

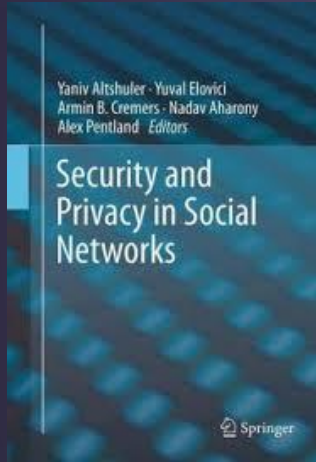
Addressing the Data Conundrum: Artificial Intelligence on Blockchain

Mihaela Ulieru, PhD
Chief Alchemist @ Endor.com

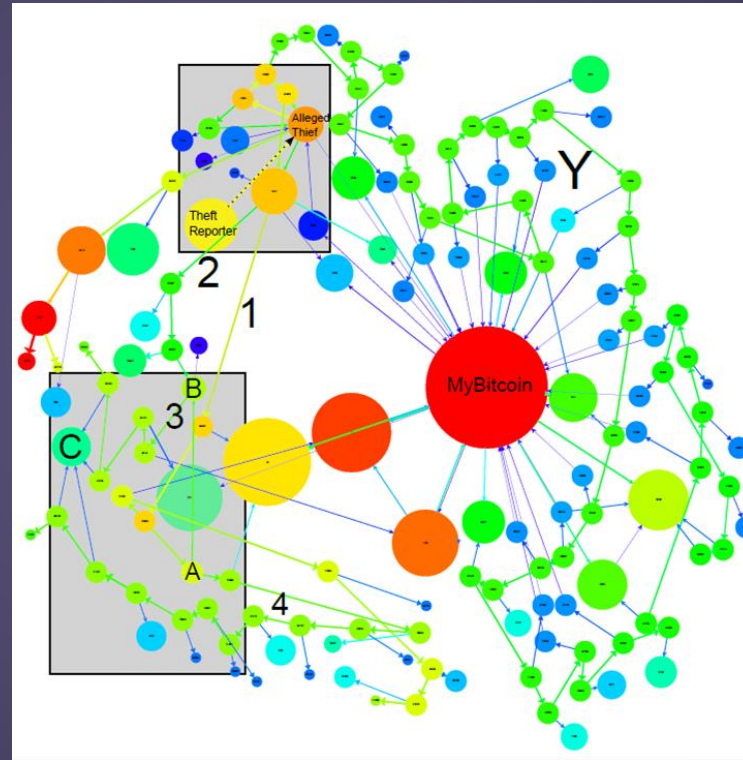
Decrease in Bureaucracy



Blockchain Data??



(Altshuler et. Al, 2012)



- Datasets **shared** amongst all parties
- **Every party** can verify the datasets of other participants in the network

Not to mention the nature and financial savings in paper...

- **Tampered** datasets are **excluded**
- An immutable **single source of truth** is established





Banks

Insurance Providers

Customs / Ports

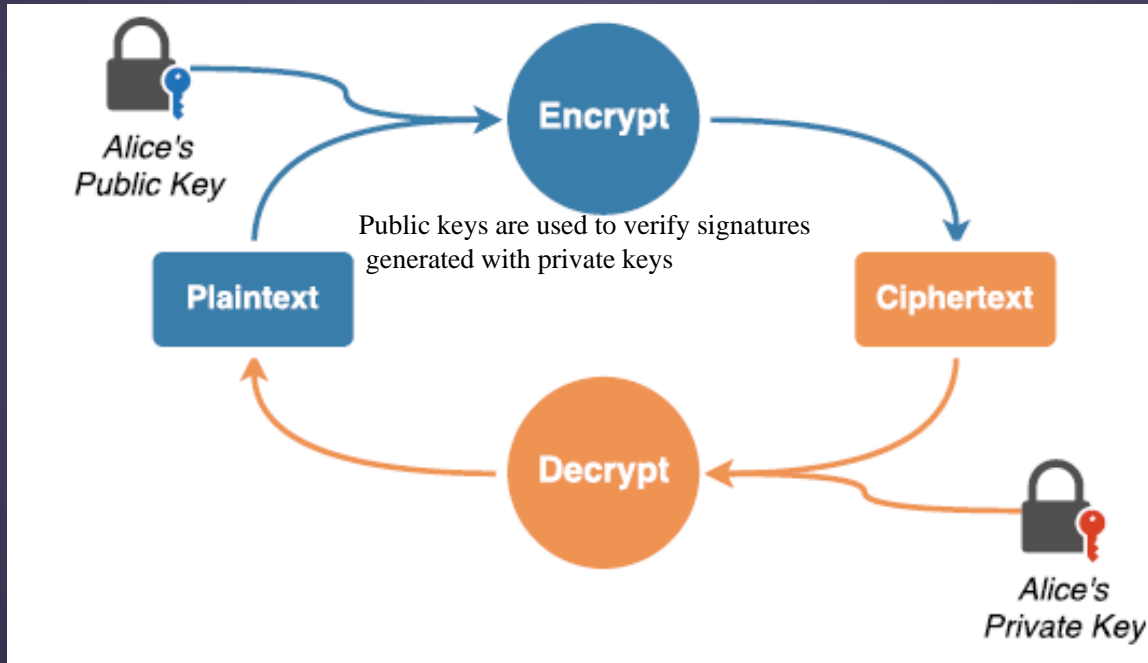
Importers/Exporters

Shipping Liners

Other Blockchains

Asymmetric Key Cryptography

public key □ hash function □ address



digitally sign transactions

Key EU GDPR Mandates

Fines

Companies that violate certain provisions—such as the basic processing principles or the rules relating to cross-border data transfers—may face fines amounting to four percent of the company's annual gross revenue, and up to two percent for violations such as failing to meet the breach notification rule.

Right to be Forgotten

A "right to erasure", also known as the "right to be forgotten," gives a data subject the right to order a data controller/organization to erase any of their personal data in certain situations. Data controllers will be required to erase personal data "without undue delay" when the data is no longer necessary in relation to the purposes for which it was gathered or processed.

Data Protection Officer

Companies whose "core activities" involve large-scale processing of "special categories" of data—information that reveals racial or ethnic origin, political opinions, religious or philosophical beliefs, genetic data, biometric data, health or sexual orientation—need to designate a data protection officer. Companies who collect some of this information strictly for internal human resources purposes may also be subject to this requirement.

Breach Notification

A single data breach notification requirement is applicable across the EU. The rule requires data controllers to notify the appropriate supervisory authority of a personal data breach within 72 hours of learning about it.

FEATURE NEWS

EU's Right to Explanation: A Harmful Restriction on Artificial Intelligence

By Special Guest / January 25, 2017
Nick Wallace

Last September, a U.K. House of Commons committee [concluded](#) that it is too soon to regulate artificial intelligence (AI). Its recommendation comes too late: The EU General Data Protection Regulation (GDPR), which comes into force next year, includes a [right to obtain an explanation](#) of decisions made by algorithms and a [right to opt-out](#) of some algorithmic decisions altogether. These regulations do little to help consumers, but they will slow down the development and use of AI in Europe by holding developers to a standard that is often unnecessary and infeasible.

Addressing Requirements

People

- Adhere to regulation-specific staffing requirements, such as GDPR's DPO, and NY's CISO (drives accountability)
- Education & awareness
- Changing behaviors around the collection and use of data
- Establishing appropriate consent controls
- Ensure suitable technical (security analysts, IR team) & non-technical (business leadership, legal, PR) staff is in place and is trained appropriately

Process

- Perform risk assessment (utilizing framework like NIST, ISO, etc.)
- Identify & manage collection of sensitive data
- Set processing/dissemination rules
- Ensure means to address inquiries and adhere to 72-hour notification requirements
 - Establish data lifecycle management (inventory, classify, track the movement of, and disposal of, data)
- Set IR processes (preparation, detection/reporting, triage/analysis, containment/neutralization and post-incident activity)
- Develop third-party risk program

Technology

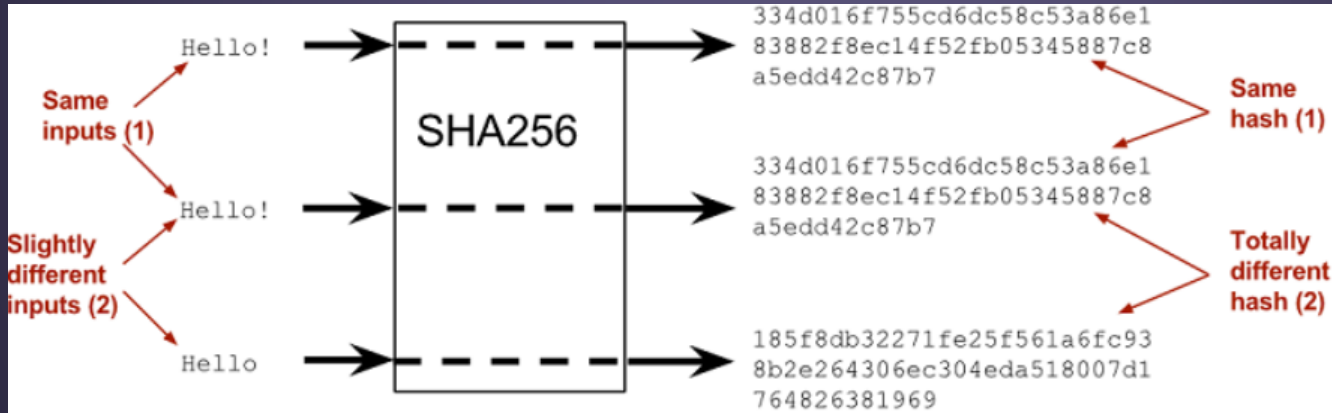
- Visibility (identify data and its location: endpoint, DB/shares, cloud, structured/unstructured)
- Analytics (when, where, and how data is moving)
- Data protection tools (discovery, classification, DLP, encryption, IAM, CASB, and gateway controls)
- Detection tools (IDS/IPS, NGFW, UEBA)
- Containment tools: Endpoint Detection and Response, and Forensics tools
- Third-party risk and security scoring tools

ENDOR PROTOCOL

Make Artificial Intelligence Predictions Accessible to All

*GDPR-Compliant, Bias-Free
Predictions Made Simple and
Accessible on the Blockchain*


Endor works on ENCRYPTED DATA!

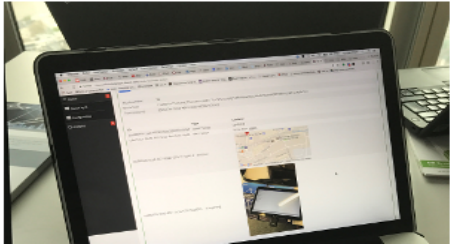


Transaction for RFID Test-123 at 05.04.2017 17:51:54

Back

Blocknumber	394393
Blockhash	WQMVjxJF+iEatCfbD3VewKPYQhgJRgyvNyhKTptBZjmtKg28sbAYNZNAkDSmctq9gwrKYUzhJBTiEims35N+gg==
Transactionid	0425ac73-9e74-409c-bb5d-256e3fbe331d

ID	Type	Content
86e4fdb8-ee4e-4de6-84de-f5f3e797faaa	stateChange	updated
ea172679-13dc-4a75-aa19-78fa972b41c3	description	Store reached
df2042c1-8902-42b3-867a-83fdf3949b7d	position	



EU GDPR MANDATES

Fines

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Endor's unique capability to compute AI predictions on Encrypted data Guarantees zero safety breaches

Data Protection Officer (DPO)

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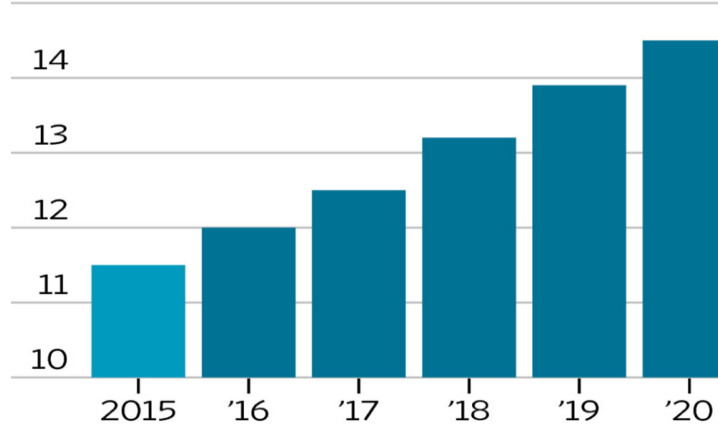
Breach Notification

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Banking on Big Data

How much the financial industry spends on technologies to analyze customers' data and market to them

\$15 billion



Note: Figures for 2016-20 are estimates/projections.

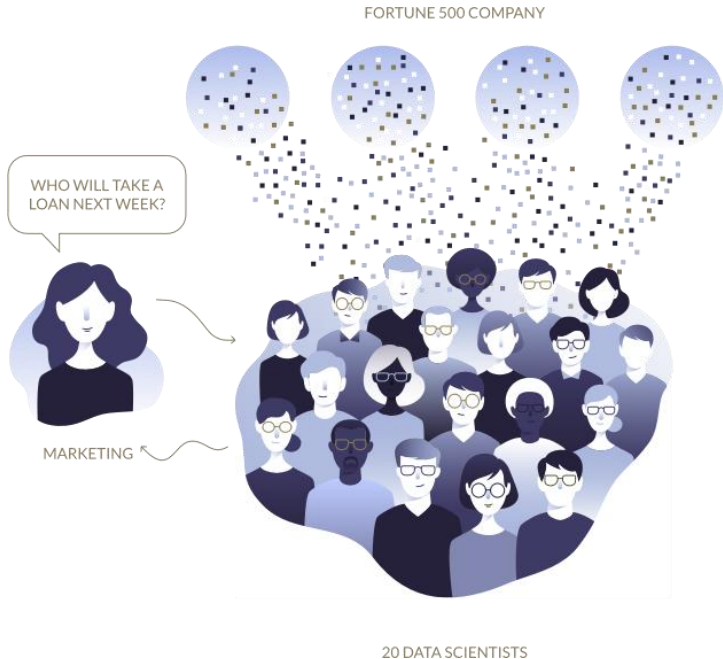
Source: International Data Corp.

THE WALL STREET JOURNAL.

Banks invest in AI technology to do 3 things:

1. Sell more to existing customers
2. Better target prospective customers
3. Save marketing and operational costs

TODAY'S CHALLENGE

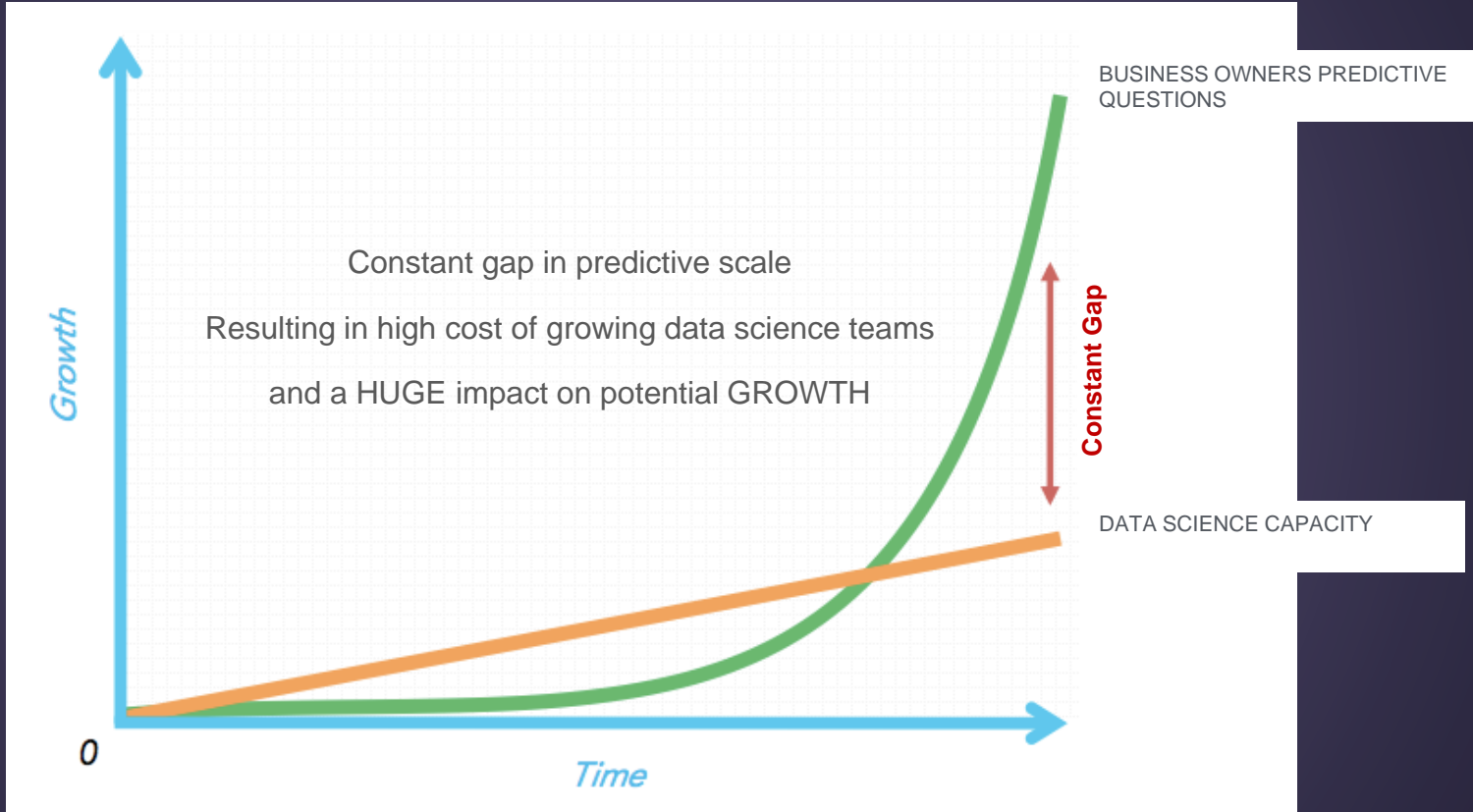


- 🕒 2 MONTHS
- 📊 3 PREDICTIONS
- 💰 MILLIONS

SLOW, COMPLEX,
EXPENSIVE, ACCESSIBLE
ONLY TO TECH-GIANTS

- Scarce & expensive data science PhDs
- Limited access to data
- Requires a model per prediction (~2 m')
- Expensive and limited scale
- Don't need to decrypt data/data safety/GDPR

THE CHALLENGE



THE SOLUTION:

SOCIAL PHYSICS

“

Social Physics breaks the paradigm.

Instead of building a model per each predictive question, build ONE model of human behavior and ask unlimited predictive questions.

This enables the automation of predictive science.

MIT Prof. Alex “Sandy” Pentland

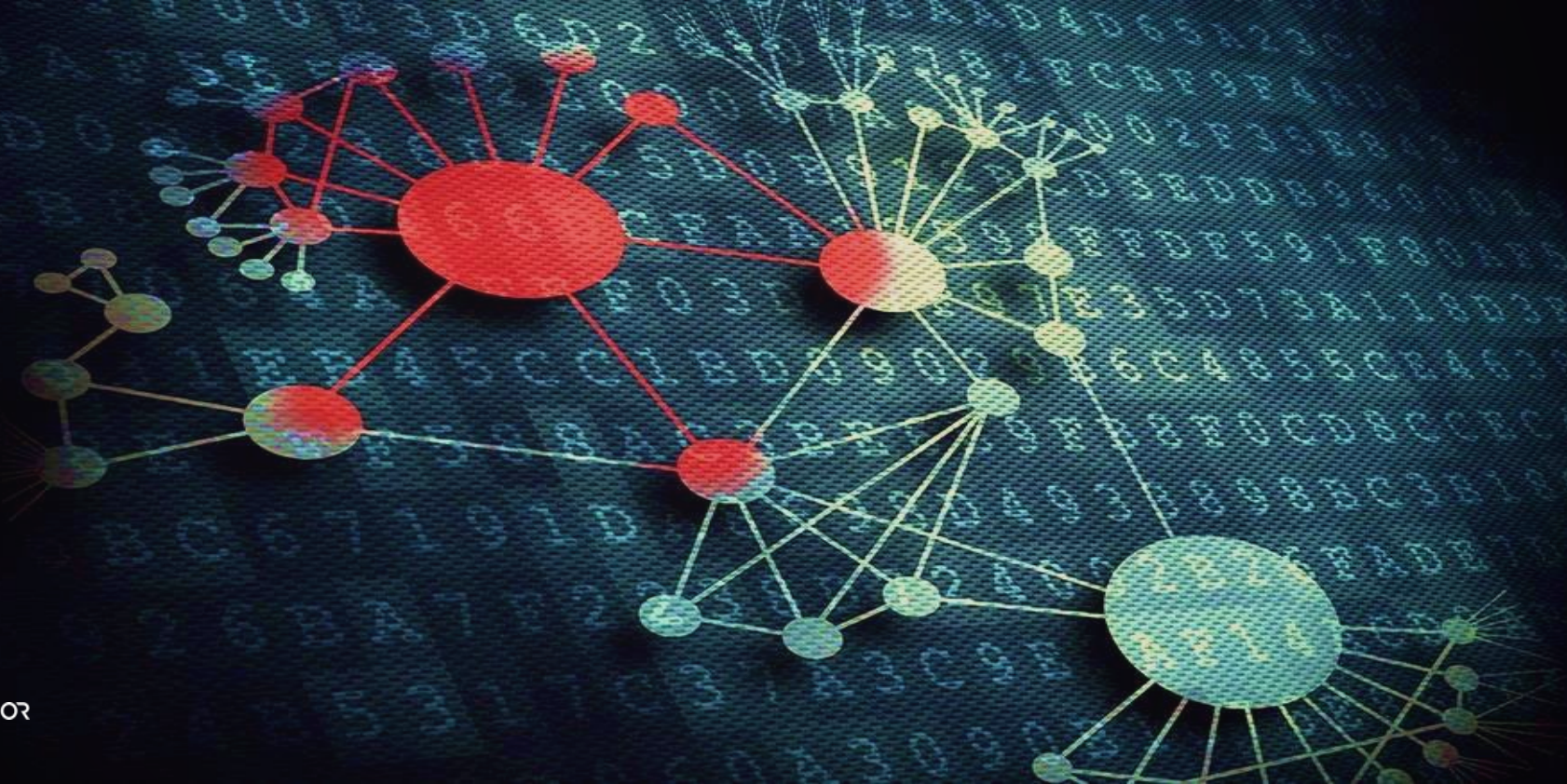


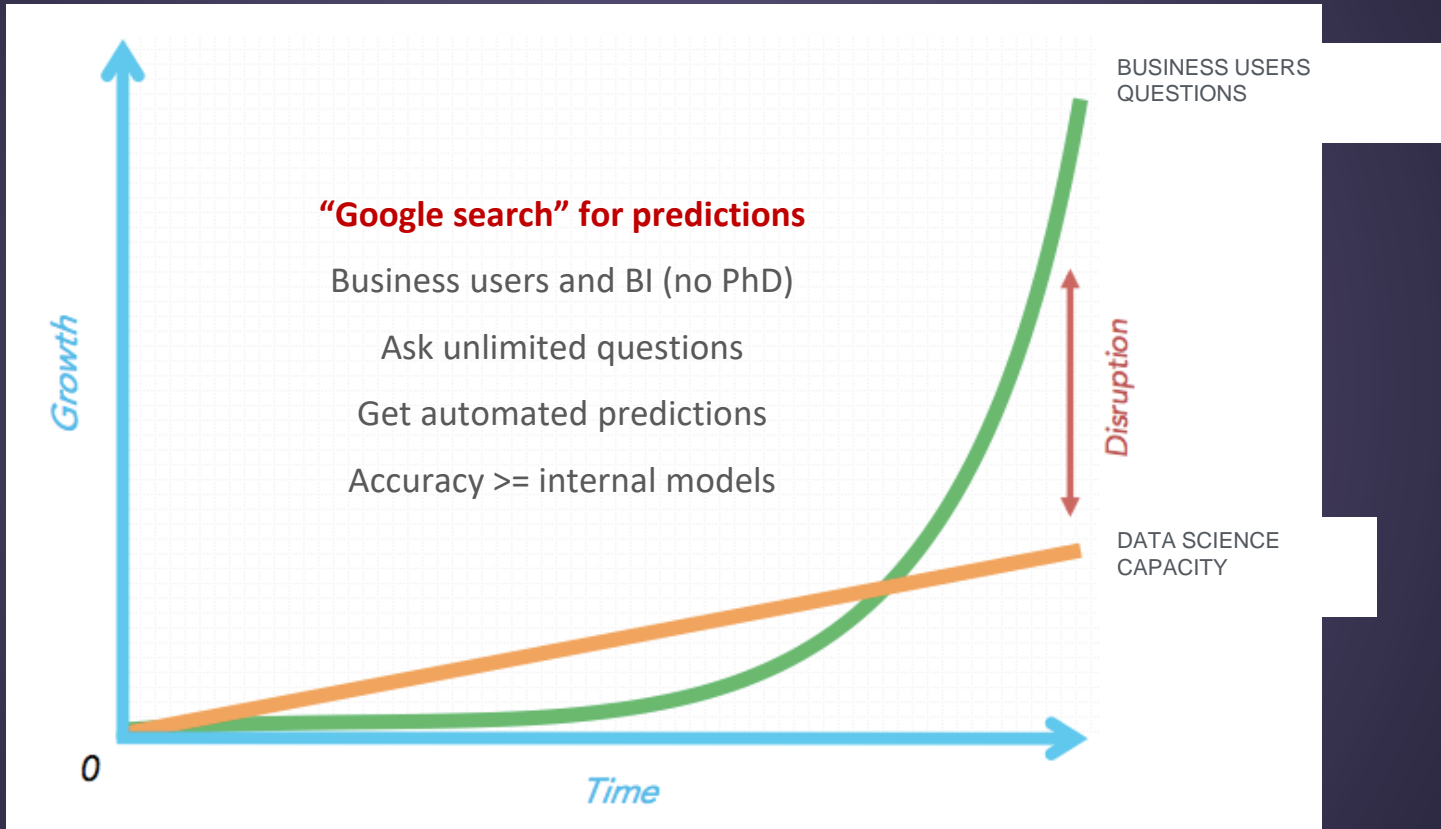
ENDOR



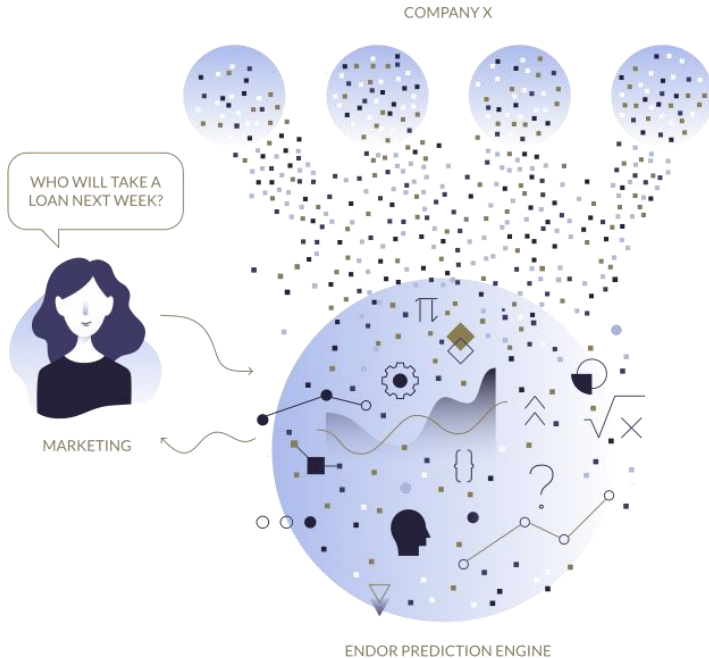
Endor Automated Social Sphere

Clusters of people likely to behave in the same manner, based on your data





REINVENTING PREDICTIVE SCIENCE



ENDOR



1 DAY



20 PREDICTIONS



HUNDREDS OF THOUSANDS

AUTOMATED PREDICTIONS,
FOR Companies of All sizes

- **Guaranteed Data Security , Fully GDPR Compliant**
- **Boost growth with automated predictions**
- **Accurate new predictions within 1 day**
- **Unlimited predictive scale**
- **Cost saving - No PhD required**

HOW DOES IT WORK

Boost growth based on automated accurate predictions
IN MINUTES, INSTEAD OF MONTHS



As simple as that.

*No PhDs required

DISRUPTING BIG DATA

20 DATA SCIENTISTS

🕒 2 MONTHS

📊 3 PREDICTIONS

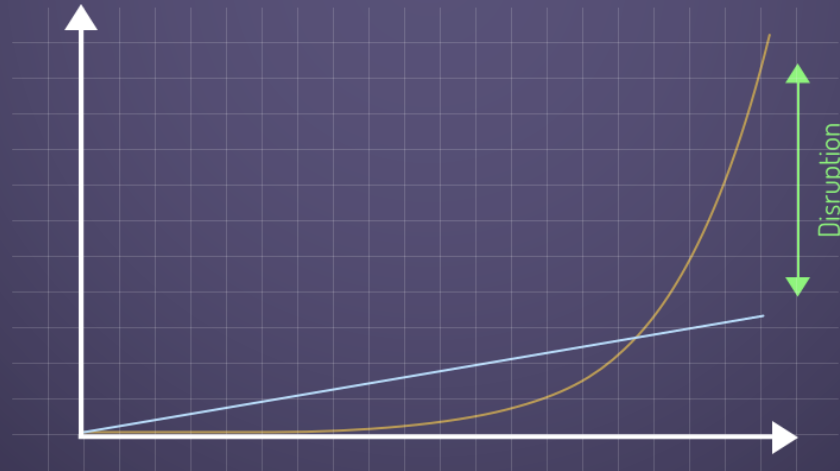
💰 MILLIONS

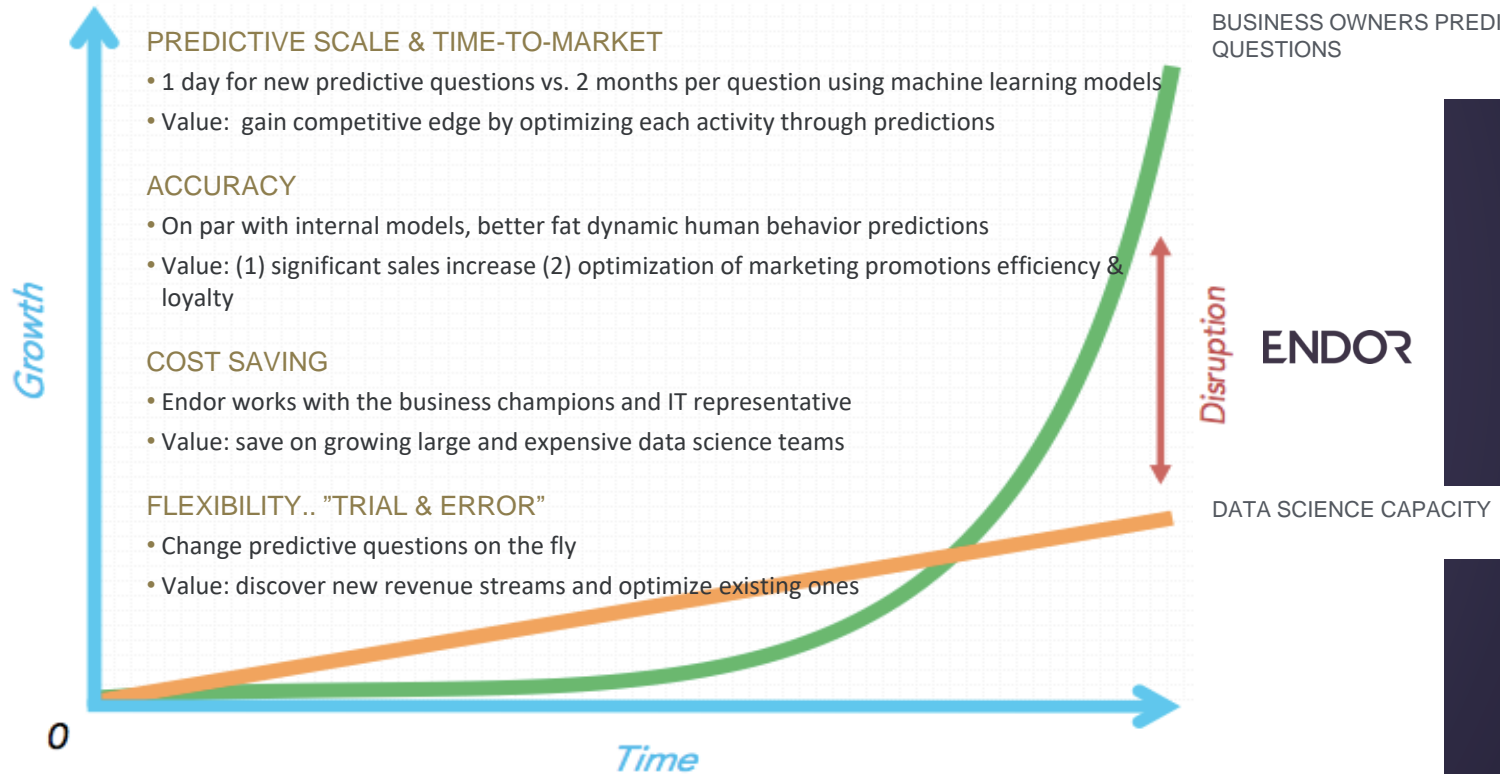
ENDOR

🕒 1 DAY

📊 20 PREDICTIONS

💰 HUNDREDS OF THOUSANDS





USE CASES

SELL MORE

- Propensity to buy
- Cross sell
- Up sell
- Big spenders
- New services - early adopters

QUESTION EXAMPLES

- Propensity to buy: out of all qualified active customers in the past 3 months, who will take a loan above \$X given a call next week? who will take a loan without having a credit card? short term loan? Long term loan?
- Cross sell: out of customers who used product X in the past 6 months, who will start using product Z given promotion Y next month
- Big spenders: out of new customers joined in the past 30 days, who is likely to spend above \$X per month, in the next 3 months?
- New service: out of all active customers in the past 3 months, who will register to a new service that we launched 2 weeks ago?

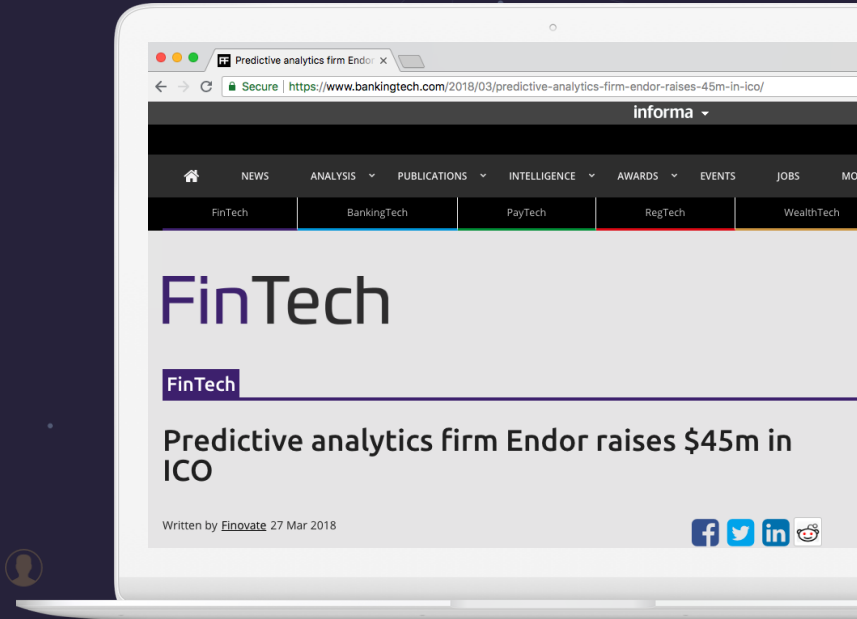
ENDOR



TOKENONOMY

- The EDR token is the exclusive means of payment for services on Endor Protocol.
- The token will be used by Endor Protocol customers to pay for predictions.
- This in turn is used to fund system infrastructure (AWS) and data acquisition (by rewarding data contributor).
- The EDR token is ERC20 compatible, ensuring a high degree of security and integration with the ecosystem.

ENDOR



TOKEN DISTRIBUTION

Endor plans to build its capabilities by committing 60% of all tokens to contributors:

- Entrepreneurs (called “catalysts”) that will build businesses using the platform will receive 25%
- Researchers that will build the algorithms used in Endor’s library will receive 15%, and
- Strategic partners such as Bancor and ORBS that will maximize distribution of the Endor coin will receive 20%.
- 20% in ICO sale | 20% for the Team

Endor’s token economy and token allocation will be vital to ensuring the right mix of stakeholders to build an innovative, decentralized ecosystem.



VISION

N

BRIDGING ENTERPRISE CUSTOMERS AND BLOCKCHAIN

- Bank and retailers



50% of Fiat revenues from enterprise customers will be used for purchasing EDR tokens on exchanges, to generate predictions

ECOSYSTEM

- Partnerships
- Catalysts
- Academia \longleftrightarrow Industry \longleftrightarrow Government



**THE
STANDARD
for predictions
on blockchain**

Token Economy and Convergence of Platforms

- Assist customers to migrate to the Endor Protocol, in order to be given superior services at a lower cost
- **Transparent to the customers and will require zero change in their current work flow, and the privacy of their data will be maintained, as always.**
- Increase overall number of predictions being generated using the Endor Protocol, with new use cases added.
- **Subsequently, incentivize data providers to integrate additional data sources to the Endor Protocol — further improve predictions' accuracy.**

Announcing:

BLOCKCHAIN AND CRYPTO SYSTEMS ALLIANCE

- **Endor** leading new Alliance to fund \$15M towards new **MIT** research center
- Industry partners **ORBS** and **Bancor** join **Endor**, as founding partners
- The Alliance will be joining Fortune 500 companies to advance State-of-the art research on Blockchain and Crypto Systems



S

Partial list companies investing in the MIT Trust::Data research center:

IBM, NEC, Intuit, MasterCard, Metlife, Airbus

FEDERATION FOR ARTIFICIAL INTELLIGENCE ON THE BLOCKCHAIN

<https://cryptosystems.mit.edu/>

- “Technological Foundation of the blockchain”
(MIT Press)
- MIT On-Campus Research Lab
- Information Flow in Blockchain Workshop (MIT, July 2018)
- Technological Collaboration with Government Organizations
(US Congressional Blockchain Caucus, June 2018)
- **MIT Media Lab Blockchain Hackathon (October, 2018)**
- **JOIN US !**

ENDOR



SOCIAL PHYSICS SUCCESS STORIES

RETAIL



”Social Physics is about behavioral analysis of big data, but it takes it to a completely new level. We were very fortunate to find Endor and work with it”

Dr. Alan Boehme, CTO
The Coca cola company

FINANCE



“Endor tripled our loan sales within a week of deployment”

“Endor is our Crystal ball, we look inside and see the future”

Ohad Maimon, EVP Business
Development & Strategy, Laumi
Card

INTELLIGENCE



”A revolutionary concept and a truly technological breakthrough. The results are unmatched by any competing tool”

CIO, Israel Intelligence corps

AWARDS

“

Inventing the “Google” for
predictive analytics.

MIT news office, december 2017



Massachusetts
Institute of
Technology



WORLD
ECONOMIC
FORUM



Gartner 2017
CoolVendor

“

One of the world's 7 most
powerful Data Scientists

Forbes

Winner of the DARPA
network challenge



POWERED BY

MIT Prof. Alex “Sandy” Pentland
Social physics



ENDOR

BACKED BY

INNOVATION
ENDEAVORS

Berkshire Partners

PejmanMar
VENTURES

MARKERLLC

Monument Capital Group



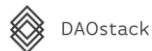
USED BY



PARTNERS



start path





Customer example: Trading Platform

- WHO IS LIKELY TO REDUCE TRADING VOLUME?
- WHICH NEW USER WILL BECOME A HIGH REVENUE SOURCE?
- WHAT TOKENS WILL EACH NEW USER BE LIKELY TO BUY?



Customer example: Propensity to Buy

- WHO IS LIKELY TO TAKE
A LOAN NEXT WEEK?

INCREASED LOANS' SALES X3

Coca-Cola 360 DEGREES OF CONSUMER BEHAVIOR

SCOPE ALIGNMENT - ILLUSTRATION

1

QUESTIONS

Next month Zero defectors

Next month Sprite defectors

Next month Sprite defectors

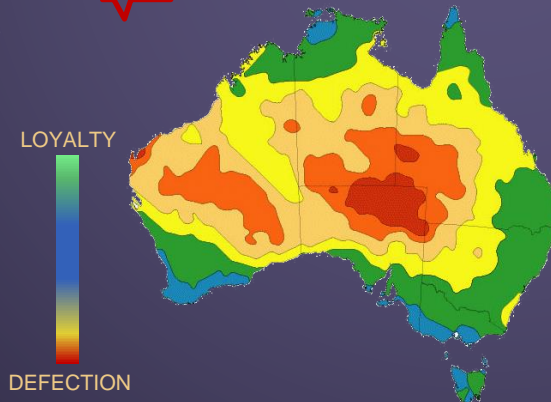
Next month Diet Coke defectors

Next month Fuze defectors

Next month Freska defectors

#2

METROTECHS LOYALTY HEAT MAP



#3

LOYALTY PROFILING

Age	25-35
Financial status	80-130K
Marital status	Single
Education	Academic
Ethnicity	Caucasian
Language	English

*Predefine KPIs w/Endor (data pending)

#4

INSIGHTS

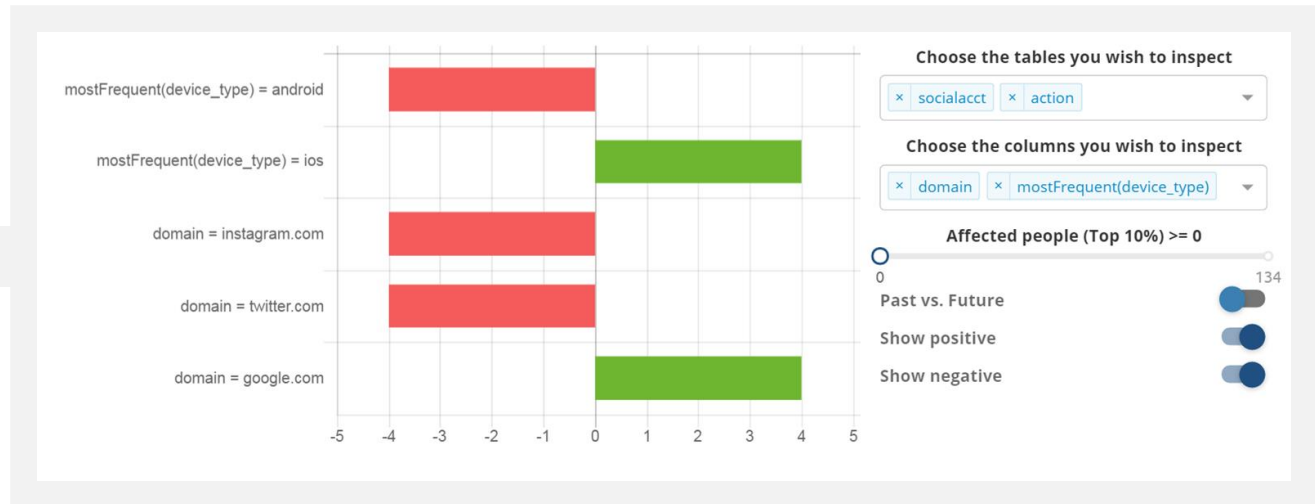
Best to co-sell with

- 6-pack Red-Bull
 - Fuse Tea
- Coupon 20%

Coca-Cola 360 DEGREES OF CONSUMER BEHAVIOR

FREESTYLE CONVERSION – FROM QUESTIONS TO ANSWERS IN 12 HOURS

REPLENISH FLAVORS TIMELY





GLOBAL WARNING SYSTEM EVALUATING BRAND THREAT

QUESTIONS

Emerging trends

Next month Sprite defectors

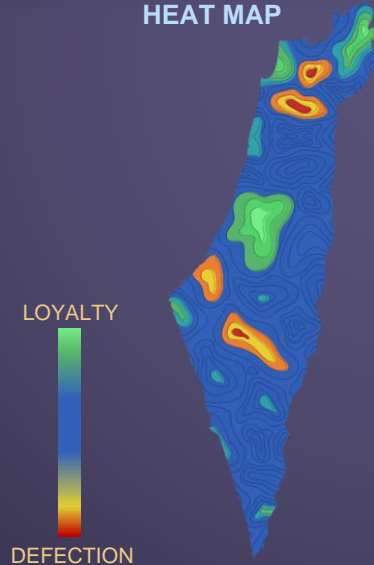
Potential new adopters

Promotions optimization

Affiliates analysis

Mobility prediction

METROTECHS LOYALTY HEAT MAP



LOYALTY PROFILING

Age	25-35
Coupons	20%
Properties	discount 6-packs

BEST TP CO-SALE WITH

6-pack Red-Bull
Fuse Tea



Can ask more questions using outside data

PREDICTION CONSUMERS MOST LIKELY TO VISIT SPECIFIC PARTNER RESTAURANT



JoeB102@gmail.com

Emily.s@gmail.com

Alice@mail.com

Sharon@mail.com

Transition to a Shared Service on Blockchain

The screenshot displays the ENDOR interface with a dark blue header. The main content area is divided into two sections: 'Find (what to find?)' and 'From (where to find it?)'. The 'Find' section includes a search criteria card with a plus icon, an 'Include' toggle, a dropdown menu set to 'CUST (TRANSACTION)', a date range 'Dec 20, 2016 - Jan 18, 2018', a status 'Active', and a filter 'where Total_Spent_Amount > 1000'. The 'From' section includes a search criteria card with a plus icon, an 'Include' toggle, a dropdown menu set to 'ZIP_CODE (ACCT_DETAILS)', a 'Meta-data' field, a value '354236', and a filter 'where clause (field1 = 5 and field2 > 9)'. Above the 'Find' section is a horizontal axis labeled 'Optimize for top:' with a scale from 10 to 100,000 and a slider set to 100. The ENDOR logo is in the top left, and navigation links for 'QUERY MANAGER', 'REPORTS', and 'DATA SOURCES' are in the top right.

Automatic
prediction of

ANY

customer behavior
ON ENCRYPTED DATA