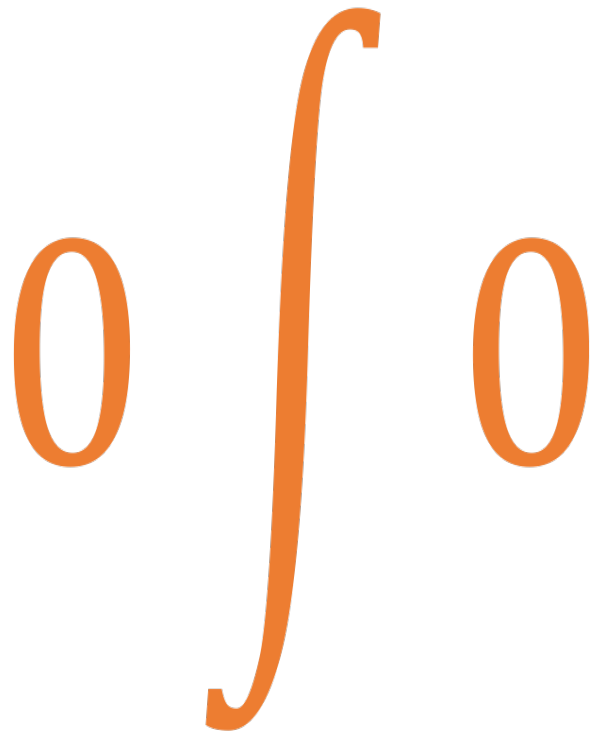


Open Science Organization

Gajendra Jung Katuwal

05/21/2018

Technical design v0

Design Challenges

1. Design of Idea Class
    1. Minimalistic design
2. Idea Ownership (URI <> Idea)
    1. Stored as a DHT
3. Idea-Idea interaction i.e. idea flow (Idea <> Idea)
    1. This logic should be modular and should be separated from the DHTs
4. Dependence on IPFS or similar tech stack for
    1. Versioning
    2. P2p storage
5. Assumption of content addressing
    1. Hash(file) = storage address

Unique Researcher Identity (URI)

- URI should be
  1. Human-meaningful
  2. Decentralized
  3. Secure
- URI can use decentralized namespace (like in Blockstack) to break the Zoko's conjecture
- Priority on using the existing decentralized identity systems such as uPort, civic (?), etc.

Mapping from real world identity of a research to a unique identity in OSO i.e. URI

Identity	URI
.	
.	
Alice Thapa, RIT, Rochester, NY	Alice_thapa99
Bob Smith, MIT, Boston, MA	Bobsmith
.	

URI profile

URI←→ URI universal profile

URI	Reputation scores	Expertise score
Alice_thapa99	(4, 5, 3)	
..	..	..

- URI profile will be stored as a DHT
- Different domains, clusters, etc. can have different child DHTs
- All child DHTs will reference to the universal DHT

URI←→ URI domain profile (e.g. genetics)

URI	Reputation scores	Expertise score
Alice_thapa99	(5, 5, 4)	4
..	..	..

URI←→ URI domain profile (e.g. economics)

URI	Reputation scores	Expertise score
Alice_thapa99	(2, 2, 3)	3
..	..	..

OSO Token Ownership in a blockchain

Design #1: tokens in other blockchains (Ethereum)
Design #2: tokens in a OSO child chain anchored to Ethereum (e.g. Plasma)
Design #3: tokens in Native blockchain

uport
URI= bobsmith

Dr. Bob Smith has the private key of the wallet 0xff holding 50 OSO tokens

Token ownership of URI

public key	Wallet address	OSO
	0xee..	10
F903kdfj33..	0xff...	50
	0xgg89...	100

URI= Alice_thapa99

uport

Alice Thapa has the private key of the wallet 0xee... holding 10 tokens

Token ownership of Idea

Idea	Wallet address	OSO
Fty9908...	0xgg89..	100

Dr. Bob Smith and his PhD student Alice Thapa jointly own the idea **Fty9908....**

Idea Class

Name	Hash	Metadata	Wallet Address
‘cool idea’	56tyyiufk	A list	
..	..	..	

Wallet address(where OSO tokens are stored) associated with the idea.
Owned by URIs

Idea content (publication, data, figures, website, etc.

Stored in a p2p network

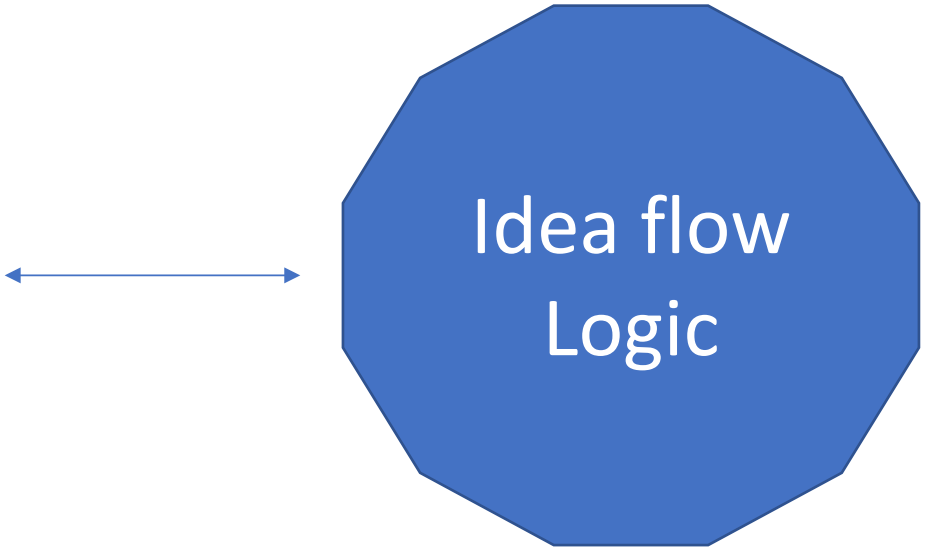
Human friendly unique name of the idea

Open questions?

1. Design of Idea class
   - Use of something like DCMI but more powerful and general purpose
2. How do we handle the intermediate states of the Idea?
   - Is it solely on author to categorize the states as milestones and intermediate
   - Should we solely depend on something like IPFS to track the state of an Idea? Or should we have another DHT just for it?

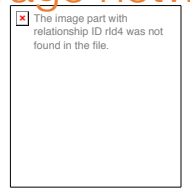
Idea Ownership

Wallet Address	Owner
‘cool idea’	bobsmith
’cooler idea’	[<alice_thapa99, 0.3>, <bobsmith, 0.7>]



Interplanetary Idea System

Identity	Naming	Resource Routing	Storage
Decentralized Identity Systems	Decentralized Name Space	Distributed Hash Table (DHT)	P2p storage network



Real World Identity ←→ OSO identity (URI)

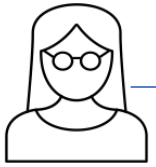
URI ←→ Ideas ←→ Storage of Ideas

URI=bobsmith

URI←→ URI profile

Dr. Bob Smith, Prof. at RIT, Rochester NY

Idea←→ Idea Profile



URI=alice_thapa99

Idea←→ Idea

Alice Thapa, PhD student at RIT, Rochester NY