Distributed Ledger Technology

Assembled by Stephen Downes

## Distributed Organizations	

Distributed Business Models

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https://medium.com/@RobinsonBenP/firms-need-business-model-change-not-blockchain-bc8b0b2466bb
Uber business model - diagram -
https://cdn-images-1.medium.com/max/800/1*IXUH5ynzMQ50JZ5K6y0Otw.jpeg

"It wasn't the smartphone that created Uber. Instead, it took business model change which exploited new technologies…. And so in banking we can safely predict that it won't be blockchain or APIs or

AI that transform the industry. Instead, it will be new business models empowered by those technologies."

Technology and platforms have neutralized scale advantages
In their recent book, Unscaled, Hemant Taneja and Kevin Maney talk about how the technologies of cloud and AI have turned scale economies on their head.

Economies of scale graphs:
https://cdn-images-1.medium.com/max/800/1*3VPVMfKZBzcaDdvpUeHdqA.jpeg
https://cdn-images-1.medium.com/max/800/1*0-LwCJAAn8I4wIr8KND05w.jpeg

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The aggregator model

https://medium.com/@RobinsonBenP/firms-need-business-model-change-not-blockchain-bc8b0b2466bb
The aggregator model is where a firm uses its grip over distribution to introduce the consumer to the right unbundled services.
Diagram: https://cdn-images-1.medium.com/max/800/1*kduCA8nGJGnZb_72rEQA-Q.jpeg

The Holding Company Model

https://medium.com/@RobinsonBenP/firms-need-business-model-change-not-blockchain-bc8b0b2466bb
The holding company model attempts to replicate the universal banking model—or conglomerate model in other industries—for the unscaled world and in a way that confers competitive advantage on the subsidiaries, especially by dint of network effects.
Diagram: https://cdn-images-1.medium.com/max/800/1*gpXJpdSUYpOkWC6rFlss7g.jpeg

Marketplaces

Data Marketplaces

https://medium.com/@FEhrsam/blockchain-based-machine-learning-marketplaces-cb2d4dae2c17
"No one has created a successful blockchain-based marketplace for data yet. The Ocean is an early attempt to outline one." (see The Ocean, above)

"A fascinating end state would be mutually owned metamodels which give data providers and model creators ownership proportional to how much smarter they've made them. The models would be

tokenized, could pay dividends over time, and potentially even be governed by those who trained them. A sort of mutually owned hive mind. The original Openmined video is the closest construction to this I have seen so far."

Secure Computing

https://medium.com/@FEhrsam/blockchain-based-machine-learning-marketplaces-cb2d4dae2c17
Openmined is creating a multiparty compute network for training machine learning models on top of Unity that can run on any device, including game consoles (similar to Folding at Home), then expanding to secure MPC. Enigma has a similar tact.

Machine Learning Marketplaces

https://medium.com/@FEhrsam/blockchain-based-machine-learning-marketplaces-cb2d4dae2c17

"Machine learning models trained on data from blockchain-based marketplaces have the potential to create the world's most powerful artificial intelligences. They combine two potent primitives: private machine learning, which allows for training to be done on sensitive private data without revealing it, and blockchain-based incentives, which allow these systems to attract the best data and models to make them smarter."

"The base of this idea came in 2015 from talking with Richard of Numerai. Numerai is a hedge fund that sends encrypted market data to any data scientist who wants to compete to model the stock market. Numerai combines the best model submissions into a "metamodel", trades that metamodel, and pays data scientists whose models perform well."

Dragram: https://cdn-images-1.medium.com/max/600/1*Gijb5M3zuLRbXaDmVAS0JA.jpeg

"a major feature is privacy. It allows 1) people to submit data that otherwise would be too private to share and 2) prevents the economic value of the data and models from leaking"

Benefits

https://medium.com/@FEhrsam/blockchain-based-machine-learning-marketplaces-cb2d4dae2c17

"First, decentralized machine learning marketplaces can dismantle the data monopolies of the current tech giants. They standardize and commoditize the main source of value creation on the internet for the last 20 years: proprietary data networks and the strong network effects surrounding them. As a result, value creation gets moved up the stack from data to algorithms.
Diagram: https://cdn-images-1.medium.com/max/800/1*VVCasQUJ-YFSIpUOwROx-g.png

Second, they create the most powerful AI systems in the world

Third, as the recommender system example shows, search gets inverted. Instead of people searching for products, products search and compete for people

Fourth, they allow us to get the same benefits of the powerful machine-learning based services we are used to from companies like Google and Facebook without giving away our data.

Fifth, machine learning can advance more quickly, as any engineer can access an open marketplace for data, not just a small group of engineers in the large Web 2.0 companies."

The ultimate recommender engine

https://medium.com/@FEhrsam/blockchain-based-machine-learning-marketplaces-cb2d4dae2c17

- - "More than any of the existing data silos of Google, Facebook, or others could ever be because it has a maximally longitudinal view of you and it can learn from data that otherwise would be too private to consider sharing"
- Google's federated learning and Apple's differential privacy are one step in this private machine learning direction, but still require trust, don't allow users to directly examine their security, and keep data siloed.
- Diagram - https://cdn-images-1.medium.com/max/800/1*qzr0K7_EtraMhfUa2ywdSA.png

Numer.ai

https://numer.ai/homepage

"Because Numerai abstracts its financial data, data scientists do not know what the data represents and human biases and overfitting are overcome."

White Paper - https://numer.ai/static/media/whitepaper.29bf5a91.pdf

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Distributed AI Mesh

AI Mesh is a routing concept - https://www.asus.com/AiMesh/

Satori, a distributed AI Mesh

https://ezradigital.com/blockchain-technology-hashgraph/
"Keeping in the vein of smart technology, there's Satori—the world's decentralized AI mesh. It's also a secure, distributed, artificial intelligence platform that offers real-time data analysis. Subscribers spend LIT Tokens which allow access to Streambots and live data streams."

LIT, by Satori - https://lit.io/
"Evolving beyond smart contracts, LIT tokens open Satori, the world's decentralized AI mesh, to the public."

Powering the World's Decentralized AI Mesh - https://lit.io/uploads/littokenbysatori_summary.pdf

"Satori's AI Streambots effortlessly consume and process data, audio and video, from around the world to offer better real-time decision-making tools to businesses, consumers, and smart cities"

Satori is Powering the World's Decentralized AI Mesh — Gabe Leydon explains
https://medium.com/hashgraph/satori-is-powering-the-worlds-decentralized-ai-mesh-gabe-leydon-explains-d6986a0011b2
- Satori is a distributed compute platform that is layered on top of the Hashgraph Consensus protocol

The Scoop on Blockchain Technology & Decentralized AI Mesh
https://ezradigital.com/blockchain-technology-hashgraph/

Subscriptions

Technical Deep Dive: Architecture Choices for Subscriptions on the Blockchain (ERC948)
https://medium.com/gitcoin/technical-deep-dive-architecture-choices-for-subscriptions-on-the-blockchain-erc948-5fae89cabc7a
"Subscriptions are one of the healthiest monetization methods on the legacy web. At Gitcoin, we believe this will prove to be so on Web 3.0, as well. Unlike surveillance capital based models, subscriptions still fit within the Web 3 ethos"

Participatory Design

Participatory Design for Cryptoeconomic Systems
https://medium.com/@mentapurpura/participatory-design-for-cryptoeconomic-systems-ab4d2eb5712
"Participatory design is characterized by an opening of the design process to non-designers. It is an active creation of spaces, moments, and methods that fosters and empowers users during the design process. In other words, the users get a say in what is being created by and for them."
Example diagram:
https://cdn-images-1.medium.com/max/1000/1*NOXgm7wsSkpUTgIt6AS_NQ.png

DAO

"DAOs are decentralized and autonomous organizations that operate using smart contracts.
The smart contracts contain the rules and operating structure of the organization, eliminating the need for centralized control and leadership." https://kingpassive.com/what-is-ethereum/
- Diagram - https://kingpassive.com/wp-content/uploads/2018/05/The-DAO-.jpg
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DAO stands for "Decentralized Autonomous Organization" and a fund was created in Ethereum as a way to show what the platform could do. Users could deposit money to the DAO and get returns based on the investments that the DAO made.

https://medium.com/@jimmysong/the-truth-about-smart-contracts-ae825271811f
- Many called the person draining the DAO of money a "hacker". In the sense that the "hacker" found a way to take money from the contract in a way not intended by the creators intended, this is true. But in a broader sense, this was not a hacker at all, just someone that was taking advantage of the quirks in the smart contract to their advantage.
- Ethereum decided that code no longer is law and reverted all the money that went into the DAO. In other words, the contract writers and investors did something stupid and the Ethereum developers decided to bail them out.

Distributed Social Networks

How the Blockchain Can Solve Social Media's Biggest Problems
https://medium.com/forbes/how-the-blockchain-can-solve-social-medias-biggest-problems-e438f3132cd2 "By utilizing the private ledger the Ethereum blockchain provides, companies can better track user interaction with content. This will enable the quantification of user's worth to the network, and therefore a better idea of how they should be compensated for their activity."

Steemit

https://steemit.com/

https://angel.co/steemit

Built off the Steem blockchain, Steemit is a Reddit-esque social platform that as of now boasts nearly 800,000 registered users. Steemit's version of upvotes, however, are tokens that hold real market value. Users—not advertisers—are rewarded for engagement.

https://en.wikipedia.org/wiki/Steemit
"Steemit is a blogging and social networking website that uses its Steem blockchain-based rewards platform for publishers. The Steem blockchain produces Steem and Steem Dollars which are tradable tokens obtained for posting, discovering, and commenting on content."

Sapien

https://www.sapien.network/
"Sapien is a Web 3.0 social news platform that gives users control of their data, rewards content creators, and fights fake news."

https://angel.co/sapien-social-platform
Steemit is a social media platform where everyone gets paid for creating and curating content. It leverages a robust digital points system, called Steem, that supports real value for digital rewards through market price discovery and liquidity.

BUIDL

How to BUIDL a Mesh Network of Human Beings

"Each node in this network is a full 3-dimensional human; with a diversity of backgrounds, experience, and culture. Every person in this network has their own personal preferences, ambitions, habits, hobbies, other time commitments, biases, family, & personal challenges."