R3 was founded in 2015 as a consortium of 42 leading financial institutions to explore blockchain technology. In 2018, R3 launched Corda Enterprise, a scalable solution to meet the service and multi-party network infrastructure requirements of highly regulated industries. Our customers include:

- DTCC – Post trade settlement systems
- Wells Fargo – live digital cash solution for interbank settlement
- HQLAx – live regulated market with Deutsche Börse
- SIX Digital Exchange – FINMA-regulated live digital assets exchange
- Spunta – 91% of the Italian banking sector live on inter-bank reconciliation app
- Archax – 1st FCA-regulated exchange for fractionalized & tokenized digital assets
A distributed ledger is not a new concept...

- The Yapese people have been using Rai Stone currency since 400 A.D as an exchange of value.
- Being too impractical to move, they established a mental distributed ledger and notified the community whenever a stone changed hands.
...today’s Capital Markets DLT has been enabled by an evolution of capabilities over time ...

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 A.D</td>
<td>Computer Usage Company provides Software products and services</td>
</tr>
<tr>
<td>1950s</td>
<td>Lyons Electronic Office (LEO) Computer used to solve accounting</td>
</tr>
<tr>
<td>1970s</td>
<td>IBM formed a ‘crypto group’ to protect customers data with Computer-Based Encryption</td>
</tr>
<tr>
<td>1980s</td>
<td>TCP/IP established the Internet as we know it today</td>
</tr>
<tr>
<td>2009</td>
<td>Pseudonym Satoshi Nakamoto made Bitcoin available as first Cryptocurrency</td>
</tr>
<tr>
<td>2014</td>
<td>Salesforce deliver enterprise applications using a simple website via Cloud Computing</td>
</tr>
<tr>
<td>2019</td>
<td>SIX launch First Regulated Digital Exchange</td>
</tr>
</tbody>
</table>

Each development evolved with:

1. Tech adaptation to Capital Markets
2. Interoperability standards established
3. Catalyst(s) for widespread adoption
...so where are we today? DLT focused regulatory changes to ensure stability and attract activity...

Market led tokenised asset activity

Regulatory Developments

20+ Government Agendas to foster innovation in Digital Assets
22+ Countries with DLT specific regulations or clarifications

R3 DLT Readiness Score

50% of FMIs plan to execute DLT Strategy within 18 months

Digital Assets

CBDCs

Inactive
Research
Development
Pilot
Launched
...but why so much activity? Reduce resource required for core activities and expand value proposition...

24/7 Operating Hours

Distribution & Functionality

Increasing Competition

Introducing new investable assets

FMI

New Asset classes and service lines

Investors

Members

Tightened Regulations

Capital Requirements i.e. Basel III endgame

Reporting Obligations

Corporate Governance

Margin Pressure

Transaction Fees trending to 0

Listings weighted to large cap

Custody aaS commoditised

24/7 Operating Hours

24/7 Operating Hours

Mid-back office processing errors

1 in 20 trades fail to settle at T+2+

Hyperconnected Exposures

Evolving Risk

Evolving Risk

Evolving Risk

Evolving Risk
...why tokenise? The same reasons we dematerialised securities and future proof for T+N...

- **Bearer**
  - Physical/paper certificate of security ownership (same as cash)

- **Dematerialised**
  - Electronic record of security ownership in central database (attributes/prospectus in separate database/documentation)

- **Digital**
  - Digital record of security ownership with attributes recorded on a distributed ledger

**Benefits**

- Transparency
- Traceability
- Mobility
- Operational Efficiency
- Operational Risk
...what problems are they solving? Three example paths to solving capital market problems using DLT...

<table>
<thead>
<tr>
<th>Point Solutions Targeting Specific pain point</th>
<th>New Market Structure Solutions</th>
<th>Digital Securities Issuance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced operational risk and costly reconciliation process bilateral trades</td>
<td>Offer Intraday and immediate access to collateral Management service</td>
<td>Reduced time and cost to issue and settle primary allocations</td>
</tr>
<tr>
<td>Back-office reconciliation with 98.2% automatic matching of approx. 200mn per month</td>
<td>Real Time legal ownership transfer</td>
<td>Onboarding, origination, issuance and distribution for digital securities</td>
</tr>
<tr>
<td>Multi-party daily workflow with transparency and immutability</td>
<td>Reduce operational risk of failed settlement</td>
<td>Streamlining primary market workflow and set up for digital asset services</td>
</tr>
<tr>
<td>Leads to standardization with shared matching algorithm</td>
<td>Reduce liquidity buffer (est. up to 25% with 100bps opportunity cost) with proactive intraday management</td>
<td>Delivery vs payment on ledger for accelerated primary market settlement</td>
</tr>
<tr>
<td>Integrates into existing mission critical infrastructure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
...what is the role of FMIs? Enable new market models that are built on existing trusted market principles...

**Multi-asset class higher value services**

- **SDA** - End to end Digital Exchange
- **DTCC** - Accelerated settlement
- **Deutsche Börse Group** - Collateral Management

**Medium to long term focus**

- FMI & Short-term focus
  - Allow Multi-Party STP Workflow and Automation
  - Ownership, asset lifecycle and transactions in lockstep
  - Decentralised Commoditised Business areas and operations

- End to end Digital Exchange
- Accelerated settlement
- Digital Issuance
- Collateral Management

**New Models**

- (phased implementation to minimize risk)

**Principles of Capital Markets**

- **GOVERNANCE**
- **SECURITY**
- **BUSINESS CONTINUITY**
- **RESILIENCE**
- **CAPACITY**
... what are our near-term priorities and challenges to overcome?

- Scale Proven Use Cases
- Harmonise Regulations
- Wholesale CBDC
“The integration of DLT in asset issuance is a critical step forward in the evolution of our ecosystem’s digital capabilities, as we continue to deliver on our goal of becoming a **fully digital and data enabled Financial Market Infrastructure**.”

*Lieve Mostrey, Euroclear group CEO*

“Central banks know that they have a responsibility not only to keep pace with the digital age, but to lead innovation to ensure that is serves the public good. **CBDCs are central to this effort.** It is increasingly clear, at least to me, that **these new forms of money will sit at the core of the future financial system**.”

*Agustin Carstens, Head of the BIS*
Thank you

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