round B
- 7 scenarios were identified initially, but open for more
  - See next slides for the 7
  - Planning to address the following questions to begin with:
    - Who are the core stakeholders
    - Problem statement: what pain point are we trying to solve
    - Logical process point of entry
    - How would Blockchain help solve the problem
    - How would solving the problem benefit this group? E.g.,
      - Compared to current solutions
      - Financial benefits
      - Others
- The committee now has its own Google workspace + Slack channel for communication, and standing bi-weekly meetings
- Thanks to those of you who have offered to help, we would be happy to see more volunteers

OBADA

Open Blockchain for *Asset Disposition* Architecture

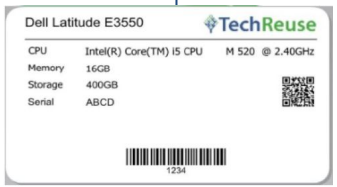


POC 1

PoC 1 Overview

TechReuse/Usody machine-connected software reads device data directly.

Sends OBIT data directly to blockchain



We are now complete to here?

OBADA API

Cosmos Validator Node

Application Specific Code

API Endpoint

Cosmos

OBIT stored On-Chain

PoC 1: Connect Devices (David/Charles)

Integration of a Inventory Management System based on a machine-connected software connected to devices

POC 1 Part A (passed) Collect the OBiT data. Link to evaluation.

- Validate the "operating of register" of the Live USB
- Obtain the make, model, and serial number from the firmware

POC 1 Part B (not started)

- Integration of an Inventory Management system with OBADA Blockchain (OBiT DID is generated) per Obada Standard 1.1
- Validate the “operating of data wiping” of the Live USB

POC 1 Part C (not started)

- Attach Data Payload: A wiping report is “attached” as a document to the DID per OBADA Standard 1.2.
- **Create a “wrapped OBiT”.** Embed the OBiT data into an ERC-721 NFT structure. **Mint a pNFT** on the Cosmos Testnet.

POC 2

Trust Anchor Purpose

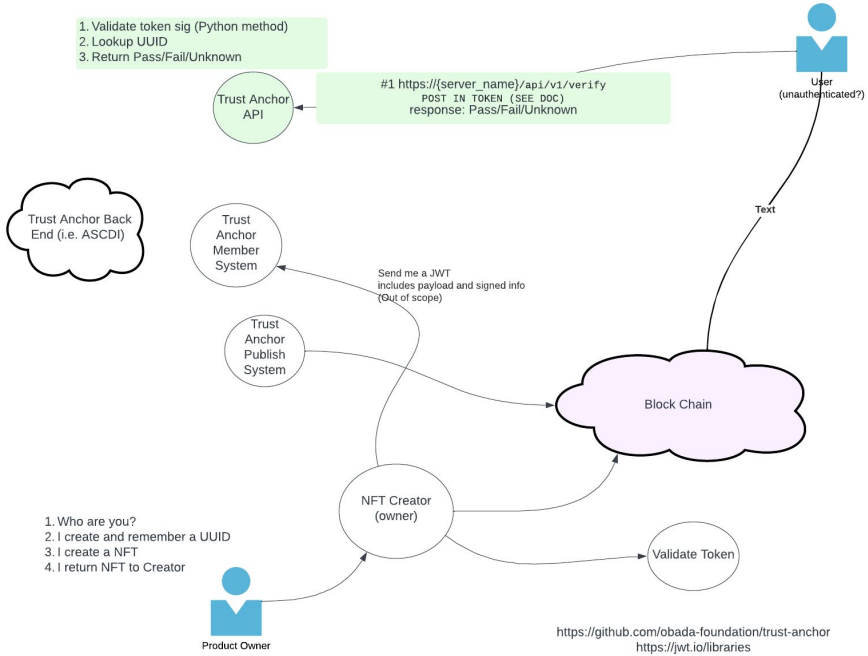
1) **The Trust Anchor provides "Proof of Identity" to an asset owner**
   a) It looks like this:
   eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJzdWIiOiIxMjM0NTY3ODkwIiwibmFtZSI6IkpvaG4gRG9lIiwiaWF0IjoxNTE2MjM5MDIyfQ.SflKxwRJSMeKKF2QT4fwpMeJf36POk6yJV_adQssw5c
   b) Only the Trust Anchor (only) can decode it.

2) **The owners adds this Proof of Identity to their obits.**
   a) To prove their identity is verified, without revealing it.

3) **Example usage:**
   a) To maintain chain-of-custody
   b) To respond to legal requests
   c) So the asset can clear customs
   d) To facilitate the safe sale/processing of the asset
   e) To prove compliance to standards such as R2

PoC 2: Trust Anchors (Dennis)

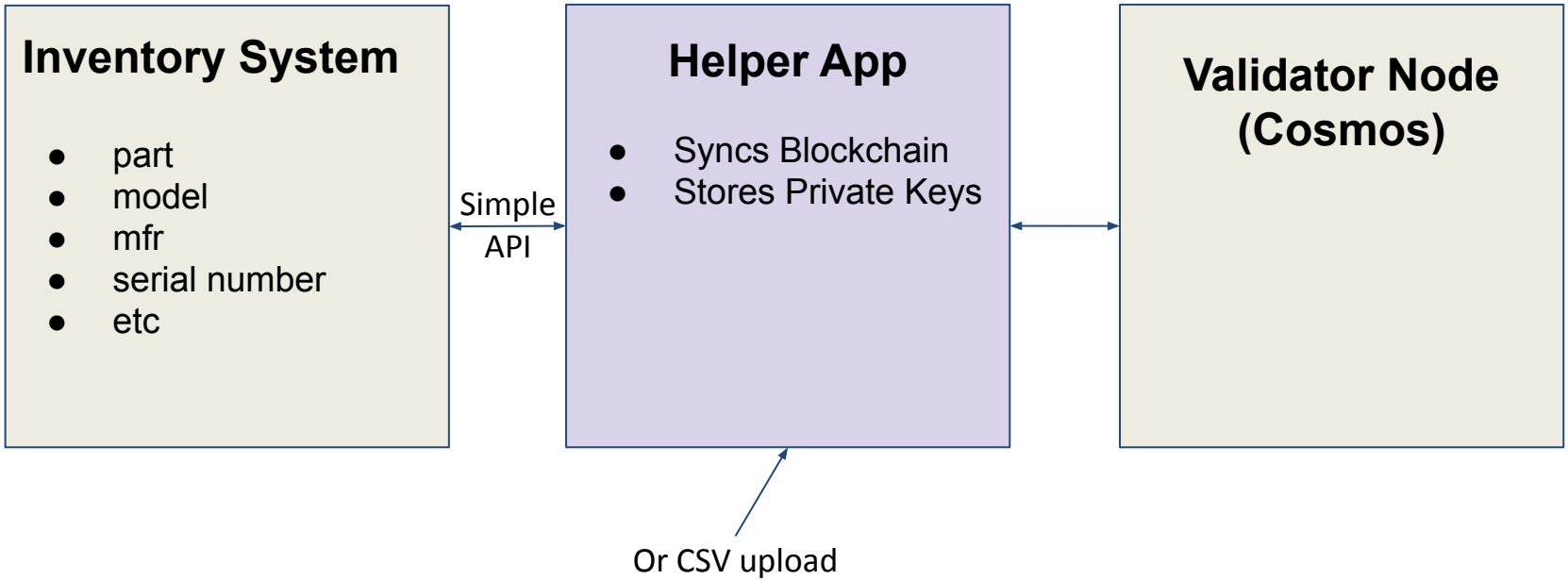
- We met and agreed on the overall high level system that are part of a Trust Anchor system and agreed that the first step would be to prove that a user can call a Trust Anchor REST endpoint and have a token verified.
- Dennis is writing the first one in Python using flask based on a set of test Tokens provided by Andrii.
- Once this is done it will be made available on the internet for others to test
- Code will be uploaded to GitHub for others to use or review as a reference.
- Next step will be to crate in a few other languages (PHP / ETC)
- Note: Area in green shows where this test comes in the overall plan.



POC 3

Server Helper:

Middleware to synch an inventory system to the blockchain



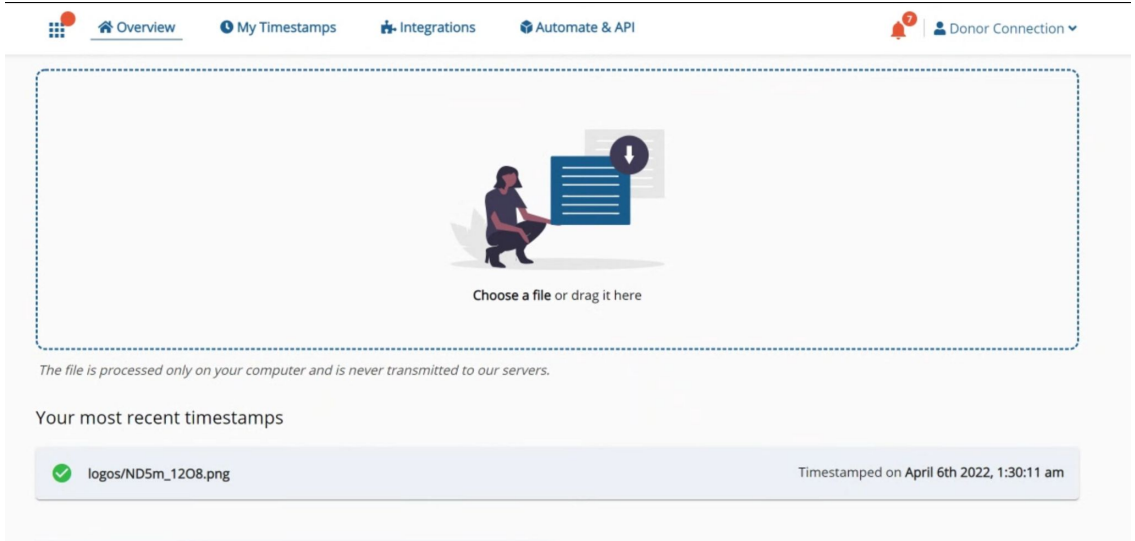
Server Helper Front-End: a CSV file upload

Upload CSV

- mfr, part, serial number, etc.

Get back a csv of obits

- with private keys*



Import to your system

- Or sync directly to the blockchain from the helper

**suitable for development, but not secure for production*

Documentation Team

Forum

See https://obada.trydiscourse.com

How can we start using this?

END