Beyond Crypto: Blockchain for Urban Development

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MINETA TRANSPORTATION INSTITUTE

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Blockchain and Distributed Autonomous Community Ecosystems:

Opportunities to Democratize Finance and Delivery of Transport, Housing, Urban Greening and Community Infrastructure

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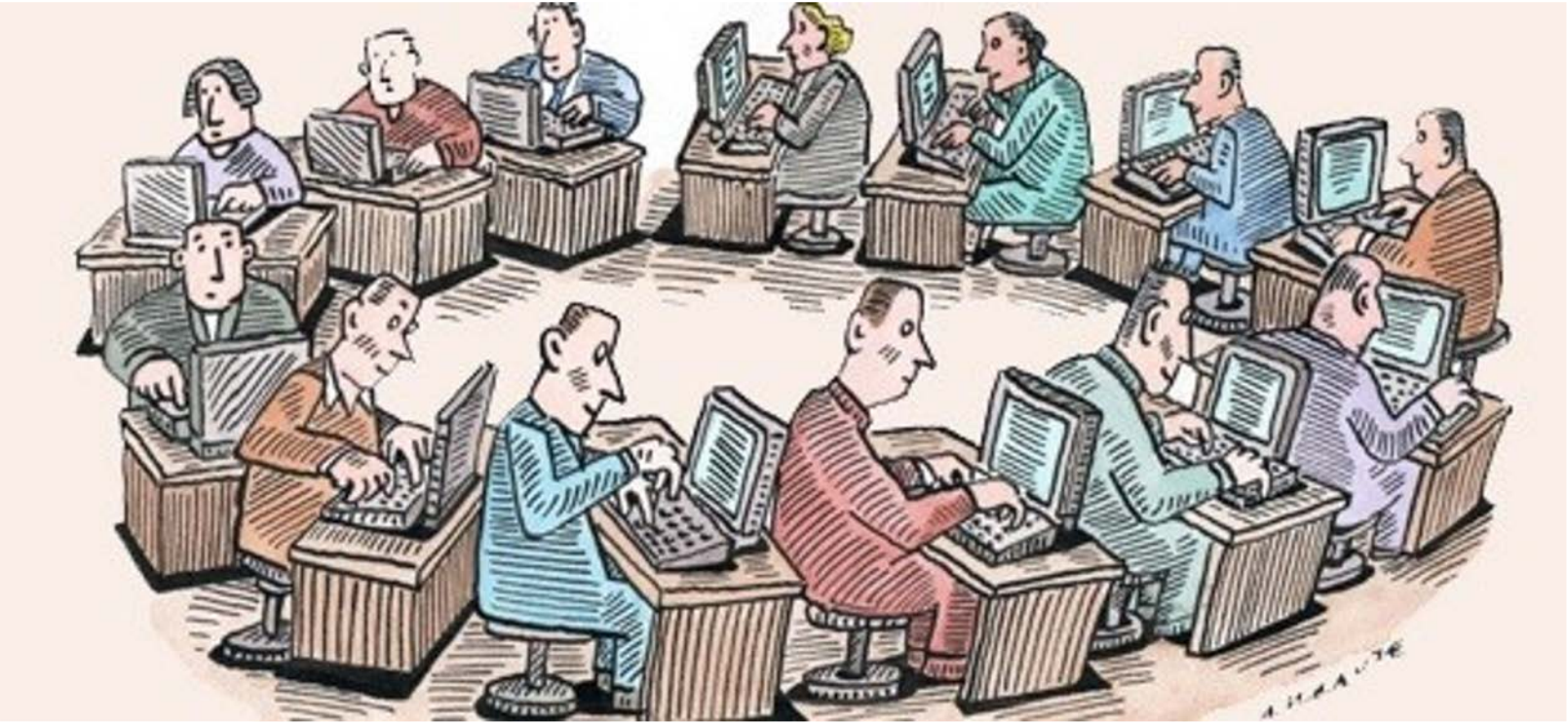
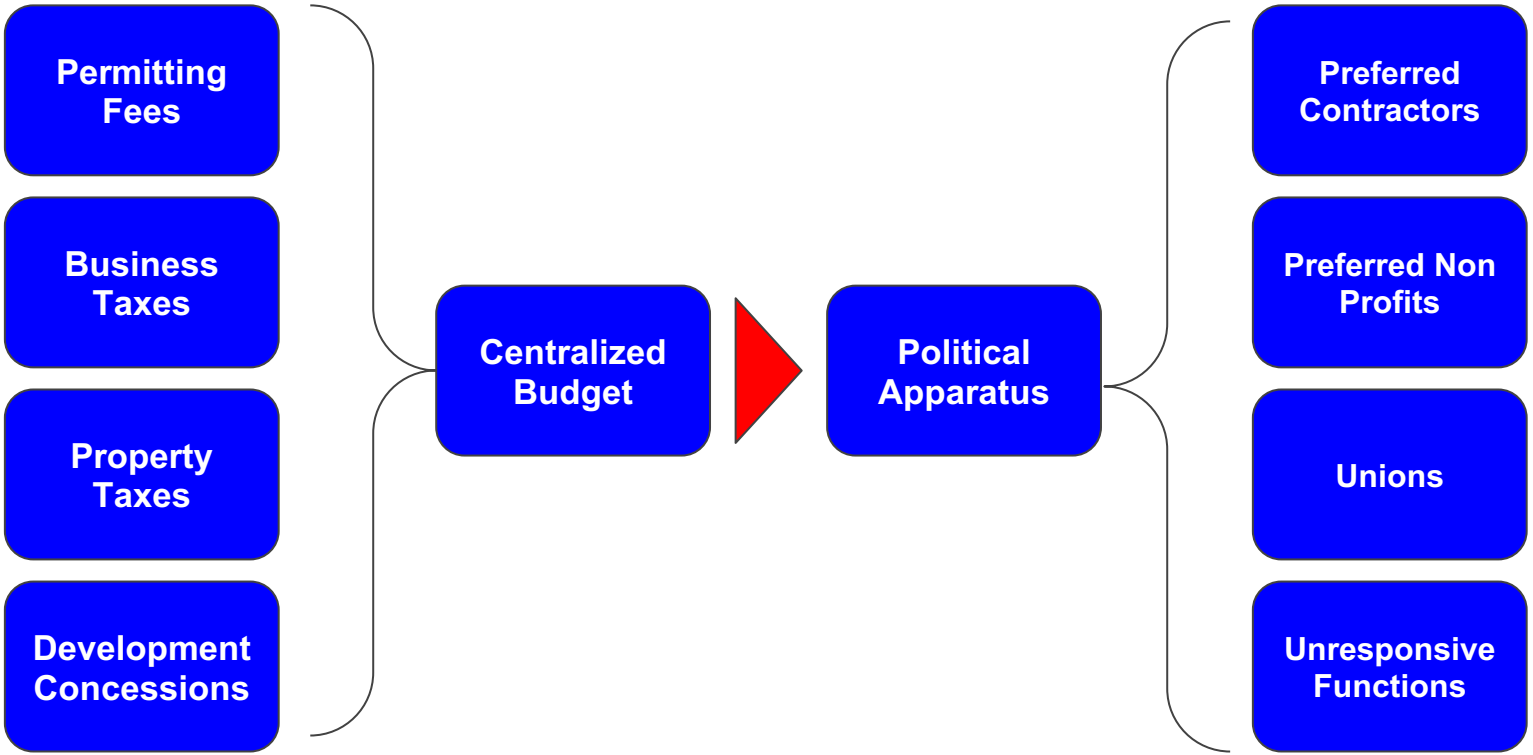
The Problem

1. Government that doesn’t work
2. Government that seems to be unresponsive
3. Government that appears to be incompetent
4. Worse, government that seems to be corrupt or captured by special interests
5. Government that is too centralized with a bloated bureaucracy that can’t meet basic needs

Current Solution

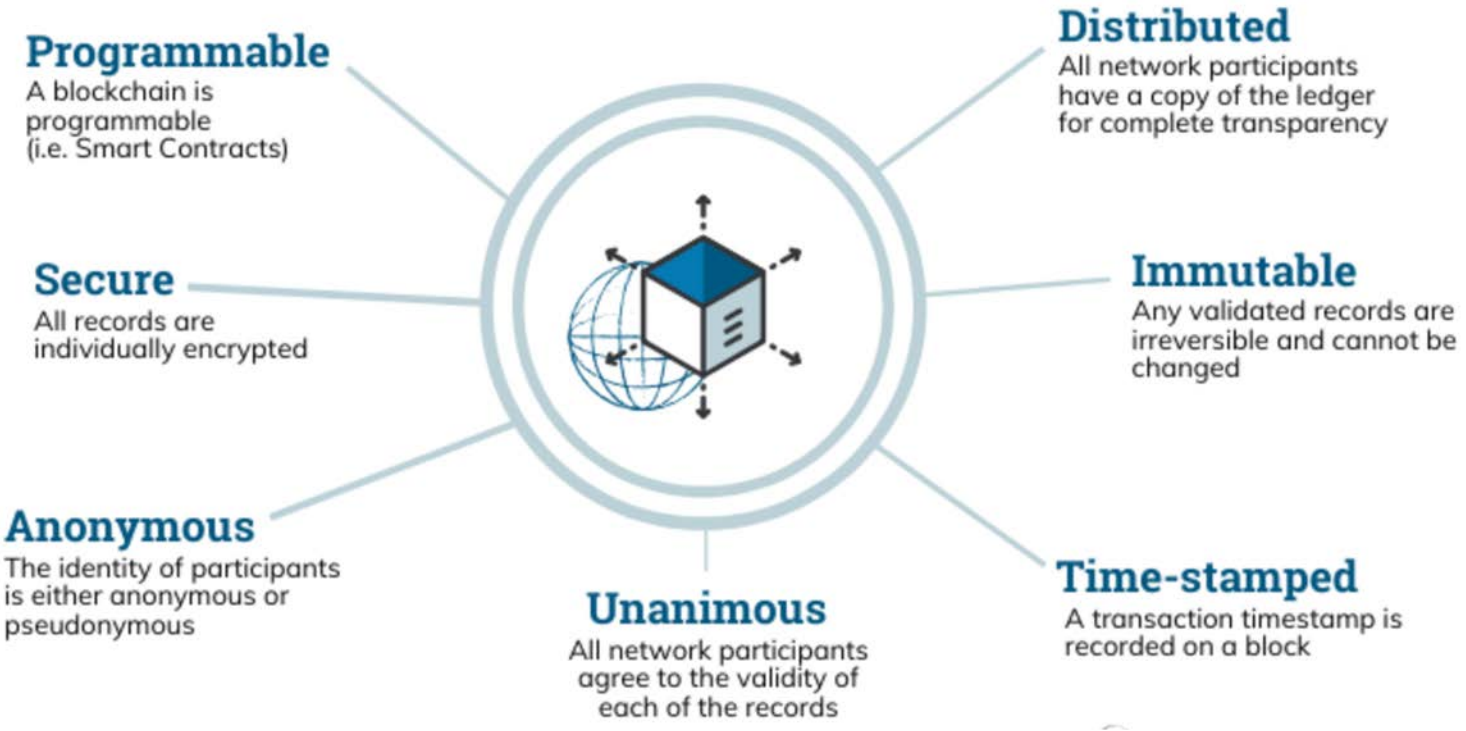


Current Perception



Current Result

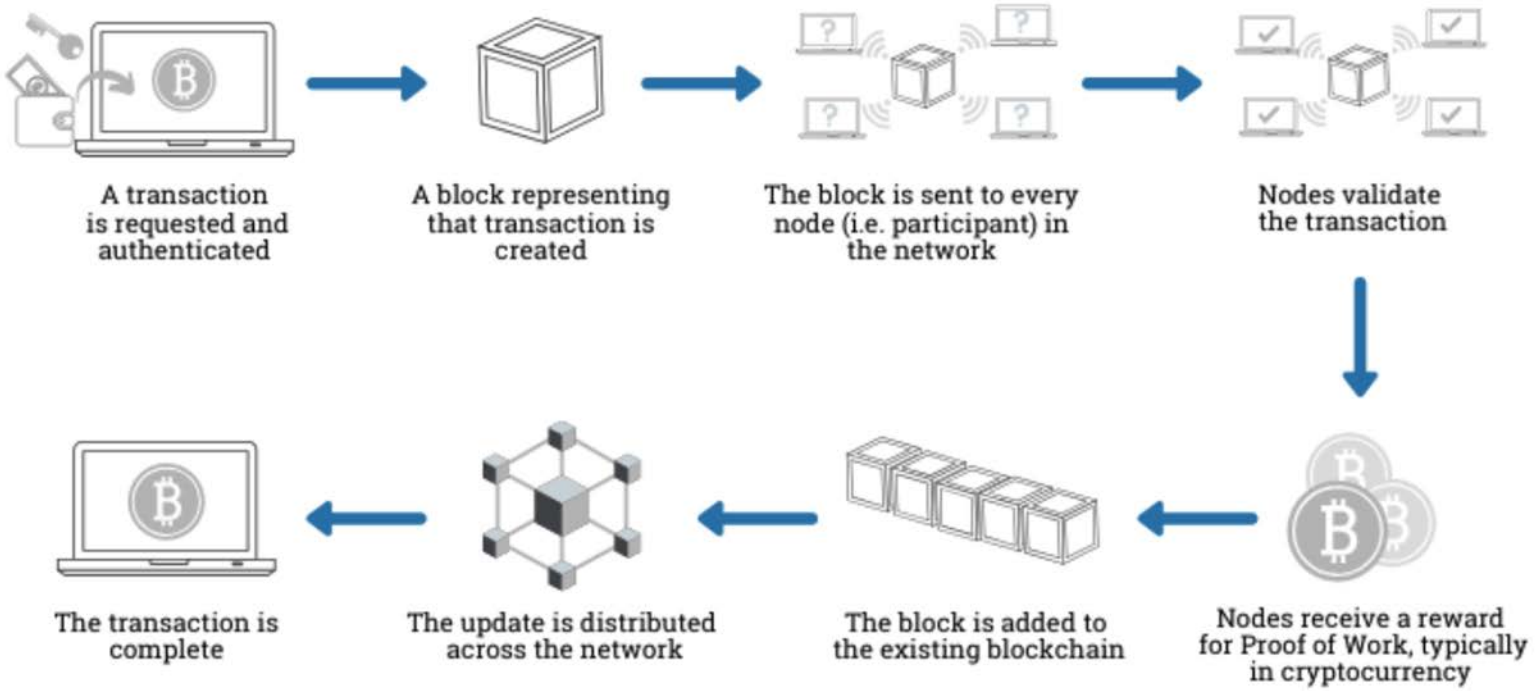
Alternative Approach



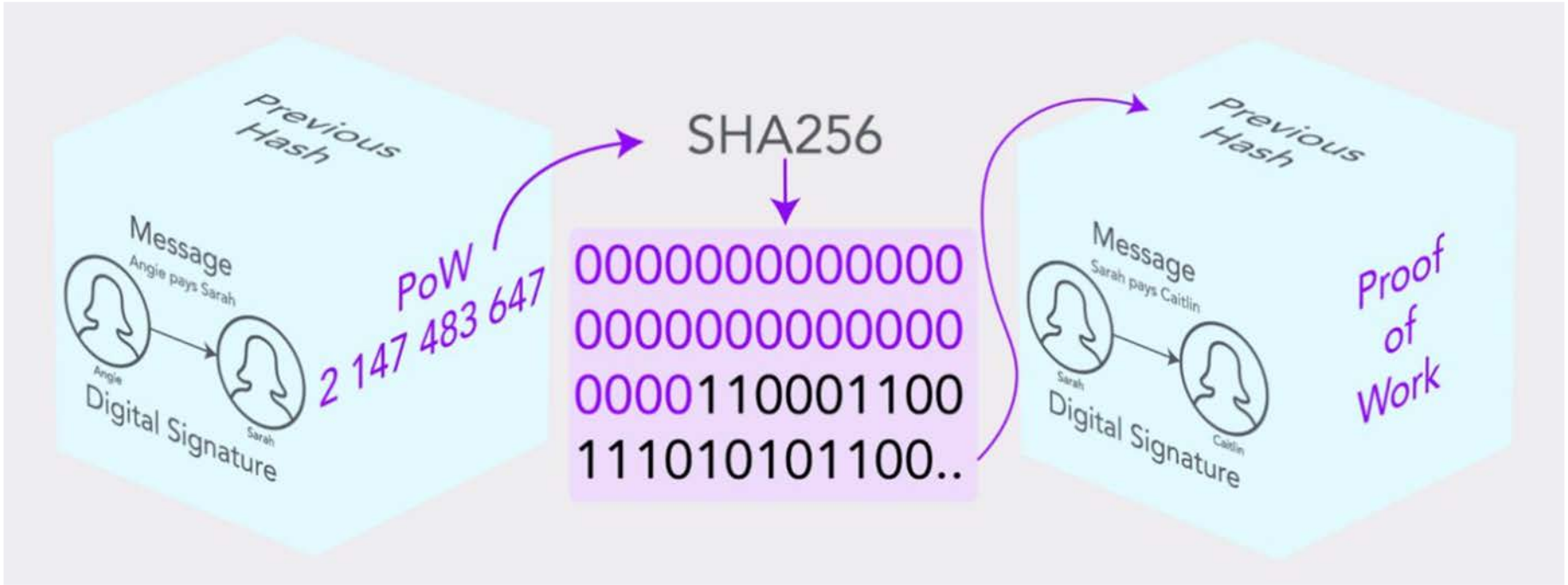
Why Blockchain?

1. Building trust with citizens
2. Assigning disaggregated rights and creating transparency in assignation of those rights
3. Enabling micro-contracts, micro-relationships, and micro-solutions
4. Reducing costs and removing inefficiencies
5. Protecting sensitive data while providing validation

Turning a Cryptocurrency Concept into IRL



Cryptocurrency Proof of Work



The General Process Flow for the Blockchain Architecture Involves:

1) Creation of blocks (transactions);

2) Sending these blocks to nodes (users) on the network for an action (mining) and then validation that that action has taken place;

3) Then adding the block to the blockchain.

It also involves the potential for creating new economic value through proof of work which can be issued through a token (possibly a graphic Non-fungible Token), certificate or possible financial reward.

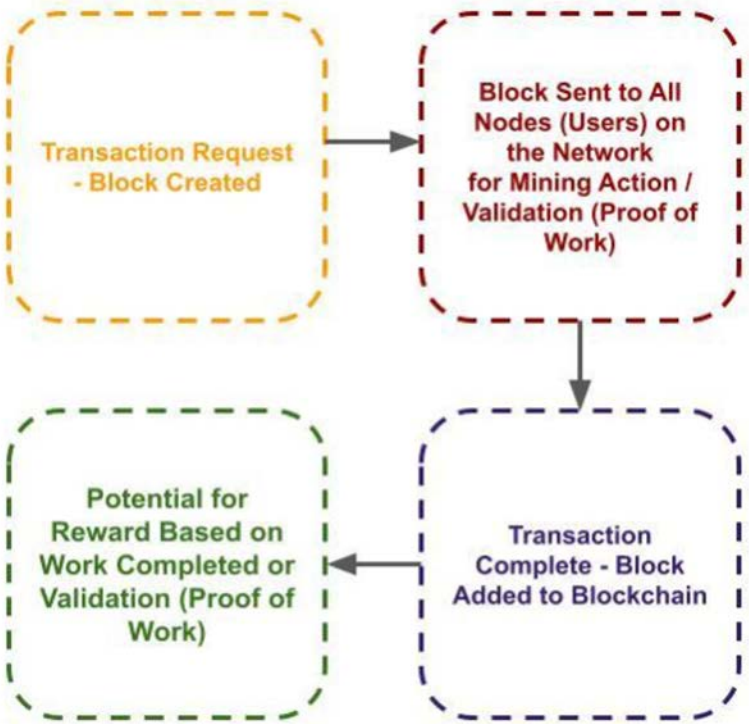


Figure 2: A General Blockchain Process

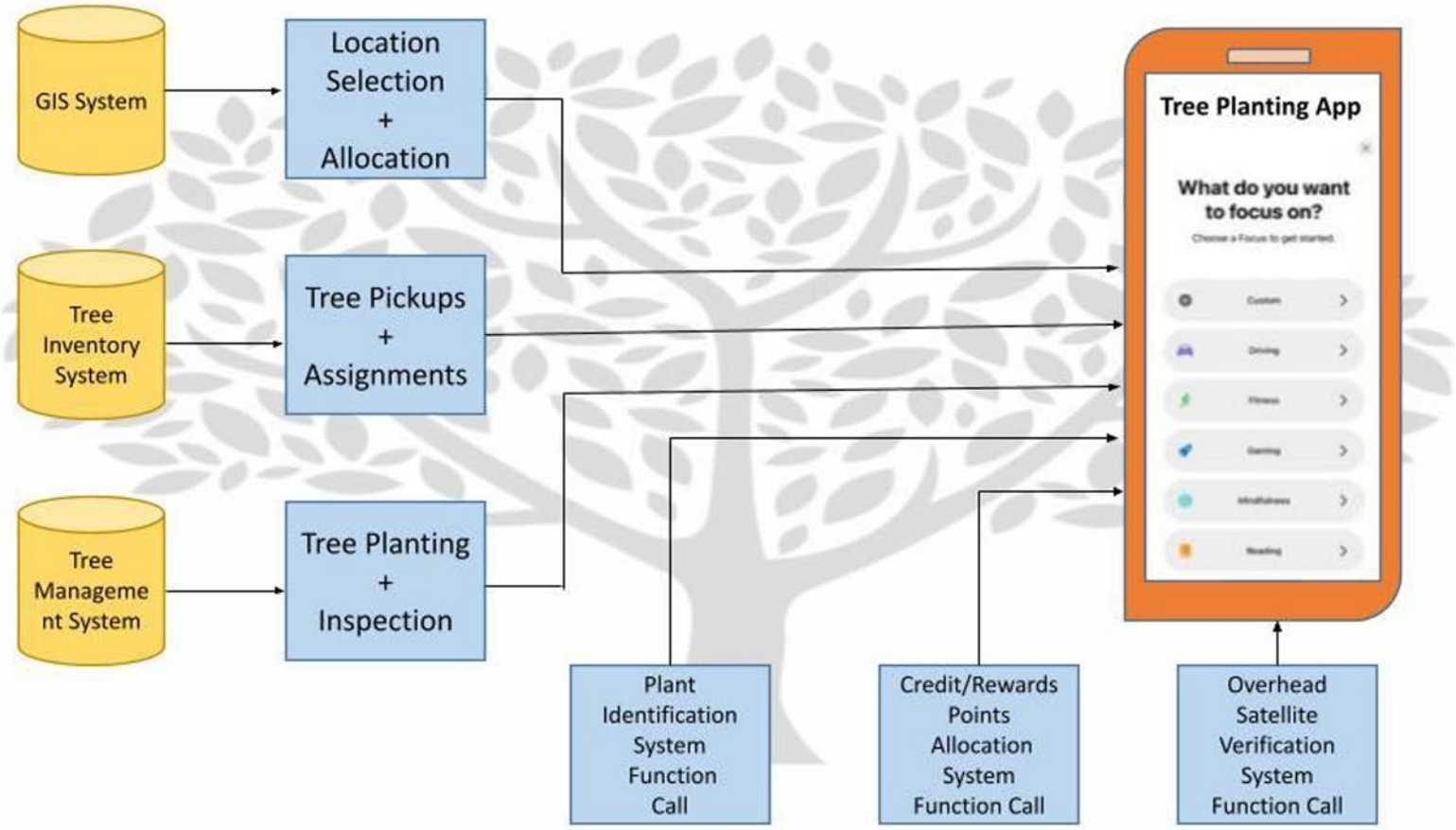
Proof of Work - IRL

What Blockchain Can Unlock

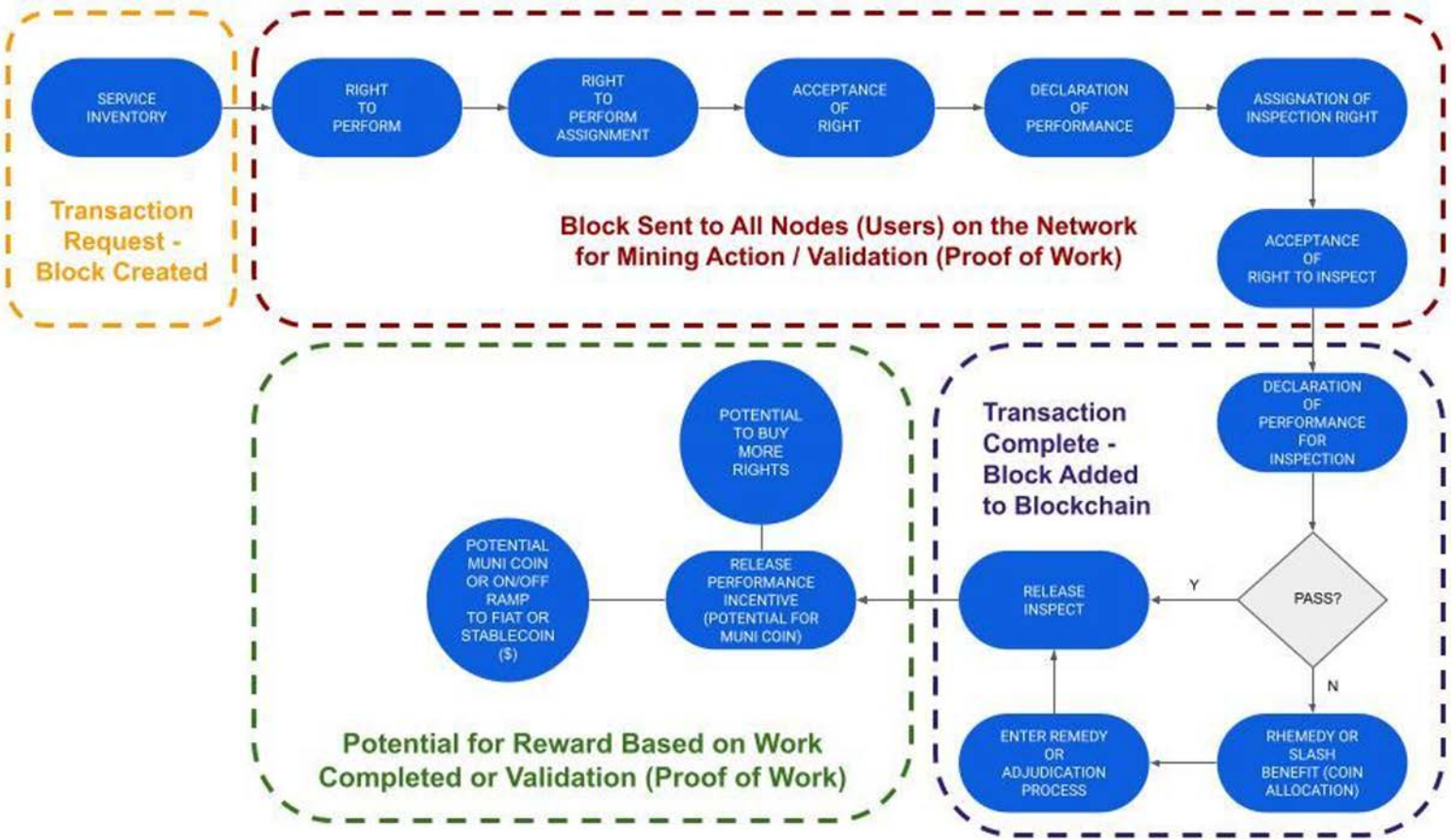
1. Trapped assets
2. Untapped human talent, energy, and capacity
3. Untapped funding sources and goodwill

Figure 16

What Can This Look Like Practically



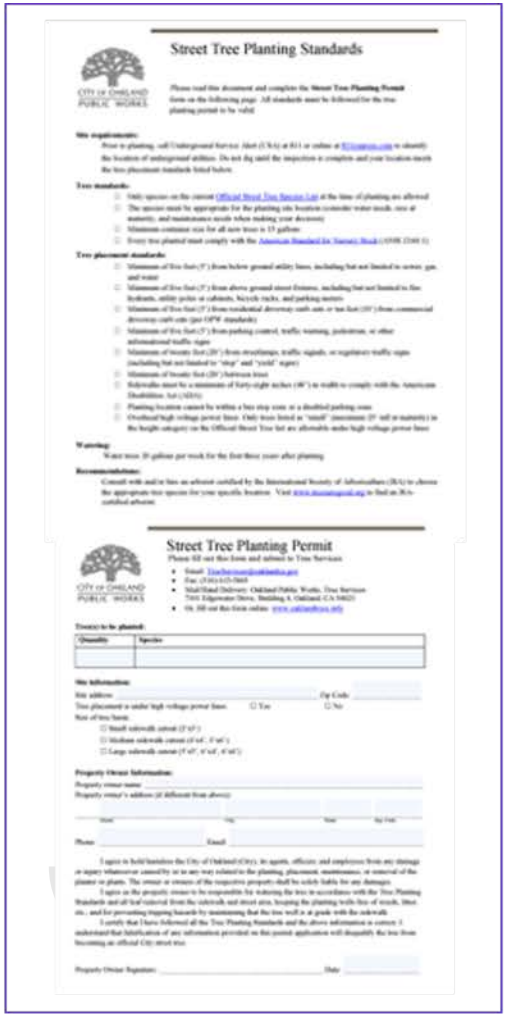
What Does this Look Like Conceptually



Enables Transformation

Enables Transformation

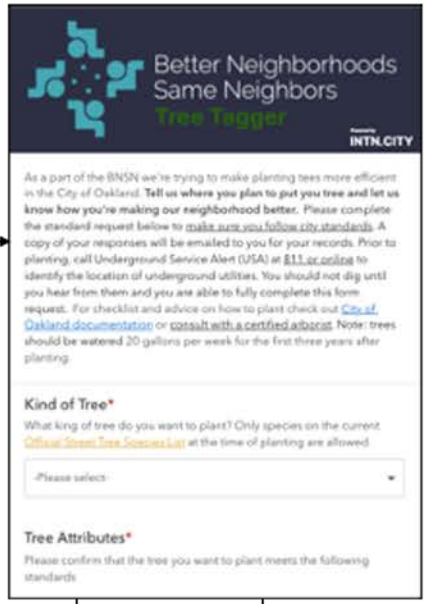
Eliminate Paper Process



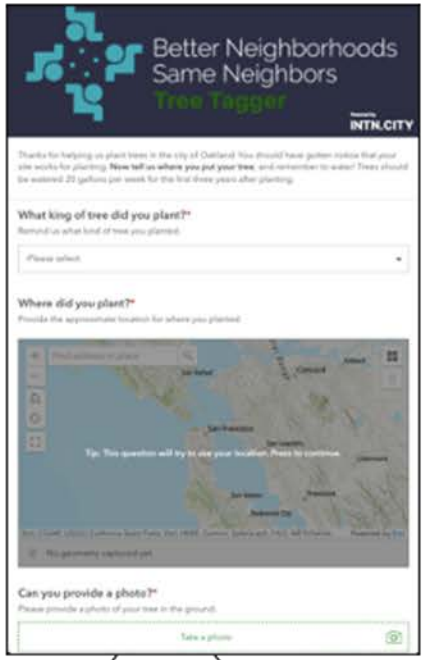
Street Tree Planting Standards

Street Tree Planting Permit

Preliminary Permit (Intent to Plant)

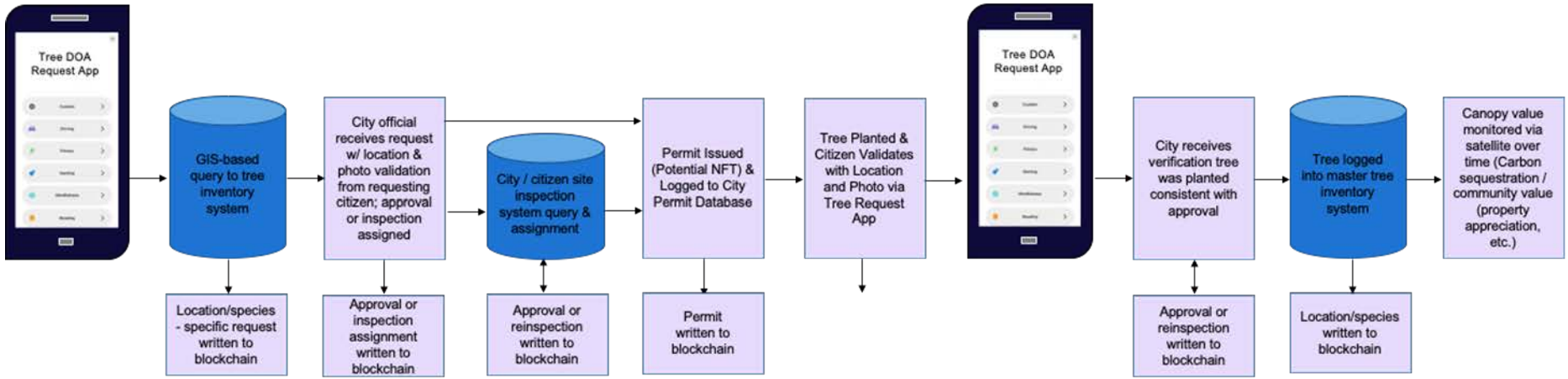


Validation of Planting

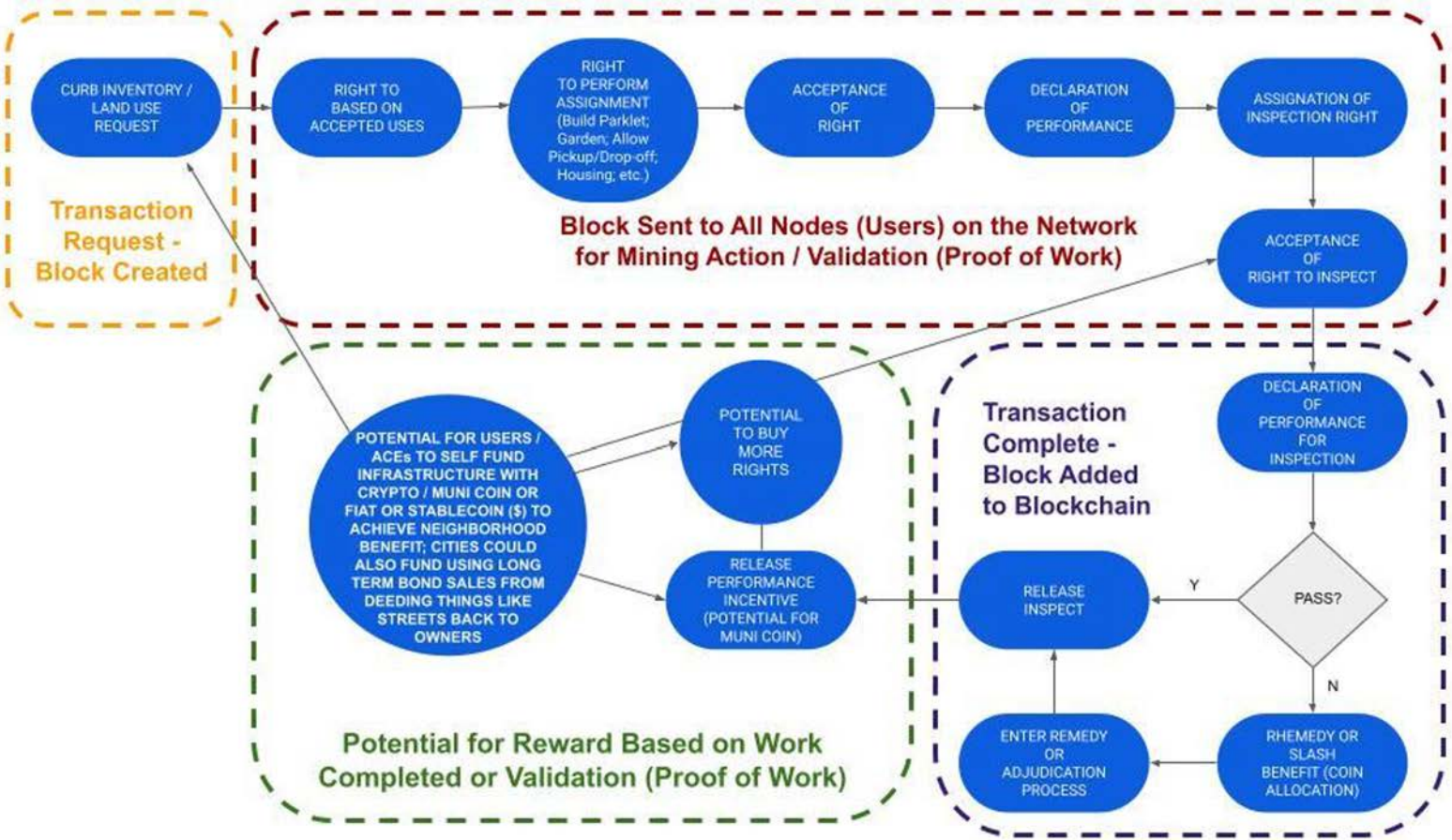


Distributed Ledger for Trees Planted By Citizens

Permit Activities	Inspections	Tree Attributes	Validations
Activities Logged	Activities Logged	Location, Species, etc.	Activities Logged


Tree DOA Request App
GIS-based query to tree inventory system
Location/species - specific request written to blockchain
City official receives request w/ location & photo validation from requesting citizen; approval or inspection assigned
Approval or inspection assignment written to blockchain
City / citizen site inspection system query & assignment
Approval or reinspection written to blockchain
Permit Issued (Potential NFT) & Logged to City Permit Database
Permit written to blockchain
Tree Planted & Citizen Validates with Location and Photo via Tree Request App
Tree DOA Request App
City receives verification tree was planted consistent with approval
Approval or reinspection written to blockchain
Tree logged into master tree inventory system
Location/species written to blockchain
Canopy value monitored via satellite over time (Carbon sequestration / community value (property appreciation, etc.)

Enables More Complex Actions



And Applications are Far Reaching

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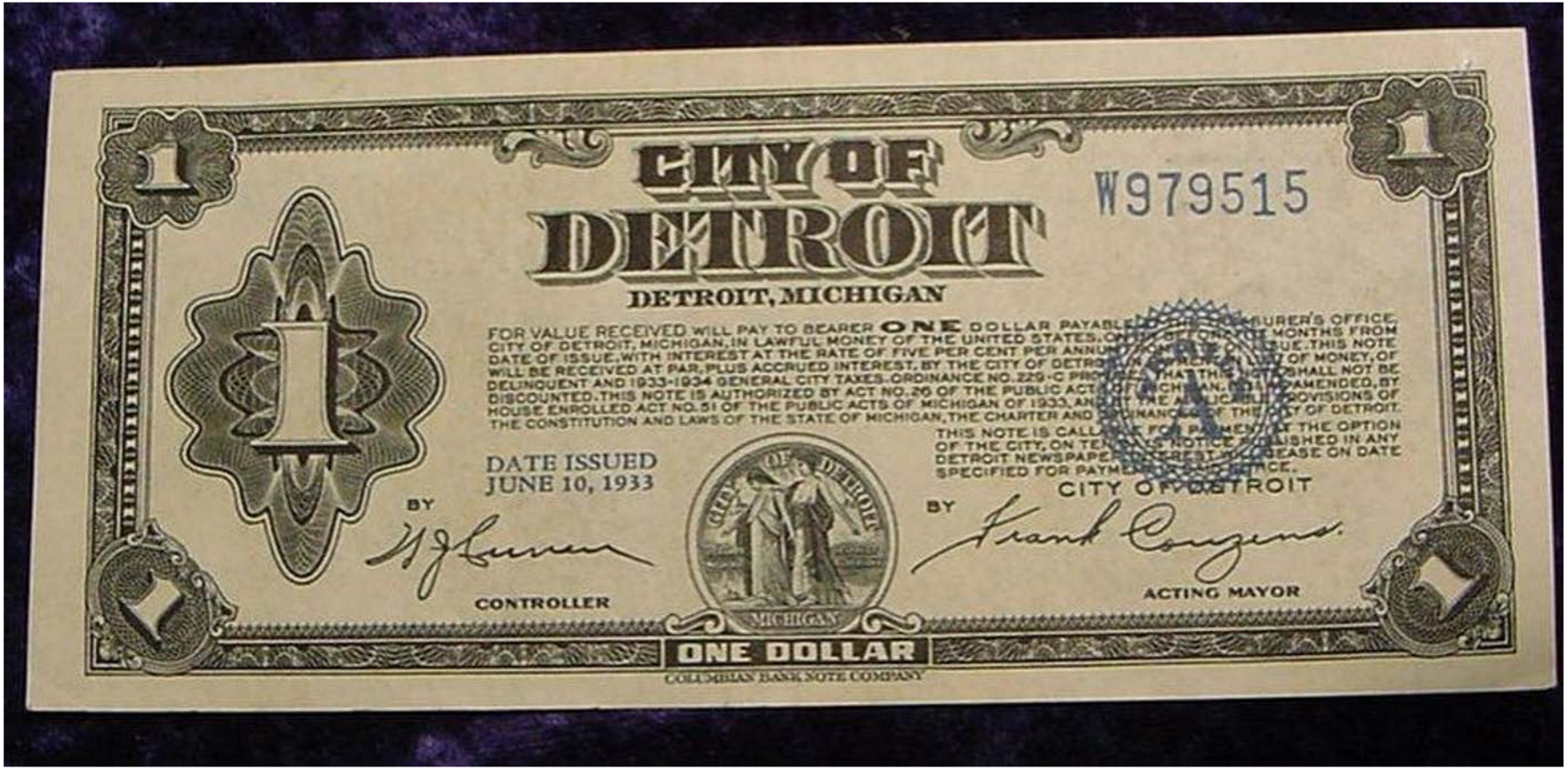
And Go Even Further



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