Decentralized Data Marketplace

Agenda

11:30-11:45 Check-In, Networking

11:45-12:30 DDM Overview, Discussion

12:45 Announcements, Networking

Active Planning Committee

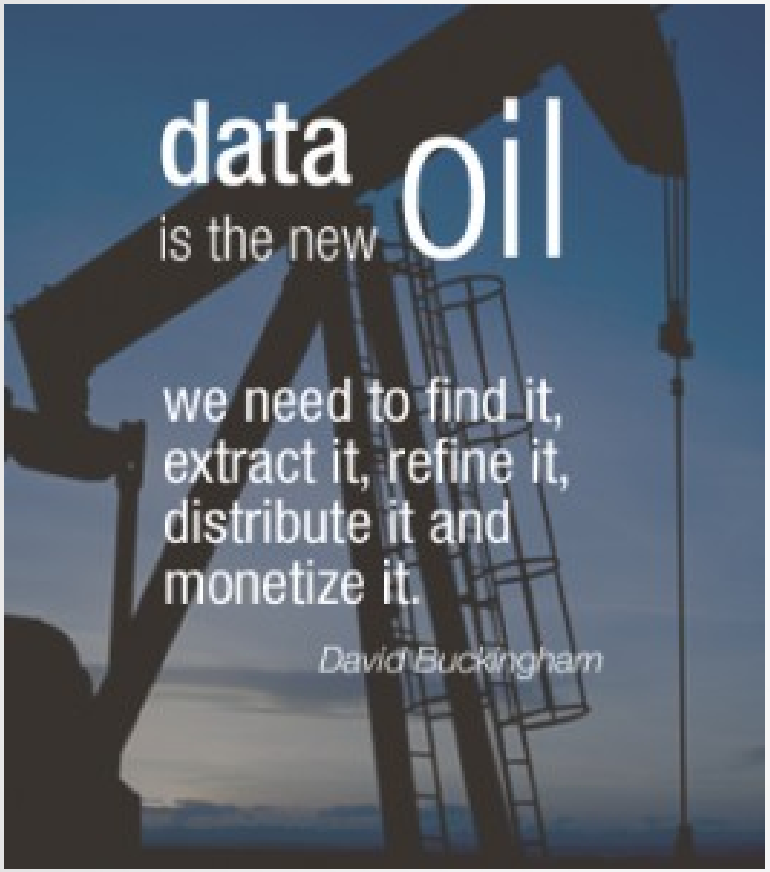
John Lindsay, Patent Attorney

See me to become more active in this or other chapters
To support meetings like this, www.ieee.org/join

Decentralized Data Marketplace

An IoT Community Marketplace for Smart Cities

Decentralized Data Marketplace



Data is not the new oil
(its value is not based on scarcity)

Data increases in value
the more it is connected

dgen.net

Decentralized Data Marketplace

Internet of Things (IoT) in Cities

- Applications and uses for IoT, involving real-time data streams, are growing:
  - Vehicular traffic sensing
  - Parking Meters
  - Security
  - Air quality monitoring
  - Smart Trash Cans

IoT 1.0 and Challenges

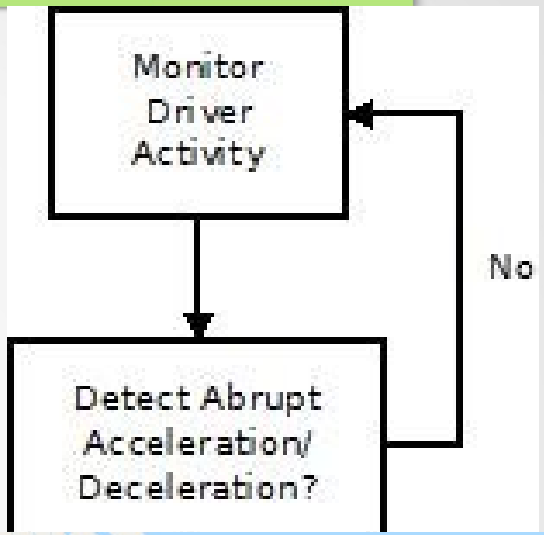
- IoT 1.0: A single organization deploys and maintains devices, network, middleware, cloud-based processing, end-user application

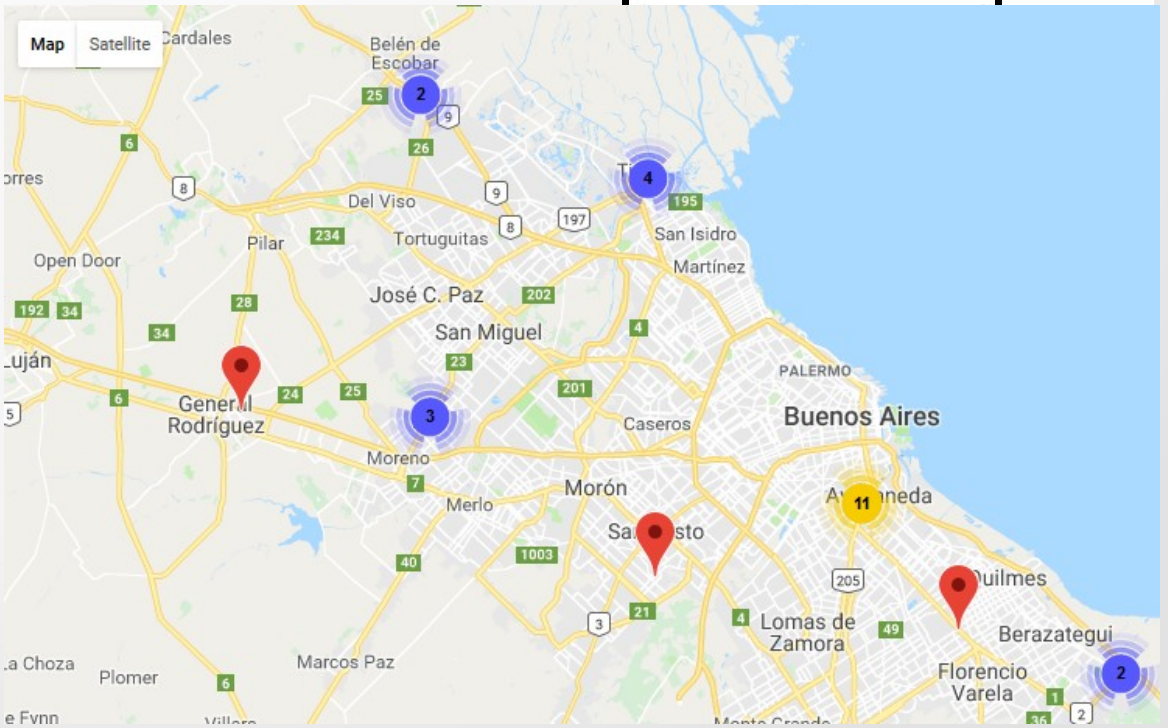
- This is a data siloes approach that does not scale and inhibits technology deployment.

- Cities are leery of single-vendor lock-in

Sensor Data Based Smart City App 1

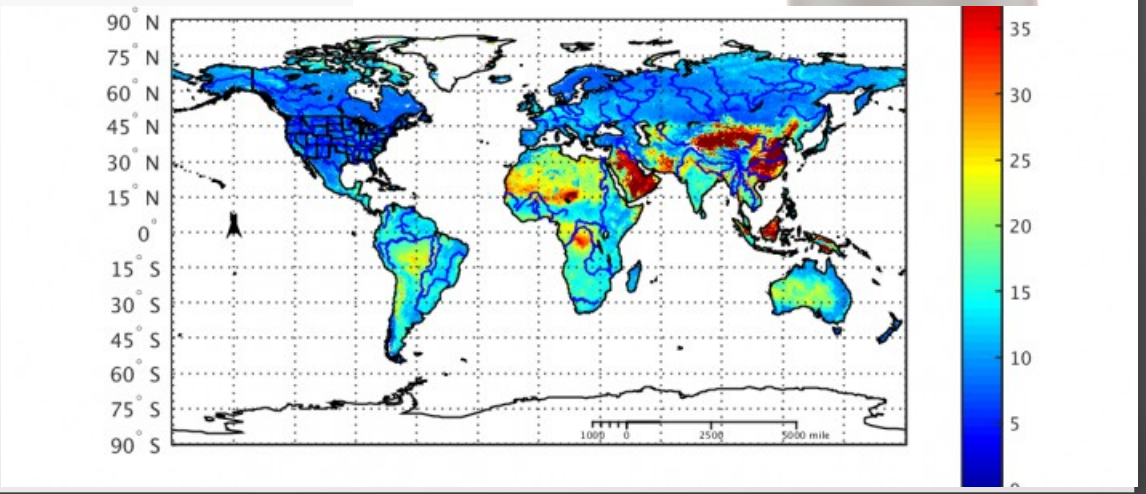
- Application ("Coaster")
  - Map clusters of harsh braking
- Sensor Data
  - Accelerometer, GPS (~10 times per second)
- Network
  - Cellular carrier
- Storage
  - Firebase





Sensor Data Based Smart City App 2

- Application (“Array of Things” subset)
  - “Google Maps of air pollution”
- Sensor Data
  - Air particle sensors
- Network
  - Wired/Wifi
- Storage
  - Single host (API)



Decentralized Data Marketplace

Interoperability at the Data Layer

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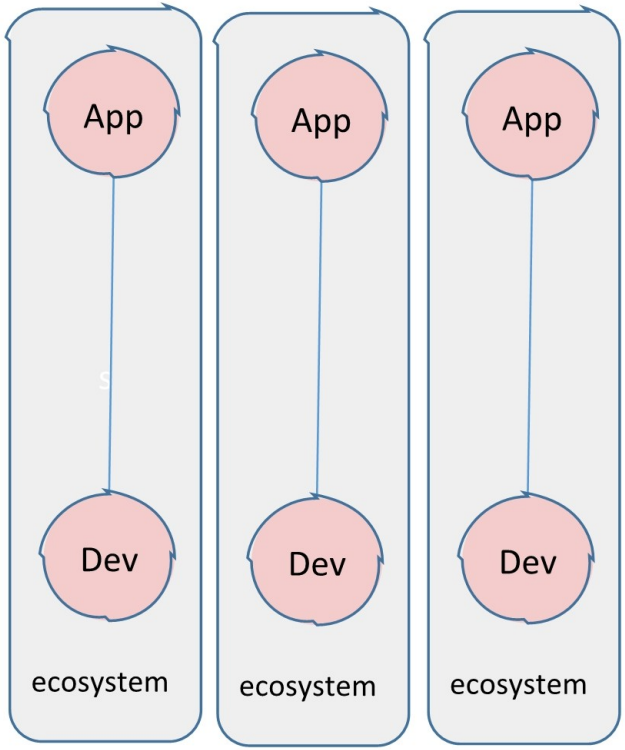

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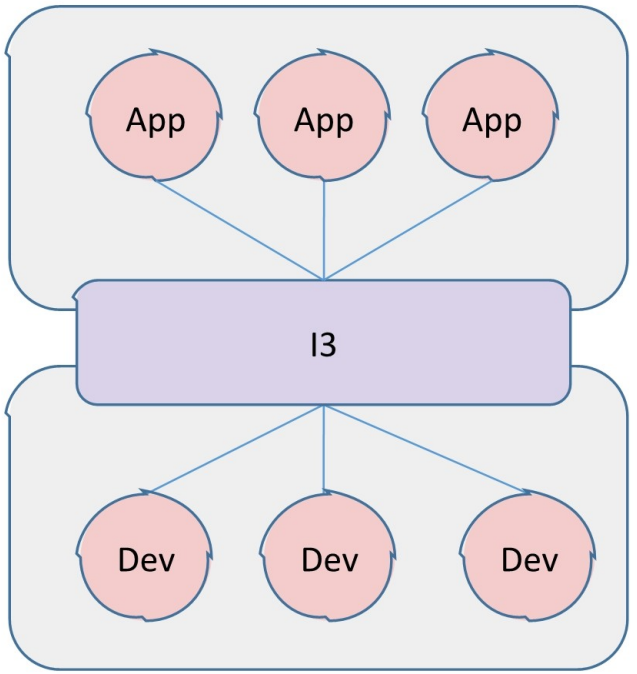
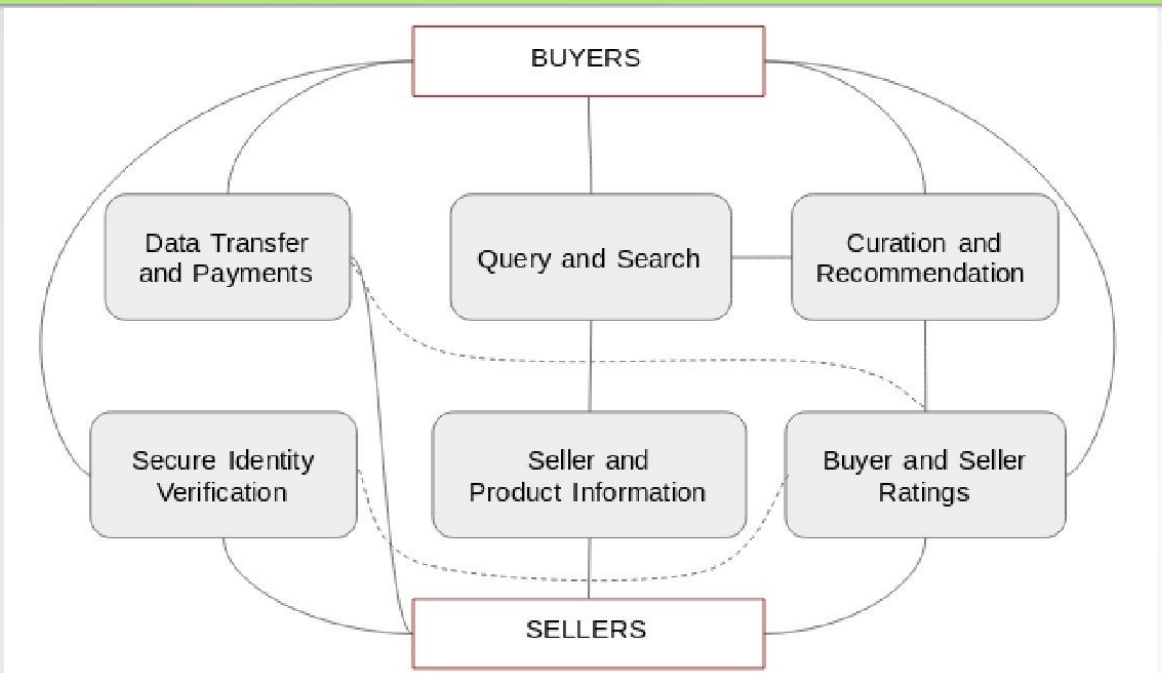


http://i3.usc.edu/

Decentralized Data Marketplace

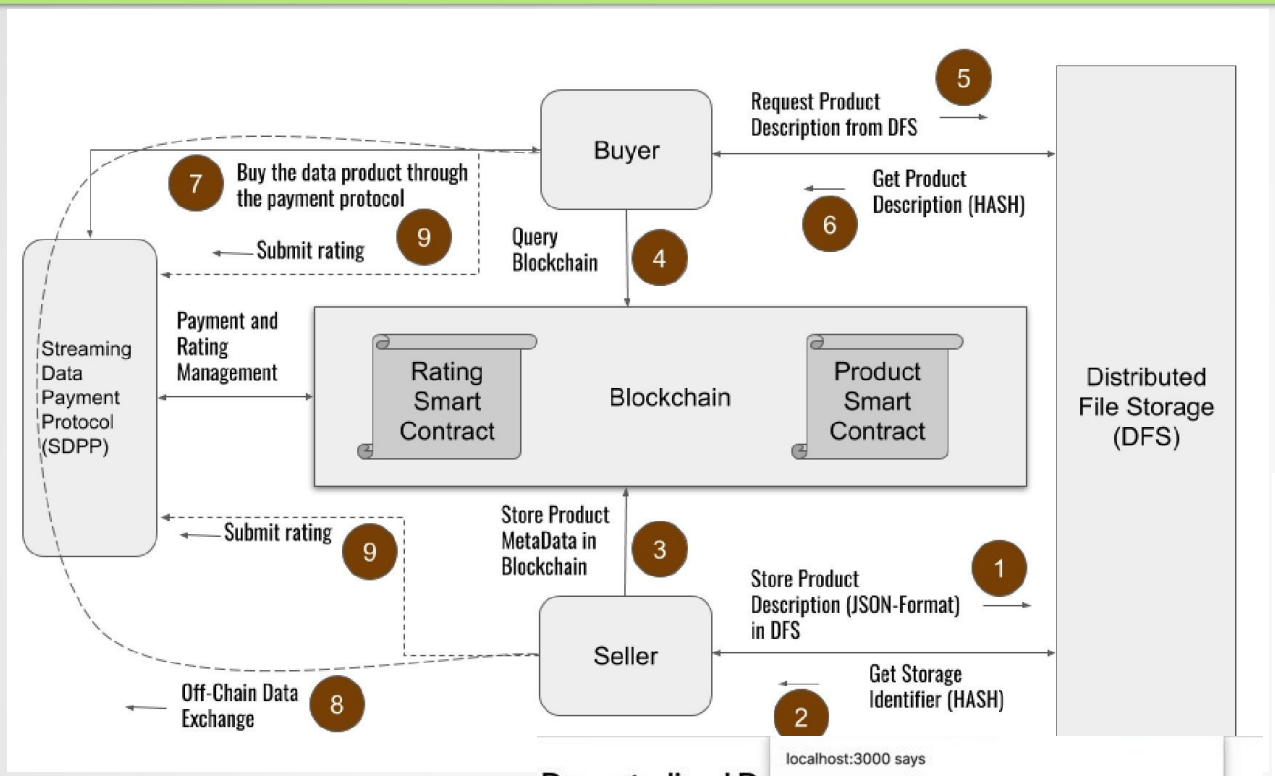


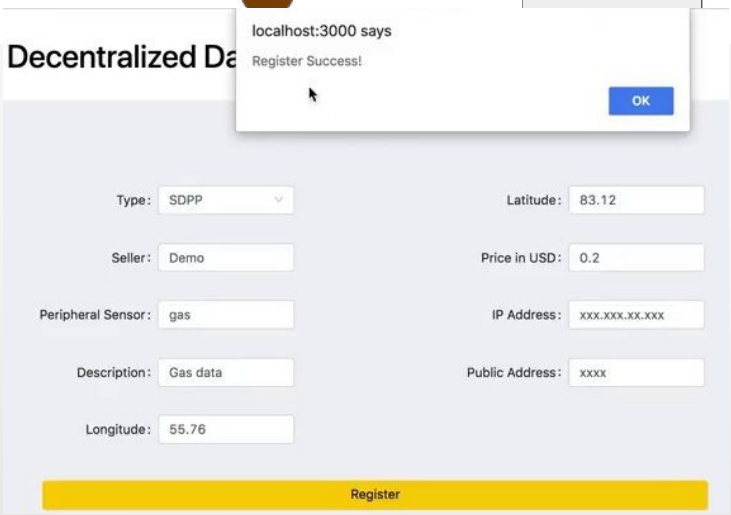
What does Decentralized mean? What are the possible Benefits?

- The marketplace doesn't depend on a central server hosted by a "trusted" third-party
  - Resistant to data tampering
  - Minimize manipulation of ratings, recommendations
  - Eliminate monopoly power of market platform operators
- Peer to peer data connections with seamless payments for streaming data

- Posting and Discovery
  - "Website" ("serverless")
- Storage
  - Decentralized file storage
- Payment
  - Peer to peer
- Data Exchange
  - Peer to peer
- Data Quality – Ratings
  - No controller

Decentralized Data Marketplace



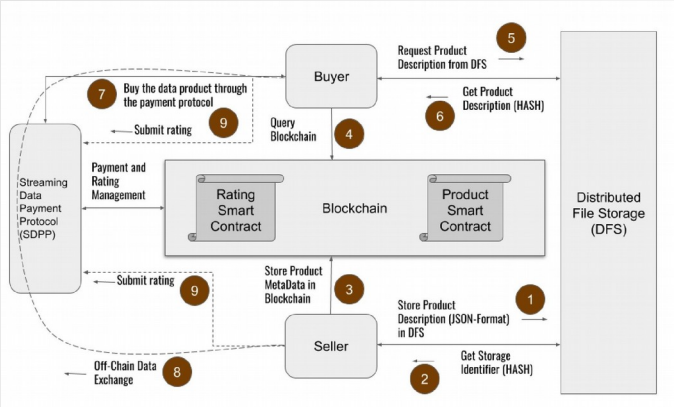


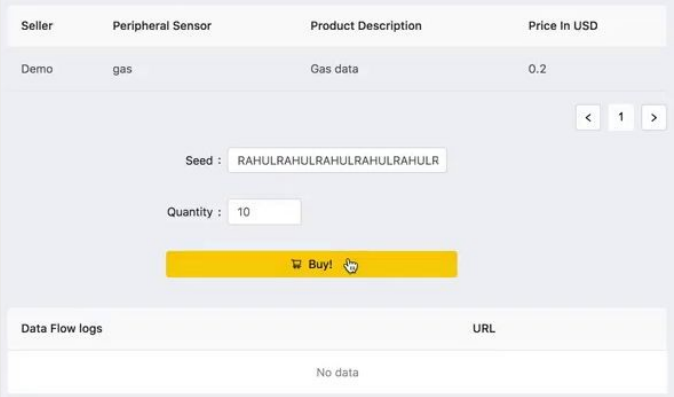
Seller (Steps 1 -3)
Sensor Data Product Description
- Formatted Description
- Store to IPFS
- Store Metadata

Product Description Template


```
{
  "Product Type": "Sensor",
  "Peripheral Sensor": "Temperature Sensor",
  "Product Description": "TMP36 temperature sensor deployed
outdoor.",
  "Latitude": "34.022596",
  "Longitude": -118.28443,
  "Price per Data Unit in USD": 1.5,
  "Data Unit": "100 data points",
  "IP Address or Hostname": "xxx-xxx-xxx-xxx",
  "Public Address":
"0x32590bb72050e53df34676f9a75c17a0677866c7",
  "Seller Credentials": "xxxxxxxxxxxxxxx"
}
```

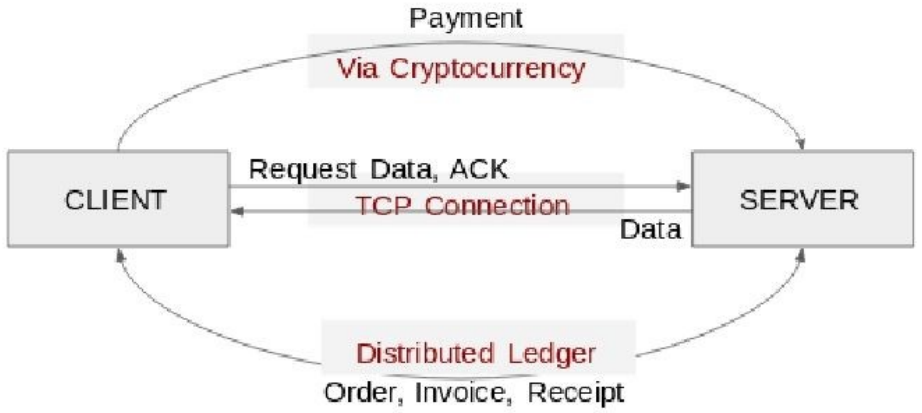
Decentralized Data Marketplace

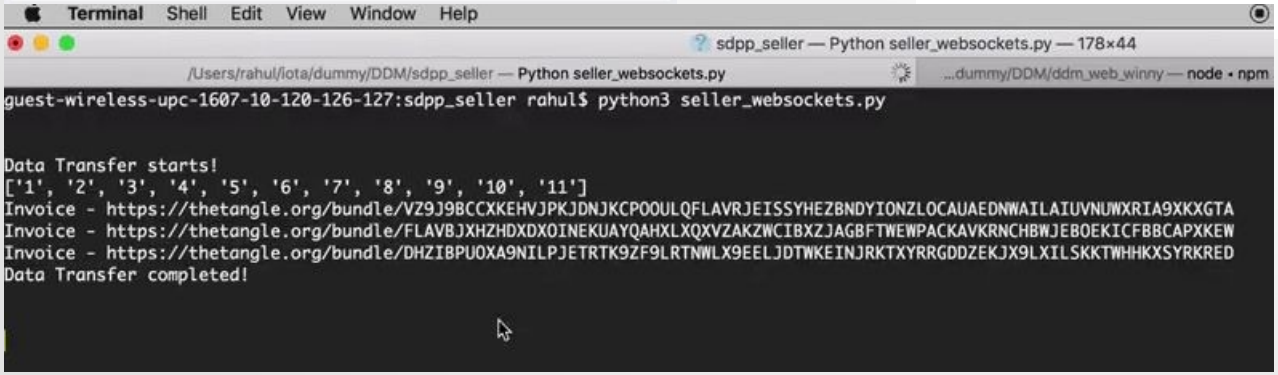




Buyer (Steps 4 -6)
Query data products

Purchase (Steps 7-9)
Buy
P2P data exchange (SDPP, work ongoing)





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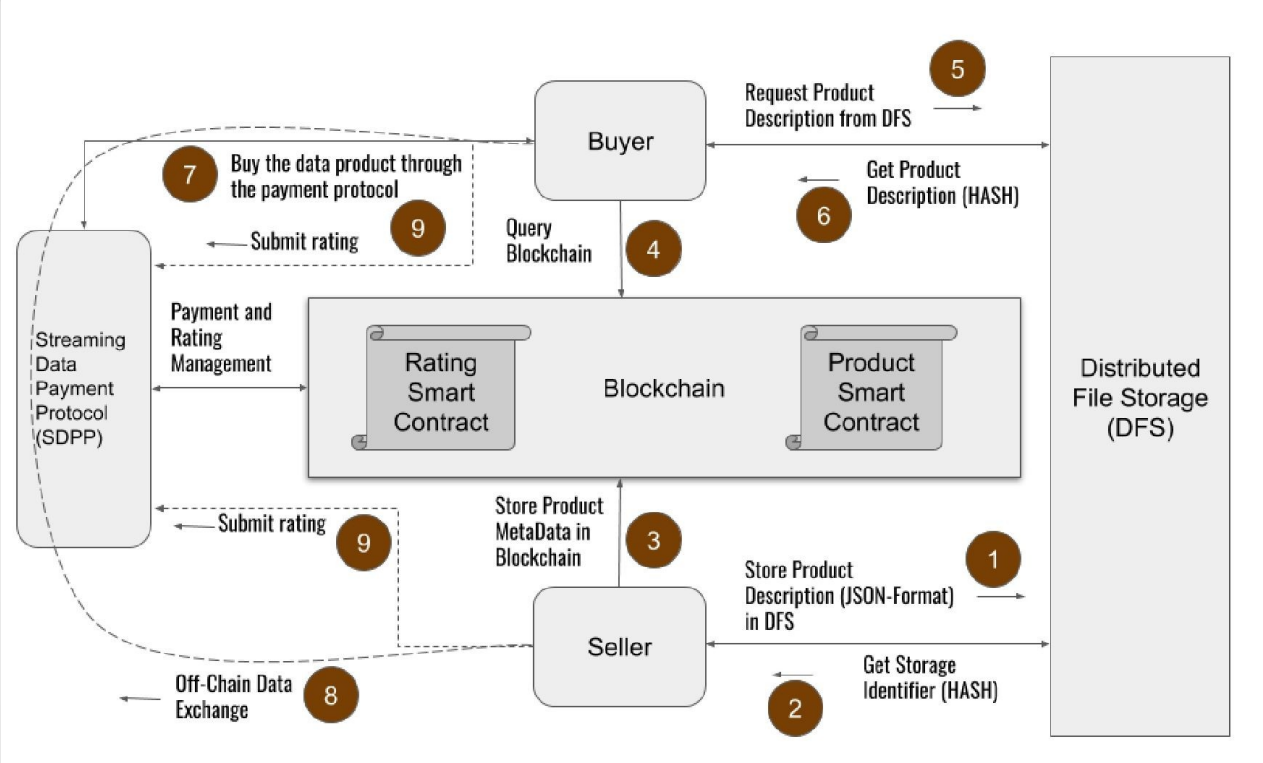
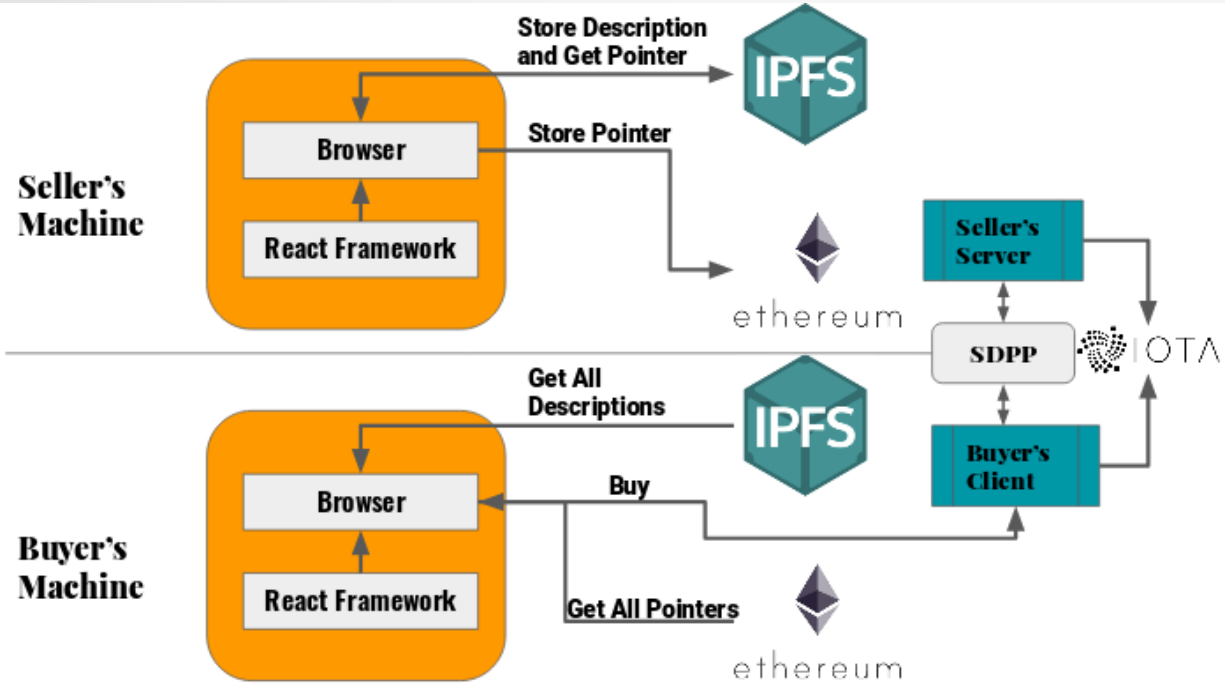


Rating
Seller
Buyer
Crypto supported transaction
Token Curated Rating

Decentralized Data Marketplace



Proof of Concept

Posting and Discovery
- ReactJS("serverless")

Storage
- IPFS (decentralized)

Payment
- IOTA/Ethereum

Data Exchange
- SDPP

Data Quality
- Token (Ethereum)

I3 Demo Video

Decentralized Data Marketplace

How might those samples apps exist within DDM?
How might the decentralization add/detract from an application?
What use cases suit fit/don't suit DDM?
Does DDM enable new business models?
How does DDM overcome vendor lock-in? At what cost?
What does DDM add over IOTA, M2X, Android OS, …?

Comments/Questions?

John Lindsay
Patent Attorney
Coaster, Smooth Driver Application