Distributed Futures

An open source research programme for Smart Ledgers and new technologies

To Be, To Have, To Know:
Smart Ledgers & Identity Authentication

Long Finance Webinar

Friday, 22 March 2019, 14:00 to 14:30 BST

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Introduction

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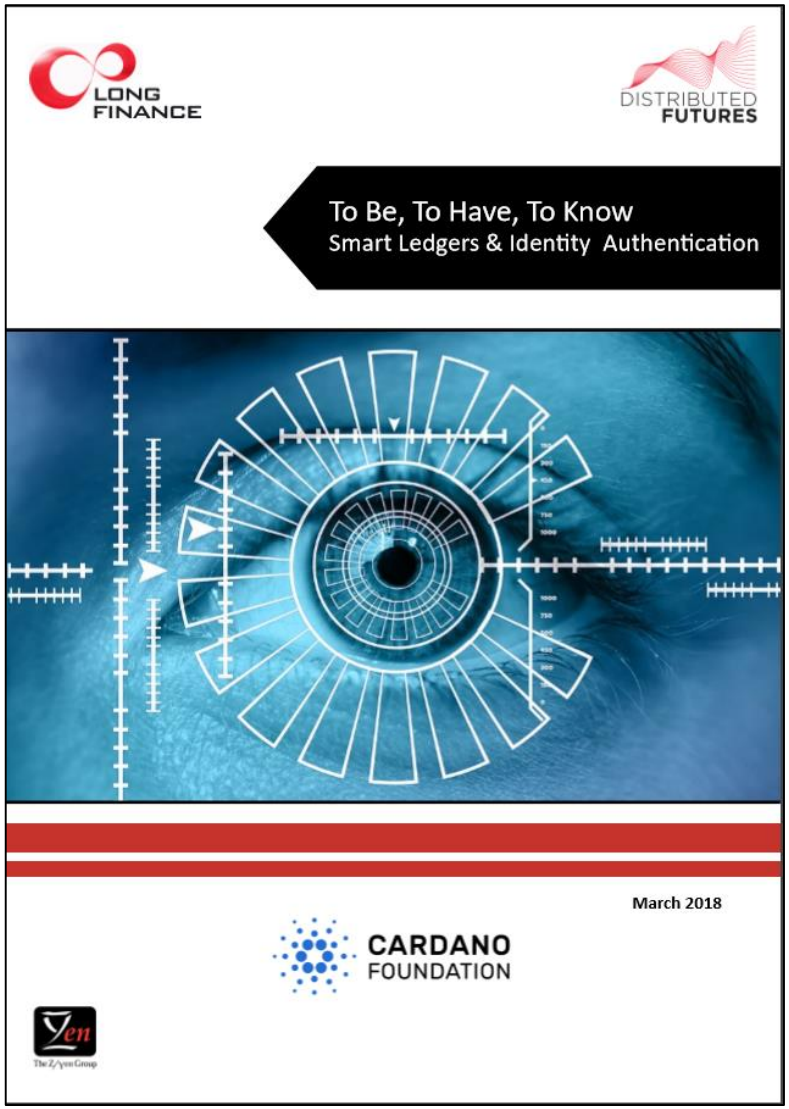
Agenda

14:00 – 14:05	Welcome & Introduction
14:05 – 14:20	Presentation
14:20 – 14:25	Questions
14:25 – 14:30	Concluding Remarks

Report



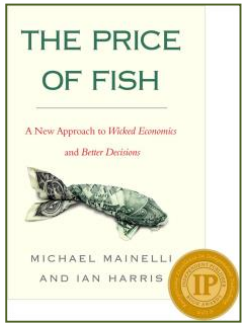
Read the report at:

https://www.longfinance.net/publications/long-finance-reports/

Z/Yen Group

- **Special** – City of London's leading commercial think-tank
- **Services** – projects, strategy, expertise on demand, coaching, research, analytics, modern systems
- **Sectors** – technology, finance, voluntary, professional services, outsourcing

- Independent Publisher Book Awards Finance, Investment & Economics Gold Prize 2012 for ***The Price of Fish***
- British Computer Society **IT Director of the Year** 2004 for PropheZy and VizZy
- DTI **Smart Award** 2003 for PropheZy
- *Sunday Times* Book of the Week***, Clean Business Cuisine***
- £1.9M **Foresight Challenge Award** for Financial £aboratory visualising financial risk 1997



Distributed Futures Programme

We work in partnership with many stakeholders to learn together and build the vital infrastructure needed to make Smart Ledgers a success.

Our research is structured around four themes:

- Societal
- Technological
- Economic
- Political

Directed at four outcomes:

- Expanding frontiers
- Changing systems
- Delivering services
- Building communities

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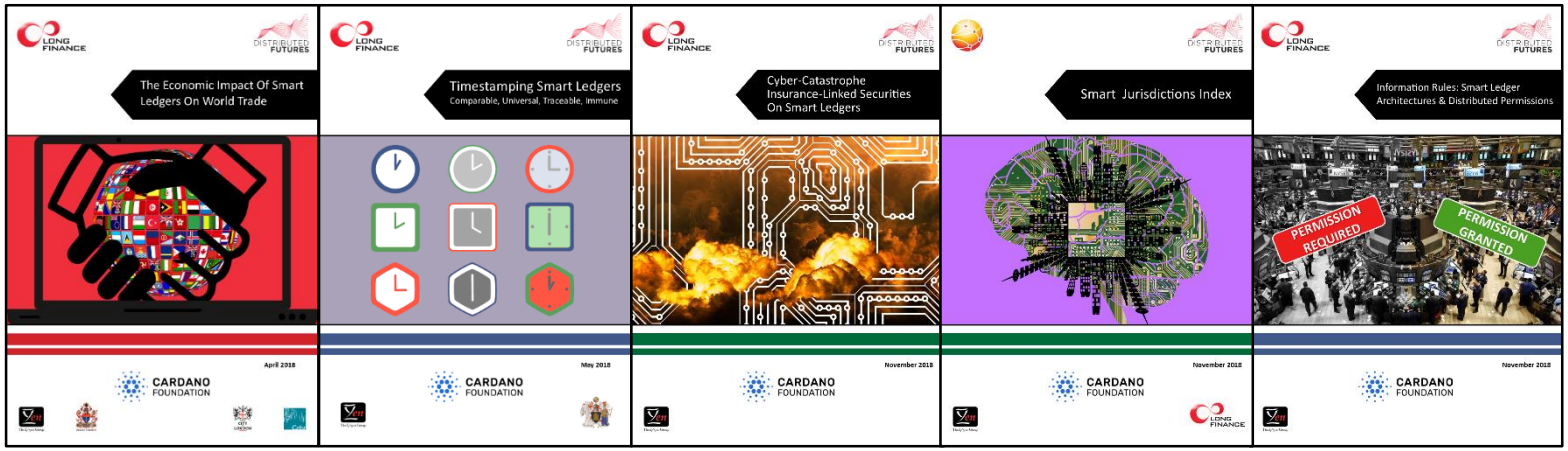
Distributed Futures Research



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Timeline

2017 2018 2019 2020

EXPANDING FRONTIERS

- Smart Ledger Geostamping: Steps Towards Interoperability & Standards 3
- Green Ledgers, MDLs and Sustainability
- Industry Pilot - Shipping
- Human Adjudication In Smart Ledgers
- Healthcare and Smart Ledgers
- Liquidity Or Leakage - Plumbing Problems With Cryptocurrencies 6
- Artificial Intelligence - The Risks
- Stable - Value: Money Supply Rules, Algorithms, And Liquidity
- The Economic Impact Of Smart Ledgers On World Trade 7
- Smart Data For Trading Decisions
- Fractal Characteristics and Measures
- Smart Ledgers & Collective Defined Contribution Pensions 9
- Bubbles
- Servitisation

CHANGING SYSTEMS

- Responsibility Without Power? The Governance Of Mutual Distributed Ledgers (aka Blockchains) 2
- The Quantum Countdown: Quantum Computing And The Future Of Smart Ledger Encryption 4
- Smart Ledger Surveillance Techniques
- IP Rights On Smart Ledgers - Music
- Taxation And Smart Ledgers
- Developing Markets: Use Of Smart Ledgers
- Get Smart About Scandals: Past Lessons For Future Finance 5
- Identity And Smart Ledgers (KYC/AML)
- WIR Revisited
- Timestamping Smart Ledgers: Comparable, Universal, Traceable, Immune 8
- Voting Structures On Smart Ledgers
- Provability in 'Smarts'
- Prior Smarts - The Origins of Smart Ledger Technology
- Taxonomies And Classifications of Smart Ledgers
- Cyber-Catastrophe Insurance Linked-Securities On Smart Ledgers 10
- Inter-Exchange Operability On A Smart Commodities Ledger
- Cryptocurrency Energy Consumption
- Information Rules: Smart Ledgers & Distributed Permissions 12
- Land Tax On Smart Ledgers

DELIVERING SERVICES

- Smart Jurisdictions Index 11
- Smart Data Structures And Interplanetary C#ASMs
- Re-Inventing Local Government, Travel & Tourism
- Online Simulation For Tokens And Currencies
- Certificate Authenticity And Management
- Audit And Accounting For Smart Ledgers
- Economics Of Competing Currencies
- Visualising Smart Ledgers
- Protection And Indemnity Mutuals
- Architechtures For Tokenless Ledgers
- Technology Mapping For Smart Ledgers
- Directory Services

BUILDING COMMUNITIES

- The Missing Links In The Chains? Mutual Distributed Ledger (aka Blockchain) Standards 1
- E-Learning (On-Line Micro Courses)
- Internet of Record
- RegTech
- Performance Benchmarking
- Technical Fora
- Standards and Interoperability
- Regulatory Consultations
- Games And Fun
- Global Clearing And Settlements (FINSERV)
- Ledger Learnings & Simulation
- Media And Telecoms

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Terminology Evolving

- **ledger** – a record of transactions
- **distributed** – divided among several or many, in multiple locations
- **mutual** – shared in common, or owned by a community
- **mutual distributed ledger (MDL)** - a record of transactions shared in common and stored in multiple locations
- **mutual distributed ledger technology** – a technology that provides an immutable record of transactions shared in common and stored in multiple locations
- **blockchain** - “a transaction database shared by all nodes participating in a system based on the Bitcoin protocol”
- **smart ledger** – MDL with embedded, executable code

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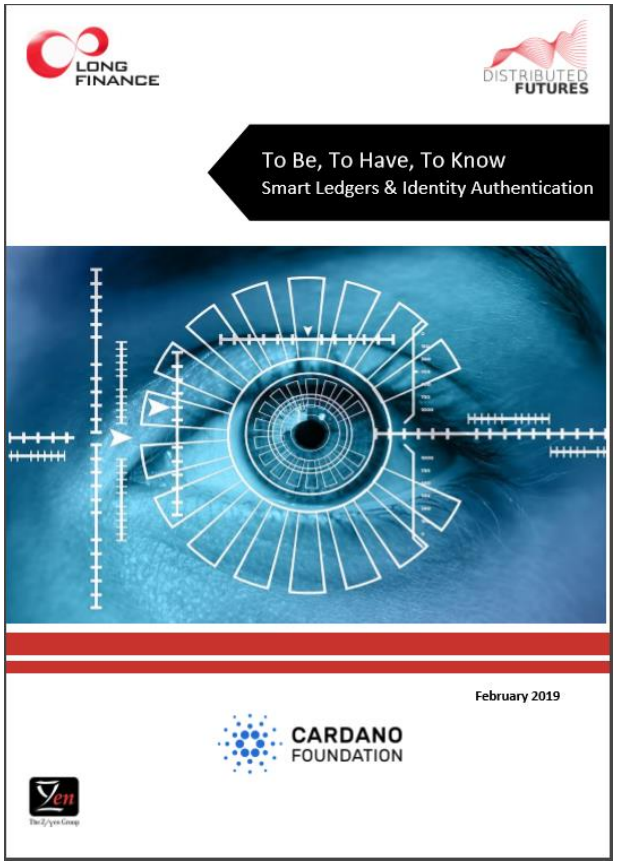
Smart Ledgers Hold Immense Promise

Financial Instruments, Records, Models		Public Records		Private, Semi-Private/Semi-Public		Physical Keys, Intellectual Property, Other Records	
Currencies	Derivatives	Land & Property Titles	Vehicle Registries	Contracts	ID	Home Key	Hotel Key
Commodities	Insurance Policies	Shipping Registries	Satellite Registries	Signature	Will	Office Key	Car Key
Trading Records	Private and Public Equities	Business License	Business Ownership Records	Trust	Escrow	Deposit Box Key	Mail Box Key
Certificates of Deposit	Bonds	Incorporation / Dissolution Records	Regulatory Records	Other Classifiable Data	High School / University Degrees	Internet Of Things	Copyrights & Patents
Voting Rights (Financial Services)	Credit Data	Criminal Records	Passport	Professional Qualifications	Certifications	Licenses	Digital Rights Management
Collateral Management	Client Monies Segregation	Birth / Death Certificates	Voting ID	Human Resources Records	Medical Records	Trademarks	Proof Of Authenticity / Authorship
Mortgage / Loan Records	Crowd-Funding	Health & Safety Inspections	Tax Returns	Accounting Records	Business Transaction Records	Cultural Events	Historical Events
P2P Lending	Microfinance	Building & Other Types Of Permits	Court Records	Locational Data	Genome & DNA	Documenta-ries	Big Data
Account Portability	Airmiles / Corporate Tokens	Government / Listed Companies	Accounts & Annual Reports	Arbitration	Genealogy Trees	SIM Cards	Archives

Report Summary

To Be, To Have, To Know
Smart Ledgers & Identity Authentication

Hugh Morris
ChainZy CEO



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Smart Ledgers & Identity Authentication

- **Introduction –** what kind of world do we want for identity?
- **Synchronic Identity**
- **Diachronic Identity**
- **Identity Management And Authentication**
- **Monopolies –** and their drawbacks
- **Commercial / State Multiplicity**
- **Considerations**
- **Conclusions**

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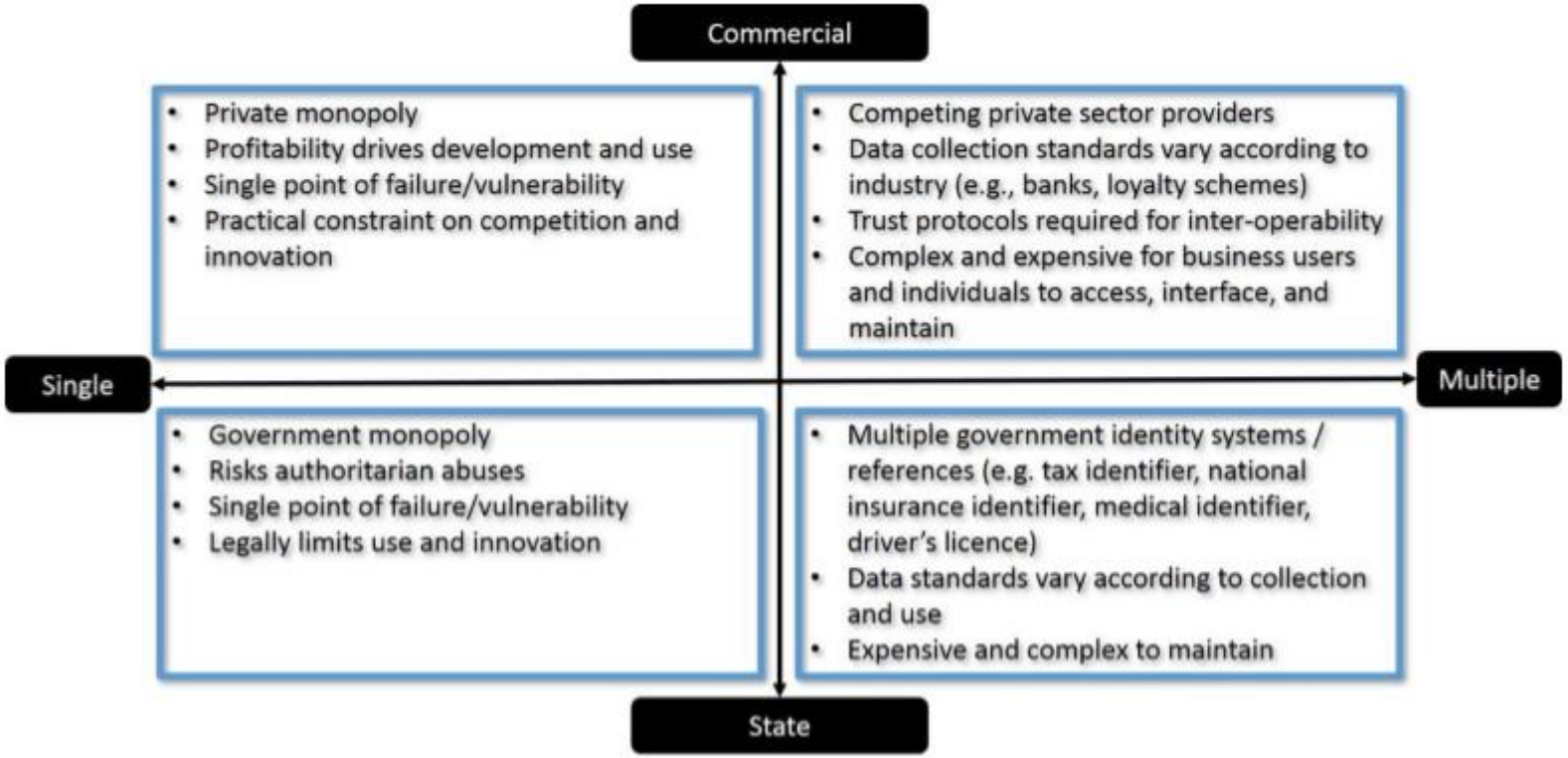
Classes of Identity

- Individuals
  - People
- Entities
  - Companies, partnerships etc.
  - Sports teams
  - Governmental organisations
- Places
  - Towns, cities
  - Property, land
- Animals
  - As creatures
  - The food chain
- Objects
  - Single
  - Compound

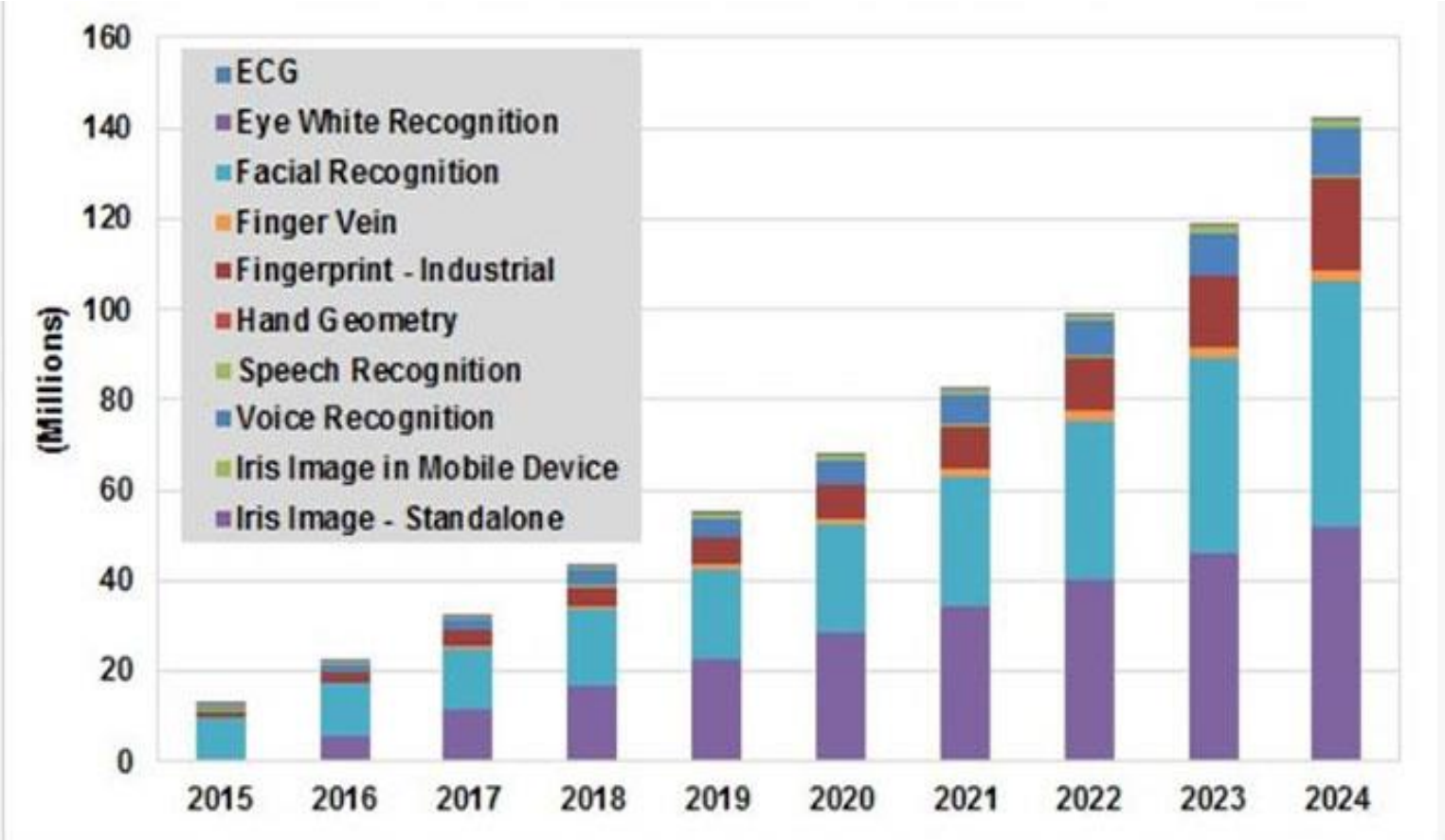
Implementation Models

- The key choices are how identity management and authentication systems are implemented



Growing Use of Biometrics

- Biometrics is a developing set of modalities



Enterprise biometrics devices and licences, World Markets: 2015 – 2024 (source Tractica)

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Biometrics – Benefits and Risks

- Biometric Modalities in Action
- Ease and Acceptability of Use
- Environmental Factors
- FAR and FRR
- Ease of ‘Spoofing’
- Costs and Template Sizes
- Data Storage and Security

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Politics and Identity

- National Identity Cards
  - China
  - India
  - UK
  - Estonia
- Supra-governmental Interventions
- Security and Privacy
- Use and Misuse
- Special Case: Refugees

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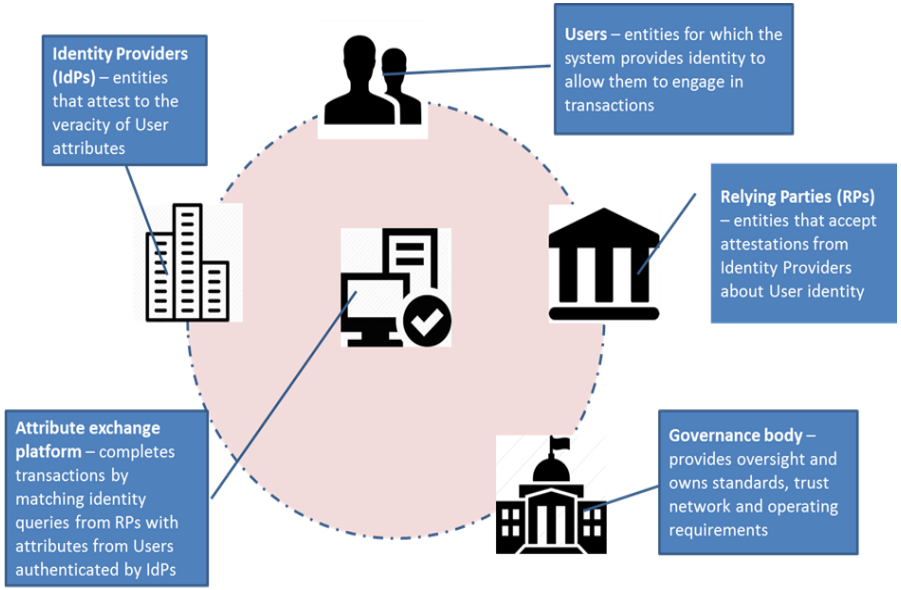
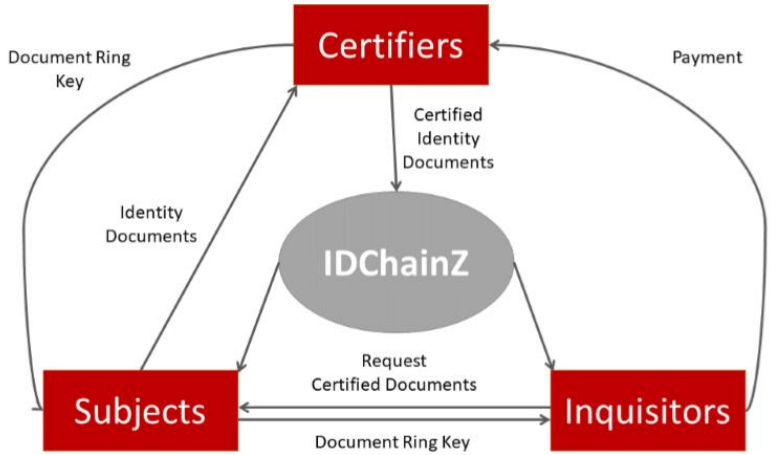
IDChainZ





1) User saves selected Identity ring files onto a new sub-ring for the Relying Party

2) User sets time and use limits on the Relying Party's ring

3) User sends the Relying Party the key for this limited access ring

Inquisitor 's Ring Key:
2fb41e7e-99cf-4110-aab4-ec401f4fd6c6
Access:
1) by App
2) or https://185.77.66.18:3000/api

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Questions

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Closing Remarks

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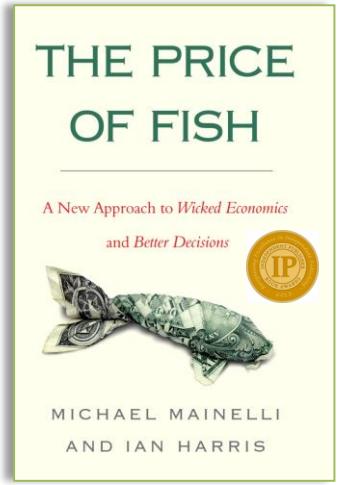
When Would We Know Our Commerce Is Working?

"Get a big picture grip on the details."
Chao Kli Ning

Thank you!

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