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5 Blockchain IOT Applications

If we use blockchains to identify and govern our devices, what kind of economy would we enable?

First—lets understand how a blockchain system could relocate trust by applying it to the ride-sharing industry. This diagram shows the effect of shifting the trust from centralized companies like Uber and Lyft to the customers and drivers themselves.

Now lets add devices themselves as trusted identities into this system.

Using centralized technologies, devices identities must be maintained by centralized service providers who are responsible for the lifecycle of the device and all interactions possible with them. This maintenance is expensive, time consuming, and places the identity of the device in the hands of the service provider. If that service provider goes out of business, potentially the device itself will be lost and any data associated with it.

Instead, blockchains decentralize identity with the devices and the peers. Service providers connect devices and people together. Reputation systems and smart contracts govern who can use the devices based upon the rules encoded. The best services are determined by the marketplaces based upon how much value they are adding to the users and the desired intentions of the communities.

Here are 5 examples of blockchain IOT Applications that would be enabled.

Cooperatively Owned Self-Driving Cars

Using current technologies, a company like Uber or Google maintains the servers necessary to run a self-driving car.


Using a blockchain-based service, any number of individuals could form an agreement between themselves to purchase a self-driving vehicle and share its maintenance amongst themselves. Each cooperative group could from contracts with other groups and share usage of their vehicles amongst a wider group of peers.

These groups can set their own rules and enforce them using reputation standards. For example a group could create a monthly maintenance checkup requirement that each individual must fulfill at least once per year—if they had not completed that duty, then the car would not unlock for that individual. The community could go a step further and block that individuals access to other services if that was encoded in their rules.

So what are 4 more tangible examples?

Community Solar
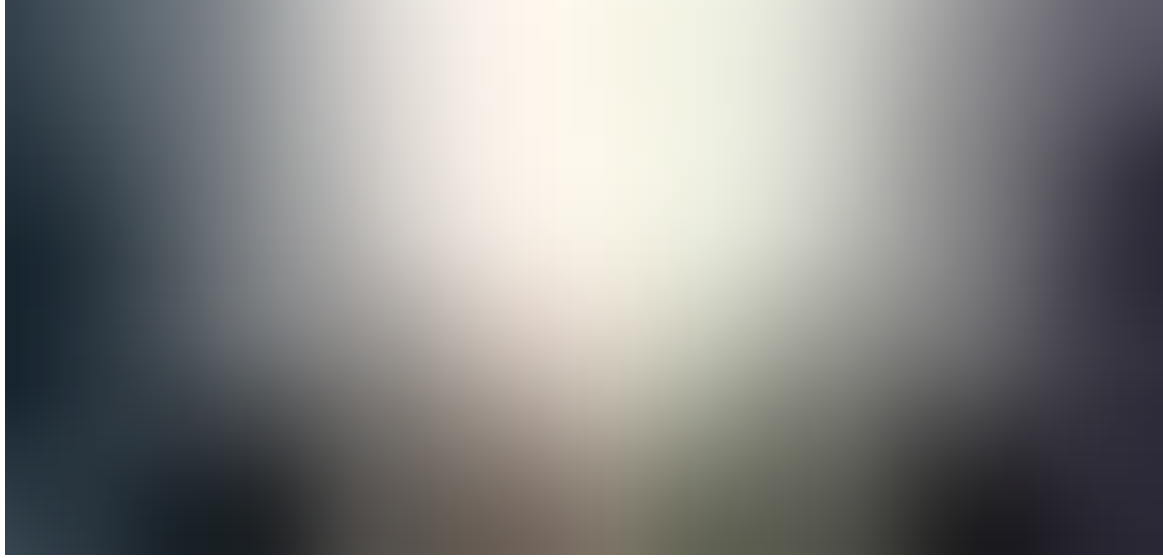
In Brooklyn, NY there is <u>an ongoing experiment for a community</u> to <u>use a blockchain</u> to record the production of solar energy and enable purchase of excess renewable energy credits. The device itself has an identity and builds a reputation through its history of records and exchange. People can aggregate purchasing power easier, share the burden of maintenance, and trust that devices are recording actual solar production.

Shared Machinery

A blockchain system could enable the collaborative ownership and usage of machinery like 3d printers, laser cutters, and woodworking tools that populate maker spaces worldwide. Smart contracts could determine whether the individual had the appropriate reputation to use the laser cutter to craft their embroidery pattern on a leather bomber jacket. The rules of the machine would depend upon the owners agreements between themselves, and the current status of those agreements.
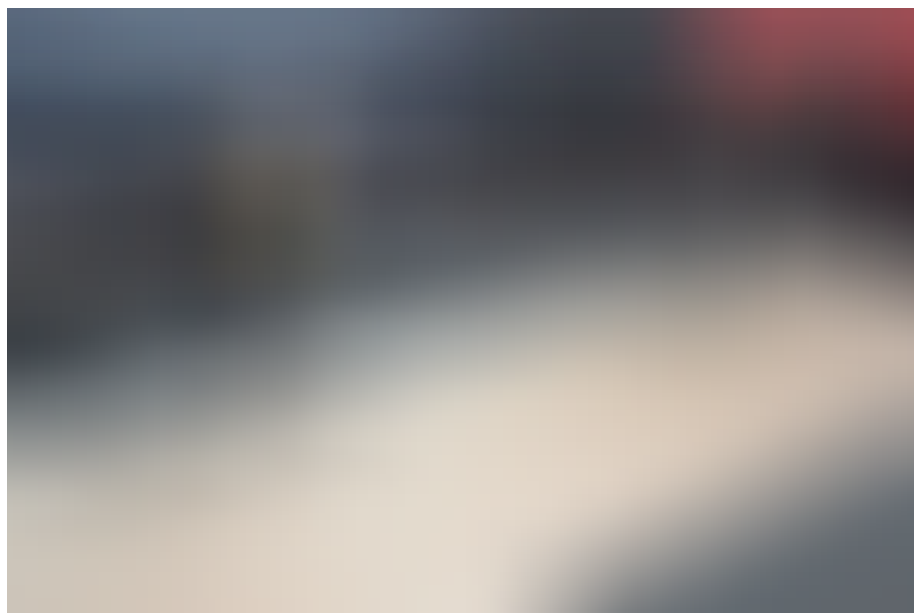
A shared maple sugar processing machine could be controlled by smart contracts that calculate an individual's ability to use the machine based upon their balance of community credits. They could have earned credits by letting others in the community use another shared resource, like a tractor.
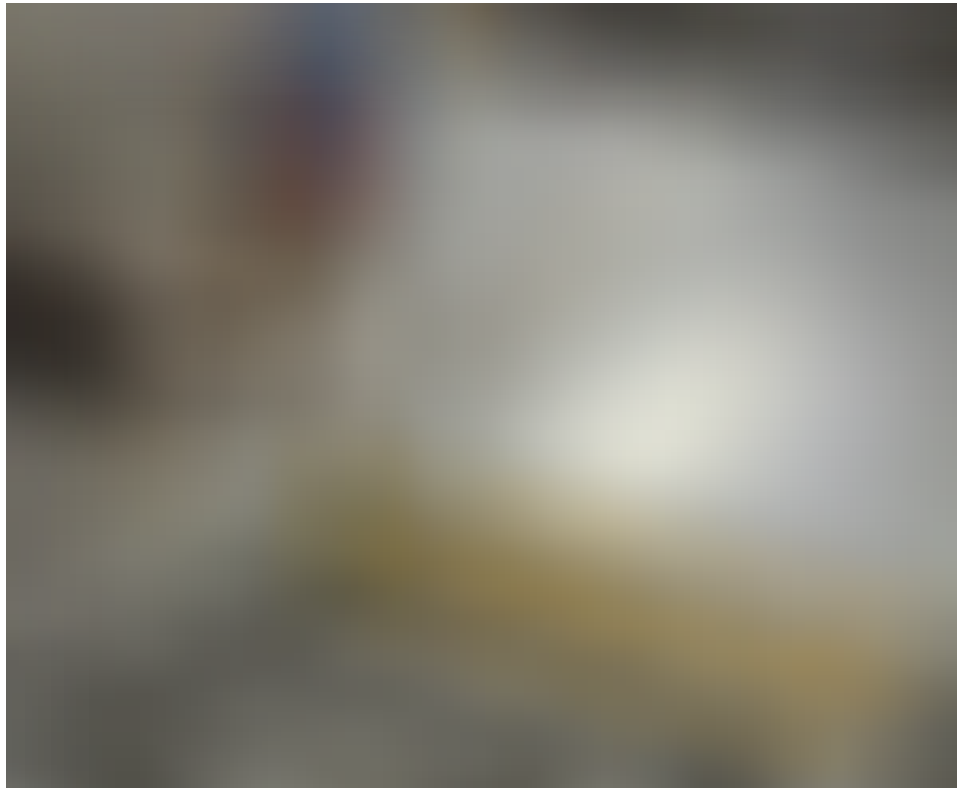
Shared Homes // Space
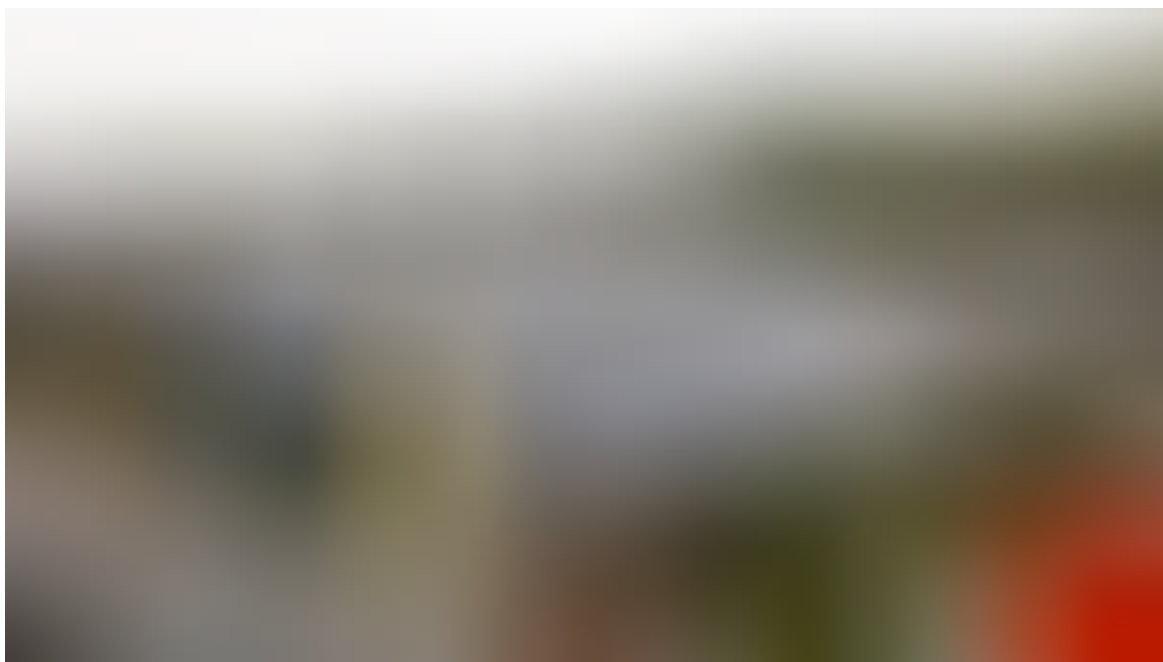
For co-working spaces to apartment rentals to spare bedrooms, smart contracts could control the ability to purchase or access the rental. For example a vacation sharing service provider could require that the individual must have leased out a space at least 3 times with successful reviews in order to rent another space on the network. Taking the

economics a step further, the service provider in question could have a reputation protocol that equated each stay in a 1 bedroom at 1 credit. A technology like Slock.it could enable the smart contract to open the door if the agreements were satisfied.

Wastewater Catchment Systems

Smart contracts could record the identity of the individual performing maintenance on a shared system. For example, individuals must satisfy 6 maintenance appointments per year, and the machine alerts the community maintenance engineers every time a checkup is required. If an individual has not satisfied maintenance of the system they will be alerted their water will shut off soon or trigger a remediation function.

Moving Towards Collaborative Consumption

These blockchain system connect trusted peers better than centralized systems, which increases the efficiency for sharing, maintenance, and usage of our world's resources. A diverse range of reputation protocols will also allow for communities to determine fair rates of exchange, creating a transparent and equitable framework to determine resource allocation.

This model is more energy efficient because people are paying per use and only recording necessary data into the blockchain. The models encourages innovation amongst a diverse range of service providers rather than consolidation. The mechanism for the network effect is the reputation of the individuals and the devices, and the value is more equitably shared between the individuals and the service providers.

Security stems from the reputation and identity systems, making it hard to spoof the trust gained by the use of real people. Smart contracts then ensure that people are using devices in a manner that is fair and trusted for the group and thus aligned with their values.

These proposed systems present a facet of the solution to the inequality of resource distribution in our economy of today—however they require proper implementation with diverse communities in order to successfully address it. How can we determine which projects are addressing future business models from the perspective of empowerment?

Cooperative Economy Checklist

Does the project?
- centralize identity and reputation with the individual people and devices?
- give ownership/access of data to individuals?
- create an interoperable protocol for users to port their identity and reputation elsewhere?
- exist to connect trusted peers or help determine a fair rate or provide added value to the peers?

Asking these questions allows us to construct distinctly different economic models that enable collaborative production and cooperative consumption. It's up to us to decide what we will fund, build, and support with our currencies.