



Nasdaq Blockchain

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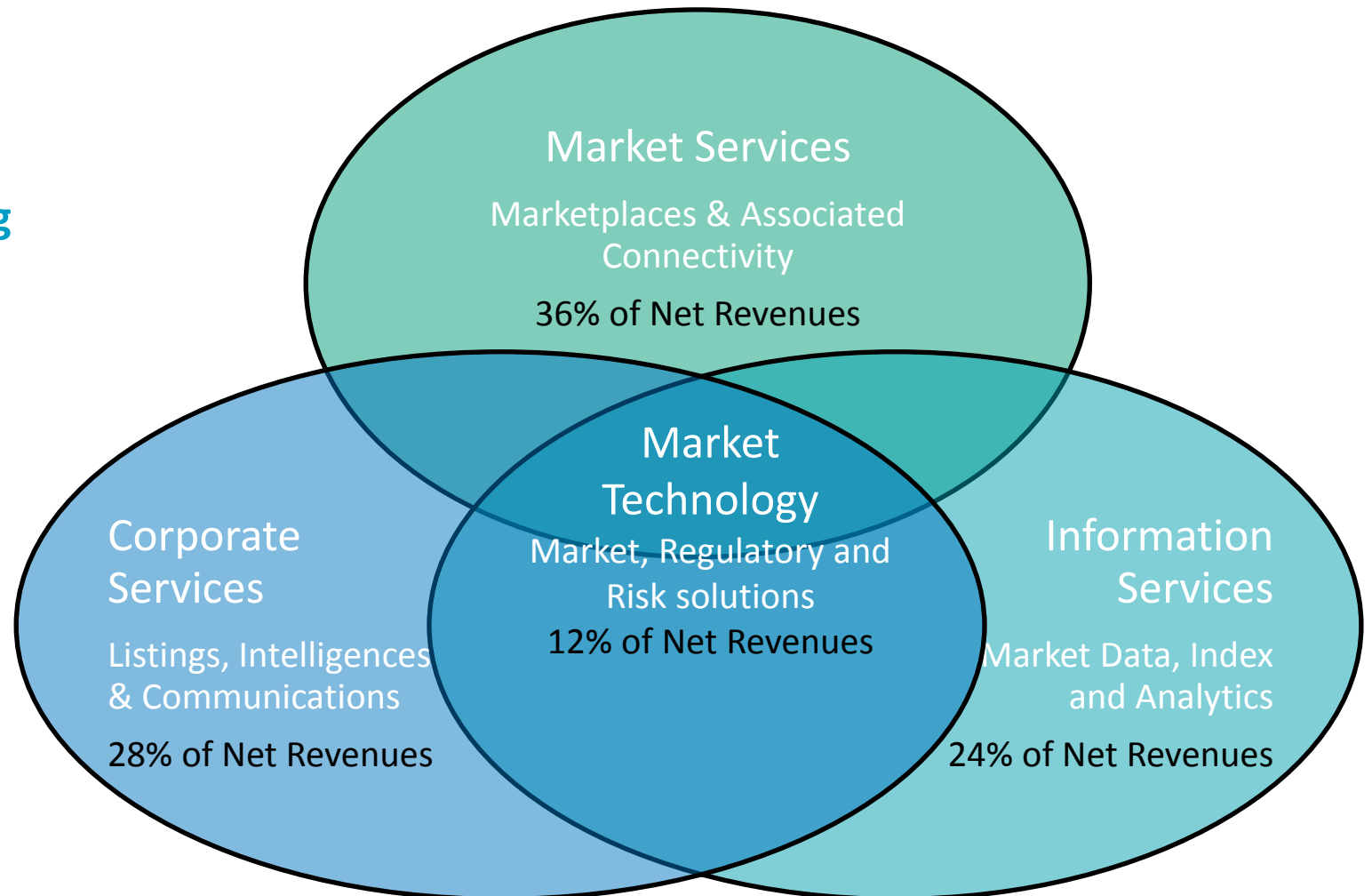
NASDAQ

A FINTECH COMPANY

NASDAQ - WHO WE ARE

We don't chase the opportunities of tomorrow - We create them

**A financial technology company,
rewriting the future of global
economies & markets by unlocking
capital and opportunities through
our technology, innovation, and
expertise.**



MARKET TECHNOLOGY

POWERING MORE THAN 100 MARKETS WORLDWIDE

- **90+ external exchanges, clearinghouses & CSDs** in 50 countries
- **31 Nasdaq owned and operated** exchanges, CSDs and clearinghouse
- **140+ market participants** in 35 countries
- **17 regulators** in 16 countries

AMERICAS (21)

- AFFINITY CAPITAL EXCHANGE
- BATS EXCHANGE (S)
- BERMUDA STOCK EXCHANGE
- BOLSA INSTITUCIONAL DE VALORES
- BM&FBOVESPA (S)
- BOVESPA MARKET SURVEILLANCE BSM (S)
- BOLSA DE VALORES DE COLOMBIA
- BOLSA ELECTRÓNICA DE CHILE
- BOLSA MEXICANAS DE VALORES (S)
- DEPÓSITO CENTRAL DE VALORES
- FINRA
- GOLDMAN SACHS DARK POOL
- ICE US (S)
- IIROC (S)
- LAT AM SEF (S)
- NEX (BROKERTEC US)
- NORTH AMERICAN DERIVATIVES EXCHANGE (S)
- NEW YORK INTERACTIVE ADVERTISING EXCHANGE (NYIAX)
- TP ICAP (I-SWAP)
- TRUEX (S)
- UTP SIP

EUROPE (26)

- AFM NETHERLANDS (S)
- AGENCY FOR THE COOPERATION OF ENERGY REGULATORS (ACER) (S)
- ASTANA INTERNATIONAL FINANCIAL CENTRE
- BATS CHI-X (S)
- BOERSE STUTTGART
- BORSA ISTANBUL
- BUDAPEST
- DUTCH AUTHORITY FOR FINANCIAL MARKETS (AFM) (S)
- ENERGIMARKNADSINSPEKTIONEN (SWEDEN) (S)
- EURONEXT – AMSTERDAM (S)
- EURONEXT – BRUSSELS (S)
- EURONEXT – LISBON (S)
- EURONEXT – PARIS (S)
- FINANCIAL CONDUCT AUTHORITY UK (S)
- ICAP (BROKERTEC EUROPE)
- ICAP (I-SWAP)
- ICE EUROPE (S)
- IRGiT
- KDPW
- OFGEM UK (S)
- OPCOM/ROMANIAN POWER EXCHANGE
- OSLO BØRS (S)
- POLISH POWER EXCHANGE
- SIX SWISS EXCHANGE
- THOMSON REUTERS BENCHMARK SERVICES (S)

MIDDLE EAST AND AFRICA (19)

- ABU DHABI SECURITIES EXCHANGE
- BAHRAIN BOURSE
- DUBAI FINANCIAL MARKET
- EAST AFRICA EXCHANGE
- ERBIL STOCK EXCHANGE
- THE EGYPTIAN EXCHANGE
- IRAQ STOCK EXCHANGE
- KUWAIT CMA (S)
- BOURSA KUWAIT
- NASDAQ DUBAI
- NIGERIAN STOCK EXCHANGE
- NATIONAL ASSOCIATION OF SECURITY DEALERS
- NIGERIAN CENTRAL SECURITIES CLEARING SYSTEM
- PALESTINE SECURITIES EXCHANGE
- PALESTINE CAPITAL MARKETS AUTHORITY (S)
- QATAR CSD
- SAUDI STOCK EXCHANGE – TADAWUL
- SAUDI ARABIA CAPITAL MARKETS AUTHORITY

ASIA-PACIFIC (25)

- BURSA MALAYSIA
- DHAKA STOCK EXCHANGE
- FEX FINANCIAL & ENERGY EXCHANGE
- HONG KONG EXCHANGES AND CLEARING
- ICAP (I-SWAP) AUSTRALIA
- INDONESIA STOCK EXCHANGE
- INDONESIAN CENTRAL SECURITIES DEPOSITORY (KSEI)
- JAPAN COMMODITY CLEARING HOUSE
- JAPAN ELECTRICITY AND POWER EXCHANGES(S)
- JAPANNEXT
- JAPAN EXCHANGE GROUP (JPX)
- MONETARY AUTHORITY OF SINGAPORE (S)
- NATIONAL STOCK EXCHANGE (AUSTRALIA)
- NEW ZEALAND STOCK EXCHANGE
- PORT MORESBY STOCK EXCHANGE
- PHILIPPINES DEALING AND EXCHANGE CORP
- PHILIPPINES STOCK EXCHANGE
- SECURITIES AND EXCHANGE BOARD OF INDIA (S)
- SECURITIES COMMISSION MALAYSIA (S)
- SECURITIES & FUTURES COMMISSION HONG KONG (S)
- SHANGHAI FUTURES EXCHANGE (S)
- SINGAPORE EXCHANGE
- SOUTH PACIFIC STOCK EXCHANGE
- SYDNEY STOCK EXCHANGE (FORMERLY ASIA-PACIFIC SE)
- TOKYO COMMODITY EXCHANGE

TECHNOLOGY TRENDS SHAPING FINANCIAL SERVICES

Blockchain cannot stand alone



CLOUD SERVICES



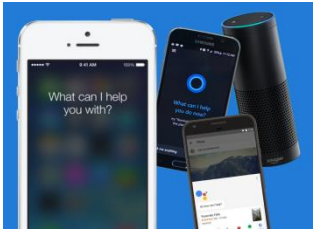
SMARTPHONE ECOSYSTEM



BLOCKCHAIN



INTERNET OF THINGS



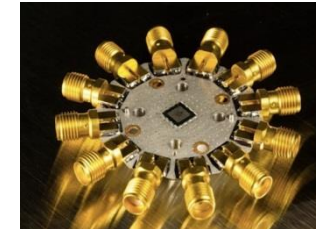
INTELLIGENT/PERSONAL
VIRTUAL ASSISTANT



MACHINE INTELLIGENCE



CRYPTOGRAPHY



QUANTUM COMPUTING



BIG DATA
FOG COMPUTING




MICROSERVICES



AUGMENTED REALITY /
VIRTUAL REALITY

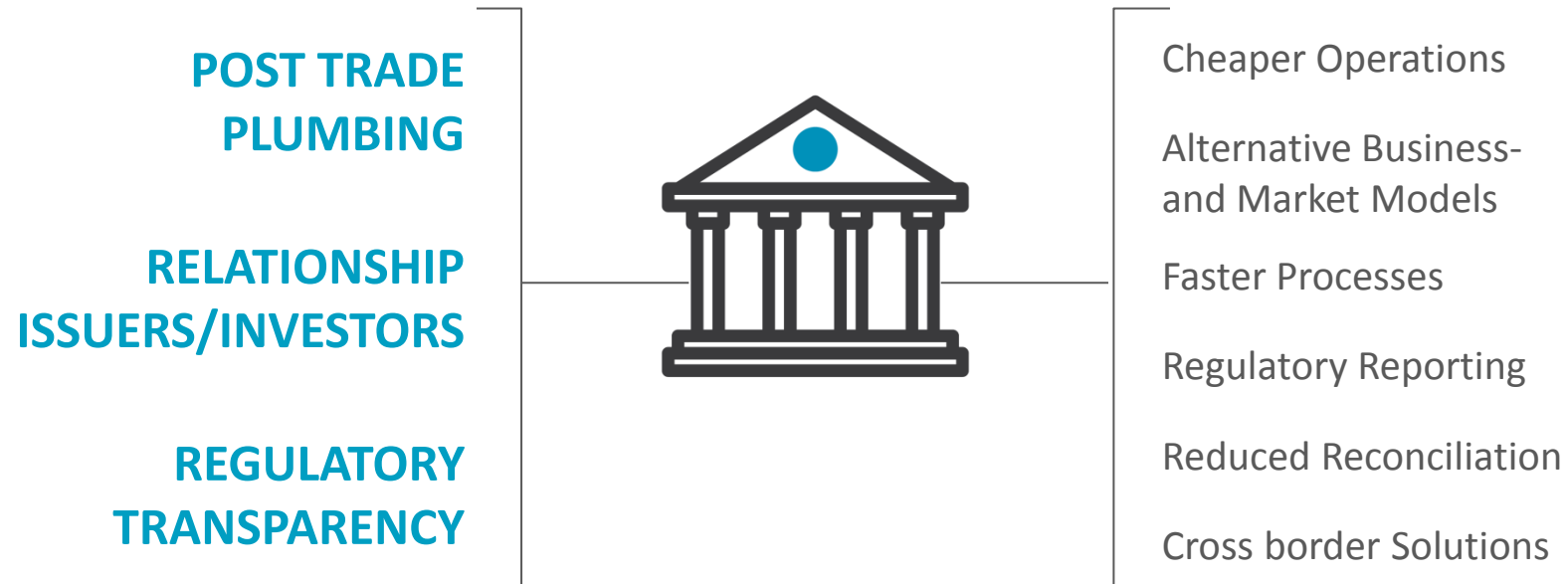


DIGITAL MONEY

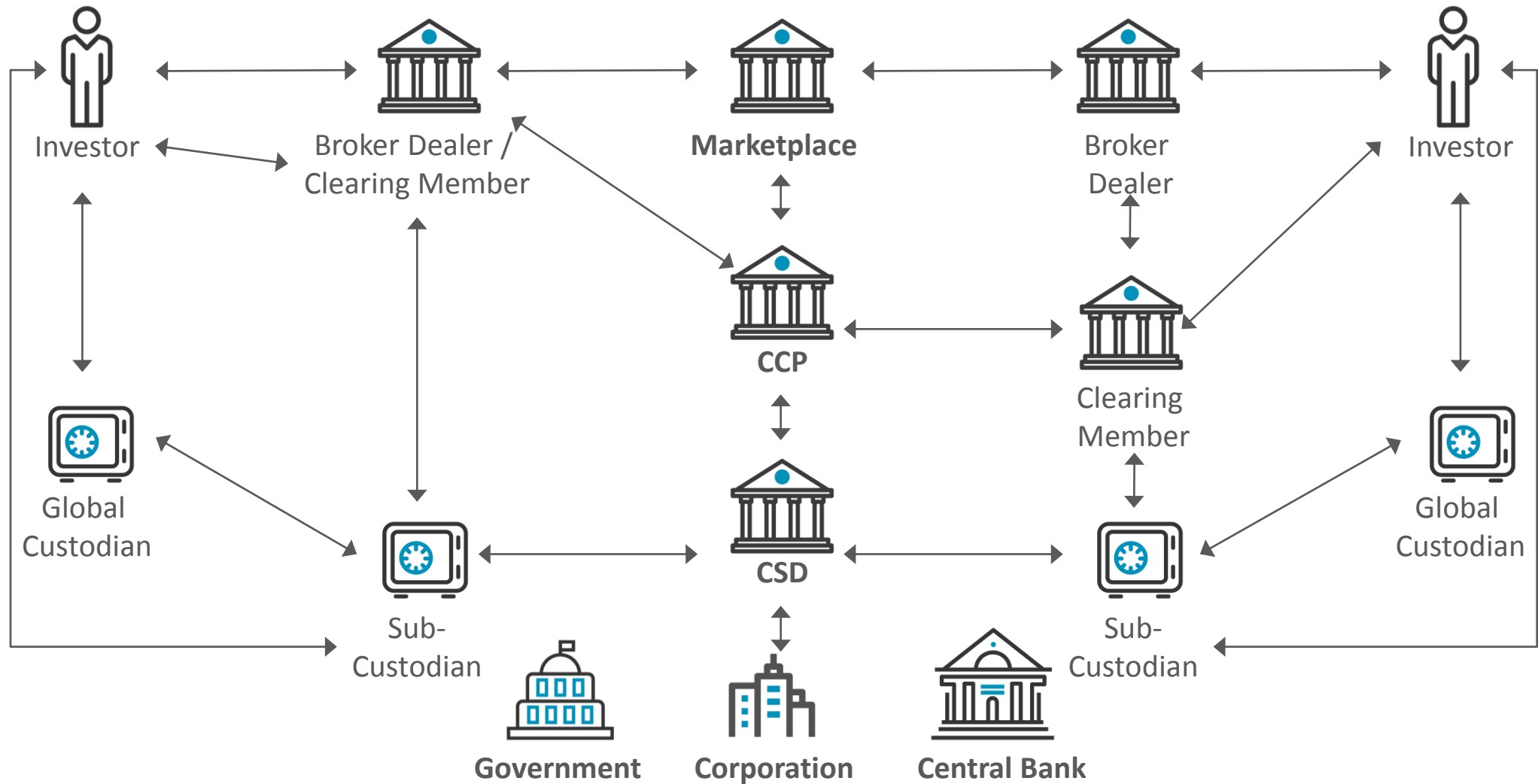
The background of the slide is a solid teal color. Overlaid on this background is a faint, abstract network graphic. It consists of numerous small, dark teal dots connected by thin, light teal lines, forming a complex, interconnected web that spans across the middle of the slide. The lines and dots are more concentrated in the center and fade out towards the edges.

Market Disruption through blockchain

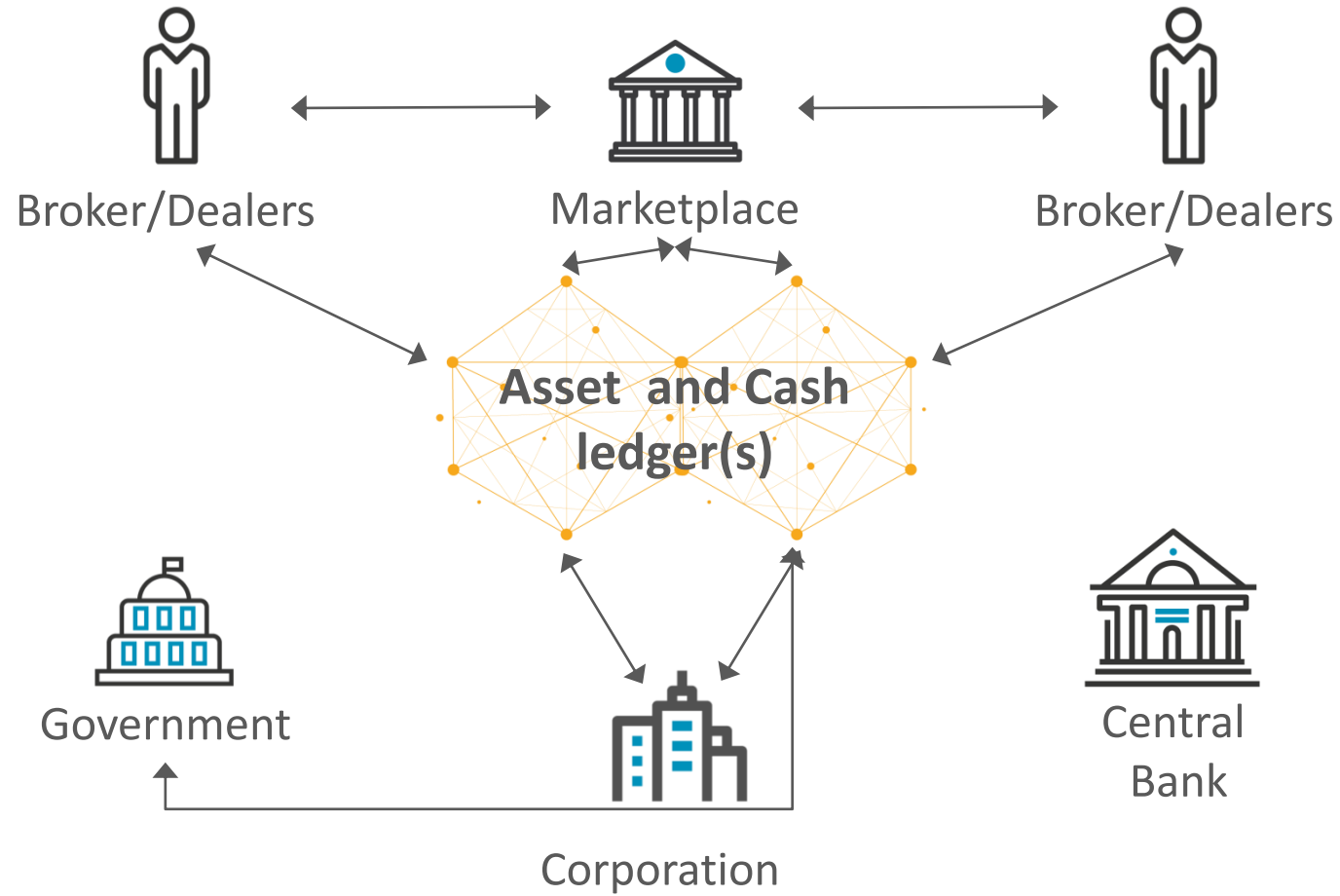
PILLARS OF INTEREST FOR THE FINANCIAL MARKET



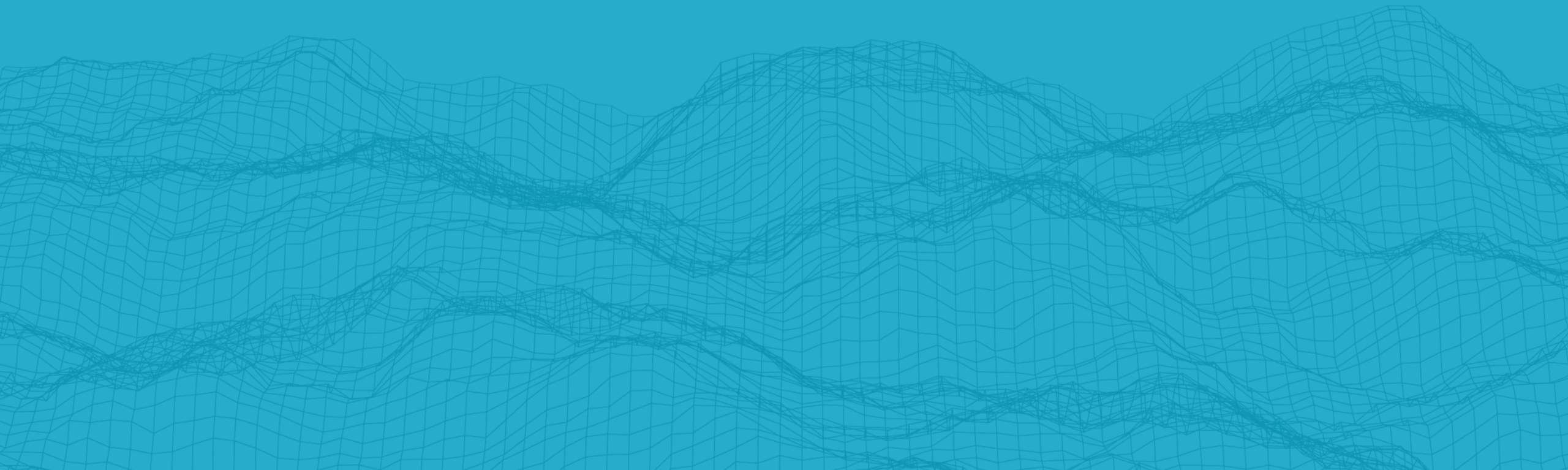
COMPLEX WEB OF THIRD PARTY INTERMEDIATION



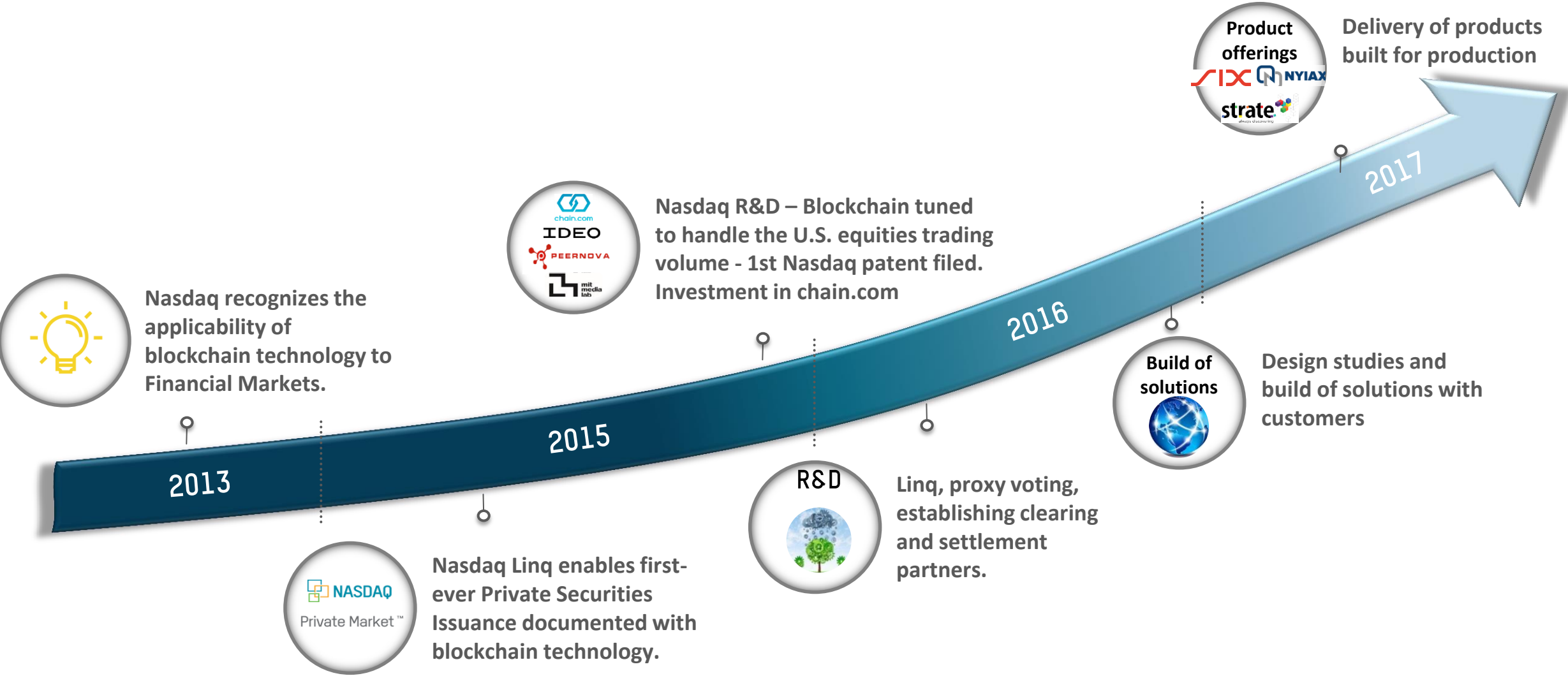
CAPITAL MARKETS ON BLOCKCHAIN



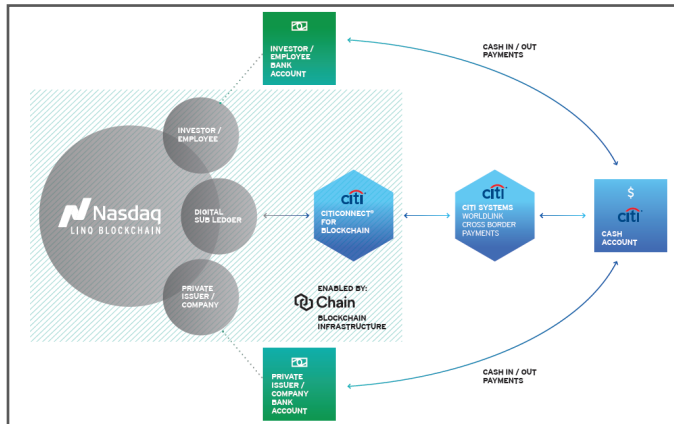
Nasdaq blockchain forges ahead



NASDAQ BLOCKCHAIN JOURNEY



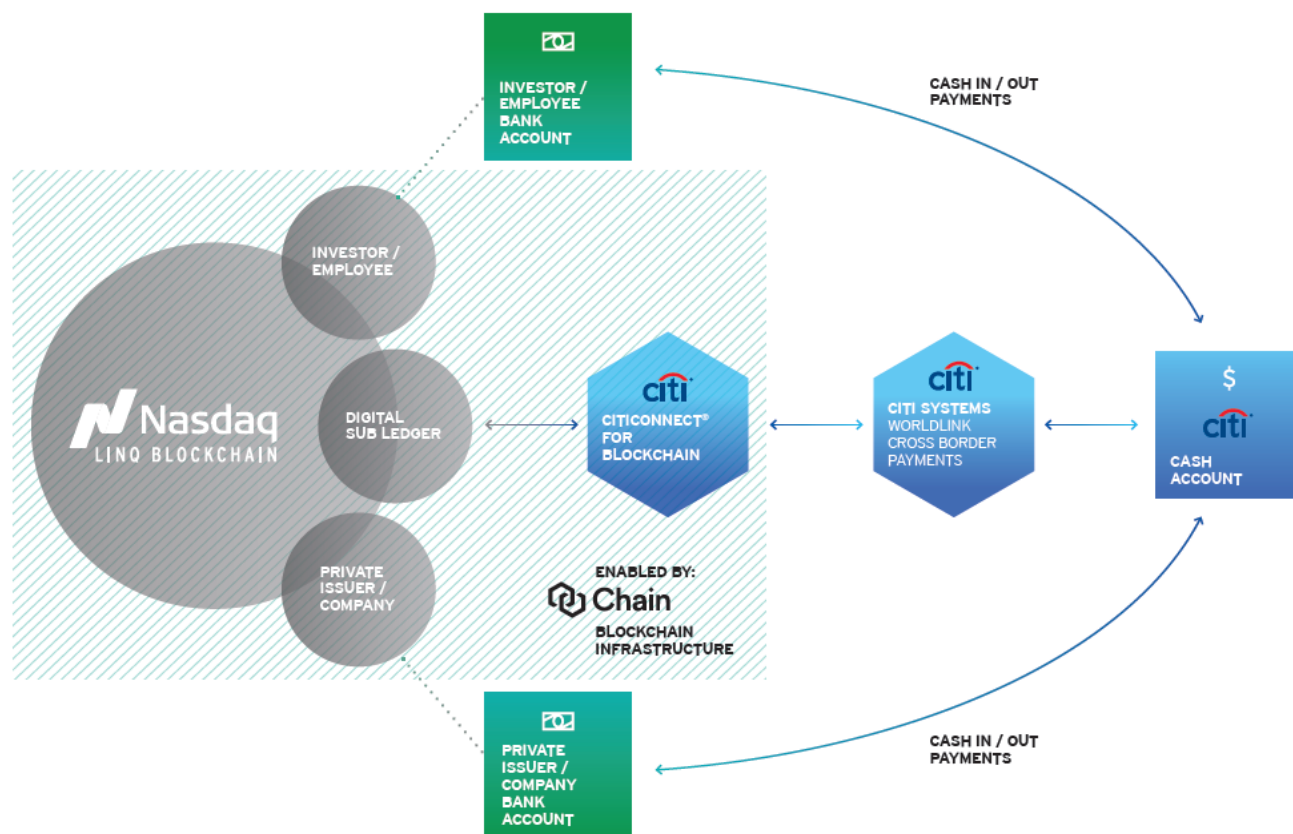
NASDAQ BLOCKCHAIN IN PRODUCTION AND DELIVERY



- Nasdaq is already live with blockchain solutions
- Actively ongoing cooperations with partners to evolve markets into a more decentralized world
- Several development projects underway with the end goal for production

“BLOCKCHAIN FOR PAYMENTS” WITH CITI BANK

BUILDING COMMERCIAL OFFERINGS AND PUTTING SOLUTIONS INTO PRODUCTION



Nasdaq / Citi Payment Solution

- A new integrated payment solution
- Enables straight through payment processing
- Automates reconciliation by using a distributed ledger to record and transmit payment instructions
- Integrates Nasdaq and Chain blockchain technology with Citi's global financial network

ISSUANCE AND SETTLEMENT OF OTC PRODUCTS IN BLOCKCHAIN

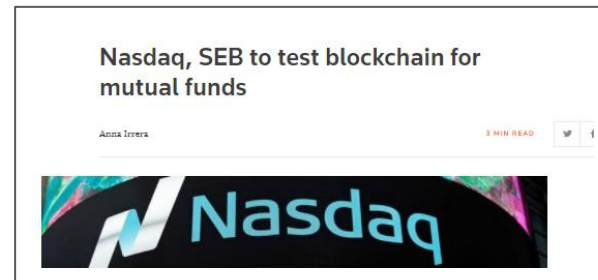
BUILT WITH AIM FOR PRODUCTION, DEPLOYED FULLY IN THE CLOUD



Issuance and Settlement of OTC Structured Products

- Issuance and settlement of structured products through a DLT solution, including management of payments.
- Solution deployed fully in a cloud environment, built on the Linq and Nasdaq Financial Framework.
- Initial MVP phase with member testing, followed with move into production and further enhancements for automating corporate actions processing
- **MVP project finished January 2018, phase 2 in the planning**

SOLVING OUR NORDIC MUTUAL FUND CLIENT NEEDS WITH BLOCKCHAIN

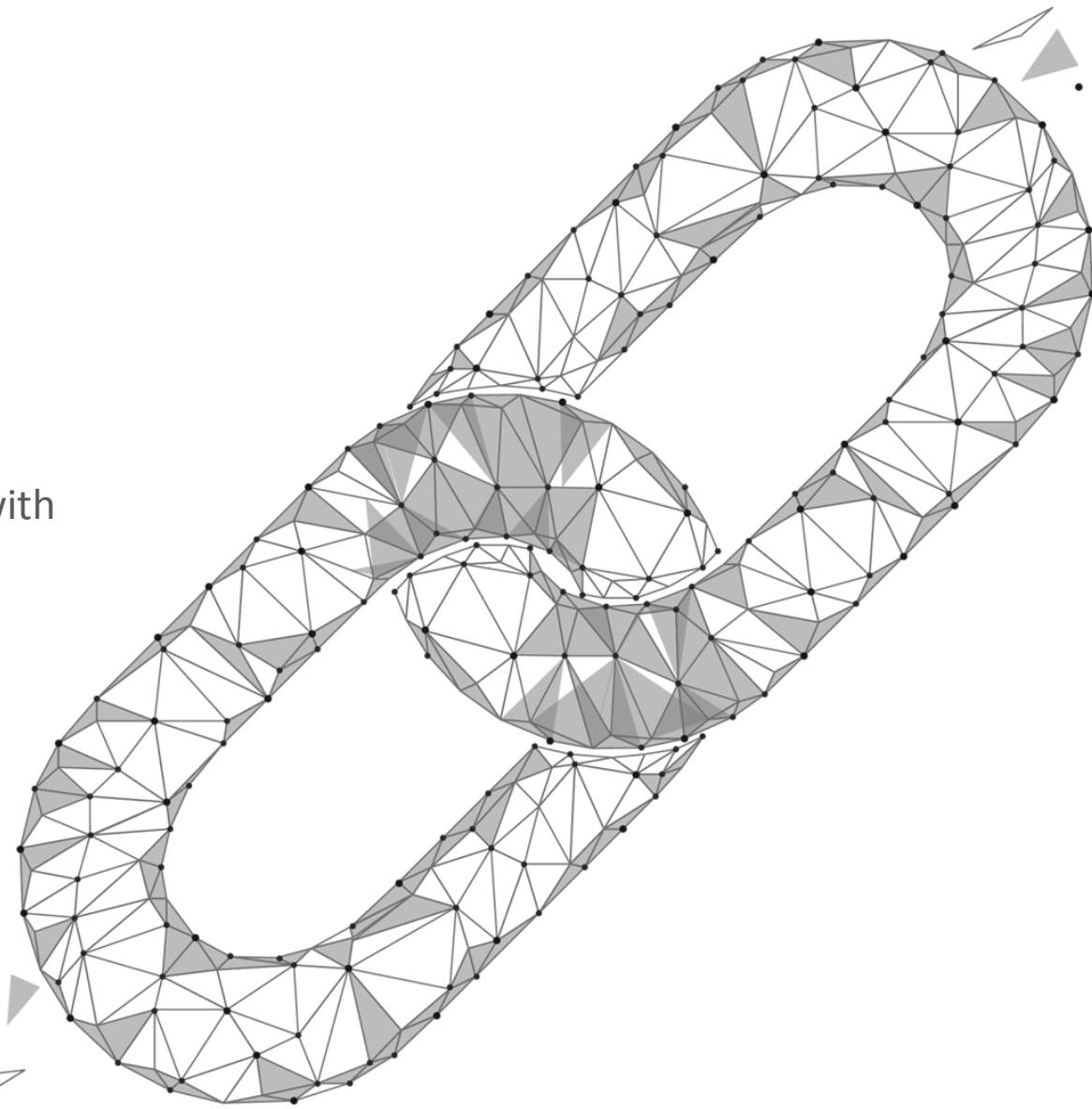


Issuance & Settlement of mutual fund shares

- Will revolutionize the fund market with one common framework for issuing, trading and settling of fund units including payments on the blockchain
- Current market very fragmented, many intermediaries, long lead times and sometimes fax machines are still being used
- Initial start in the Nordic countries, further global expansion with the market technology customer base
- **PoC project finished by end of year**

NASDAQ PUSHES BLOCKCHAIN AHEAD

- **Blockchain will disrupt and improve our markets**
Several types of market functions will benefit from a more harmonized and shared infrastructure
- **Nasdaq is a pioneer and blockchain leader**
Actively involved in developing and re-imagining the future with blockchain as one of the elements to think new
- **In production today with blockchain**
Already today we have solutions in production and products available for global use
- **Network effect through Nasdaq community**
100+ marketplaces already on the same technology



THANK YOU

NASDAQ - The Leading FinTech Company

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