Unlocking Al with Data

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## Audio radar





## Al loves data



**100x** less error

ocear

## Deep Learning Really Loves Data







UBER

The Economist

amazon

#### Data and the new rules of competition

Goode



## 1/6 of world's economy is data. And it's growing.





In 2016, the global Digital Economy was worth \$11.5 trillion, 15.5% of the world's GDP.

It is expected to reach 25% of the world's GDP in less than a decade.

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http://workspace.unpan.org/sites/internet/Documents/UNPAN98863.pdf

# Problems





1 hospital

### Data you want

10,000 hospitals





1 hospital





## **A Fundamental Tradeoff?**





The most valuable data is private data. (And we can't get at it)



Attribution: Andrew Trask



## What people think...

# "To get value from data, you need to hold the data"



## What people think...

# "To get value from data, you need to hold the data"

## The secret: this isn't true!



## Access is not Custody

# "To get value from data, you need to hold the data"





## Access is not Custody

# "To get value from data, you need to hold the data"

## Idea: separate these!



Access

Custody

### Train valuable AI models without having to hold the data! And without a trusted middleman







1 hospital



Data you'll get! 10,000 hospitals

# Last Mile 1: Data Marketplaces











#### **Connective tissue: public utility network**







### Connective tissue: Ocean public utility network







**Connective tissue: Ocean public utility network** 

Have data	Have Al (Want data)	Have data	Have data	Have Al (Want data)	
Have Al (Want data)	Have data	Have Al (Want data)	Have Al (Want data)	Have data	
Data marketplace	DM	DM	DM	DM	
DM	DM	DM	DM	DM	
DM	DM	DM	DM	DM	
DM	DM	DM	DM	DM	



Connective tissue: Ocean public utility network



### Example: commons.oceanprotocol.com



## Benefits of Ocean-based marketplaces "Your keys, your data"

- Seller retains control of the data. No data escapes.
- Buy & sell private (!) data. The most valuable data
- Don't need to trust marketplace owner; they don't hold data
- Marketplace owner isn't liable for the data
- Liquidity across data silos in enterprises & governments
- Out-of-the-box "whitelabel" marketplace



# Last Mile 2: Data Management For Smart Cities



## **Traditional Data Management: Breaches the Norm**

In 2017, Equifax was <u>hacked</u>. Credit card information of 148 million people was compromised, including customer names, Social Security numbers, birthdates and addresses. Equifax had to pay a <u>\$700M fine</u> for the data breach.





**Bitcoin (and Blockchains) are crazy-secure.** "Your keys, your Bitcoin. Not your keys, not your Bitcoin"

Bitcoin is worth \$132B.

It's fully open.

Hack it well and you could make > \$1B.

But it hasn't had security issues for years.

Why? Fundamentally different security:

- No central point of control
- 1000's of independent nodes that store the most important info: who owns what



### Ocean: Blockchain Security for Data Management "Your keys, your data. Not your keys, not your data."

- Data token = have access control to a given dataset
- Data custody  $\approx$  blockchain token custody (HW wallets, etc.)
- Transfer data access  $\approx$  transferring tokens
- Data security  $\approx$  blockchain token security (>bank-grade by default)







# Digital-Native Case Study: Estonia

## **Recent History of Estonia**

- 1991 independence from Soviet Union
- 1992 new constitution
- 2001 X-road data platform
- 2002 citizen access to digital ID & signatures
- 2005 join EU
- 2011 use the Euro
- 2014 E-Res validation
- 2015 E-Res minimum viable product
- 2016 E-Res Go-to-market
- 2017 Estcoin idea raised
- 2018 Token-friendly laws



## **Estonia E-Government Applications**

DigiDoc DigiDoc is a system that's widely-used in Estonia for storing, sharing and digitally signing documents.	Digital Signature Digital signature enables secure, legally-binding, electronic document signing	e-Business Register Enables entrepreneurs to register their new business online in minutes	e-Cabinet A powerful tool used by the Estonian government to streamline its decision- making process	Electronic Land Register A one-of-a-kind information system for storing real estate and land data	•Voting •Voting allows voters to cast their ballots over the internet, from anywhere in the world.	Keyless Signature Infrastructure Estonian digital society ensures the integrity of its systems and data by using the KSI technology.	Location-Based Services A positioning service that detects device location & provides location information
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e-Law	e-Police	e-Prescription	e-Residency	m-Parking	Mobile-ID	Mobile Payment	Population Register
Allows public access to every piece of draft law that has been submitted since February 2003	Revolutionizes police communication and coordination, maximizing effective policing.	A centralized, paperless system for issuing and handling medical prescriptions	Estonian e-Residency is a digital identity that allows everyone in the world to do business online with ease.	Allows drivers to pay for city parking using a mobile phone	Allows a client to use a mobile phone as a form of secure electronic ID	Enables payment for goods and services using mobile phones	The state database for basic information about each person living in Estonia
<b>00</b>	¥	*	ID	~	*	ß	
e-School	e-Tax	Electronic Health Record	Electronic ID Card	Smart Grid in Energy Sector	Social Welfare e- Services	State e-Services Portal	X-Road
Allow students, teachers and parents to collaborate in the learning process	e-Tax has drastically reduced the time spent by individuals and entrepreneurs on filing taxes	Integrates data from healthcare providers into a national record for each patient	e-ID acts as definitive proof of ID in secure electronic environments	Estonian-developed innovation a number of cutting-edge solutions in the energy sector on the top of Smart Grid	The social welfare benefit system is accessible by a convenient, online environment	A one-stop-shop for the hundreds of e-services offered by government institutions	Allows databases to interact, making integrated e-services possible
	e-estonia com						

The digital society



### **Estonia's Foundation is Data. Then, Identity + Payments**



## How Estonia Benefited from Its Data Platform

- Digital-native meant 5-10x less \$ spent on administration.
- More comprehensive, faster, simpler gov't services for citizens
- More opportunities for citizens
- Fast & cheap "government startup" experiments
  - E-residency by leveraging citizen identity infrastructure.
  - 60,000 "residents" that don't live in Estonia. 6,000 companies that wouldn't have been there.
  - Doubled GDP of Estonia (!)



### For smart cities: Blockchain-based data management (Ocean) Layer in identity + payments. On top, dozens of applications.



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## **Benefits of blockchain-based data management**

#### Get benefits of digital-native

- 5-10x less \$ spent on admin
- More comprehensive, faster, simpler gov't services for citizens
- More opportunities for citizens

### • Get special benefits from blockchain

- Super-secure data custody (because a public network)
- Leverage crypto infra for id + payments
- Provenance of transactions in id, payments, data
- Sidestep political concerns because "locked open"
- Privacy-respecting data marketplaces for city data
- Further unlock AI: health++, \$ savings, ..



# Conclusion



### Conclusion

#### • AI & data

- Al loves data
- 1/6th of the world's economy is already a Data Economy
- The most valuable data is private data (eg health)
- A secret: we don't need to hold the data to get value from it, by using Ocean<sup>®</sup>

#### Ocean-powered data marketplaces:

- Buy & sell private data
- Get liquidity across silos
- Without trusting the marketplace or the buyer

#### Ocean-powered data management in smart cities:

- Blockchain-grade security (vs data breaches)
- Plays well with id & payments
- 5x+ less \$ on admin (ref. Estonia)
- More comprehensive, faster, simpler gov't services for citizens
- Help each smart city be a global leader in AI

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