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# Blockchain

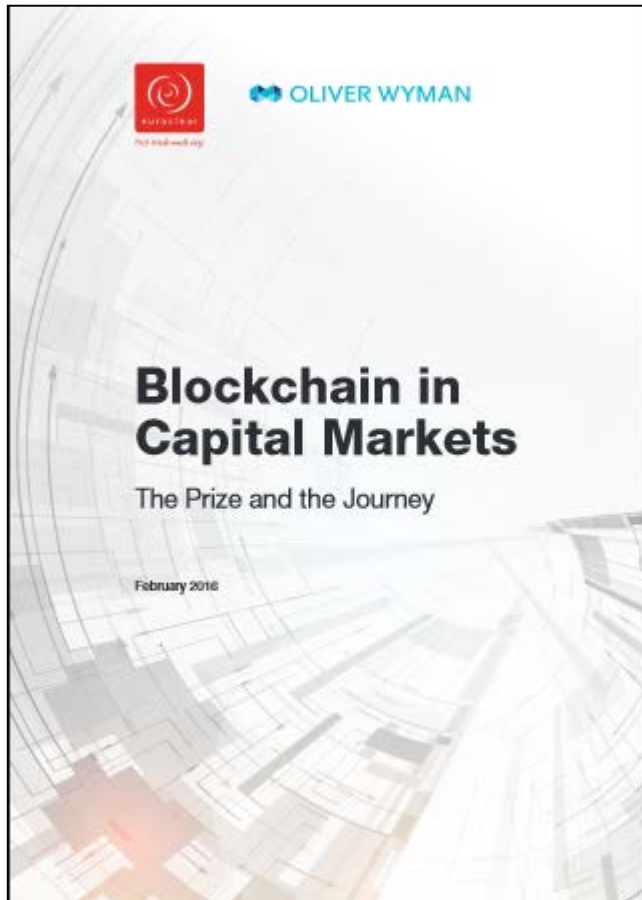
XIII International Conference of the Association of  
Eurasian Central Securities Depositories  
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# Euroclear and Oliver Wyman have prepared a widely cited study on the application of blockchain technology in capital markets



## Overall conclusions

- A compelling underlying concept – a truly new way to organise financial transactions and information
- The prize on offer is a new architecture, where a capital market participants work from common datasets, in near real-time, and where supporting operations are either streamlined or made redundant
- Still in early stages, with little quantification of benefits or compelling business cases at this stage
- Potential for non-DL technology to achieve some of the benefits (e.g. market structure standardisation)
- Two principal adoption paths:
  - Competitive innovations: developed outside of the core capital markets ecosystem
  - Industry adoption: market-wide efforts to adopt DL in the existing value chain
- Patience and widespread industry collaboration required to achieve the benefits posited



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## Three key questions- some answers proposed...but no conclusions

### **1** What is the potential of DL beyond existing technology?

- What are the elements of the technology?
- What new functionality do they provide?

### **2** Can the technology be practically adopted?

- What are the potential uses in capital markets?
- What are the adoption paths?
- What are the major barriers?
- What is the timeline?

### **3** What actions should I take?

- What have industry participants already started doing?
- What should the industry do next?



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## ...and part of a much bigger story of change to financial services

### Technology change

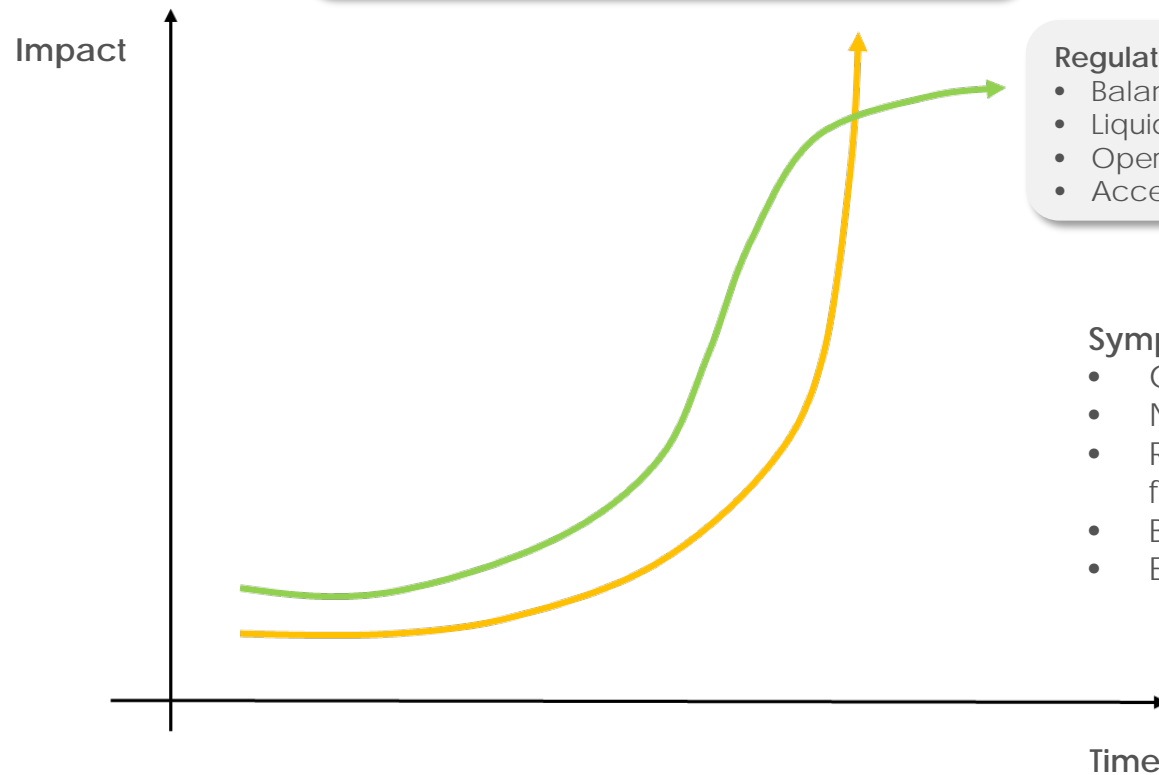
- Data Distribution (Internet; social media)
- Data management (distributed ledger)
- Data analytics (Big data; AI)

### Regulatory change

- Balance sheet- RWA; leverage ratio
- Liquidity- LCR; NSFR
- Operations- EMIR; CSDR;
- Access- PSD2; MIFID

### Symptoms of stress:

- Global RoE (ex China) <5%
- Non-operating balances
- Repo desk- from profit centre to internal funding utility
- Bond market liquidity
- Emerging platforms



# Distributed ledgers promise to revolutionize the core processes in capital markets – recording, sharing and agreeing data

Technology innovations

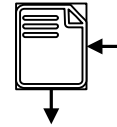
Encryption & permissioning



Mutual consensus verification



Smart contracts



Data efficiencies

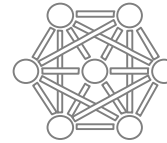
Richer data sets



Universal data sources



Distributed records



Benefits

Better use of transparent “real-time” data

More efficient settlement of transactions

- Some benefits achievable with **existing technology**
- But blockchain does provide new **functionality** and new **relationships**
- Activity around blockchain is creating impetus for change (even if “blockchain” ends up a small component)



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# Distributed ledgers could bring a range of benefits for both static and transactional processes

## Better use of transparent “real-time” data



- Remove the need for:
  - Data enrichment (such as e.g. aligning trade data with settlement data),
  - Reconciliations and disputes amongst counterparties
- Participants selectively reveal trusted data to another counterparty ahead of trade
  - Greater certainty of their own worthiness as a counterparty ahead of trade time
  - Reducing risk and/or credit exposures.
- Assets not typically traded (such as invoices) more easily considered as reliable sources of value
  - Used as collateral
  - Demonstration of worthiness

## Efficient settlement of transactions



- More efficient settlement of transactions and processing
- All participants see the same data, updates are quickly circulated promulgated across the market
- Cash transactions settle in (near) real time
- Remove the need for post-trade affirmation or / confirmation and central clearing
- Shorten settlement cycle to minutes or even seconds
- Reduces the scope for data errors, disputes and reconciliation lags, speeding up the end-to-end process



# Proving and scaling the technology will be critical – but governance is just as important

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## Barriers to distributed ledger adoption

Hurdles	Materiality for competitive innovations	Materiality for industry-wide adoption
<b>Technological factors</b>	<ul style="list-style-type: none"> <li>• Technology still in nascent stages of development</li> <li>• Reported progress in expanding throughput capacities</li> <li>• Ability to leverage existing infrastructures for non-critical applications</li> </ul>	<ul style="list-style-type: none"> <li>• Yet to prove technical applicability for scale markets (e.g. throughput levels)</li> <li>• However advances in next 3-5 years should enable many of today's problems to be solved</li> </ul>
<b>Investment requirements</b>	<ul style="list-style-type: none"> <li>• Sufficient funds available from VC headwind and incumbent's internal labs</li> <li>• Not a major consumer of resources until closer to large-scale implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Large scale investment to "change the industry", replace existing systems</li> <li>• Transition stage parallel runs</li> </ul>
<b>Standardisation</b>	<ul style="list-style-type: none"> <li>• Already an issue for some near-term test use cases</li> </ul>	<ul style="list-style-type: none"> <li>• Major barrier to adoption of widespread interoperability of technology in financial services</li> </ul>
<b>Legal &amp; regulatory</b>	<ul style="list-style-type: none"> <li>• Initial effort focussed on uses not requiring substantial involvement of regulators</li> <li>• Potential to develop in first instances and let regulators react thereafter</li> </ul>	<ul style="list-style-type: none"> <li>• Need for major changes to regulatory / legal standards</li> <li>• New monetary policy frameworks</li> <li>• Requirement for "master" administrator capability for regulatory / legal bodies</li> <li>• Common global/regional approaches required to enable benefits to be realised</li> </ul>



Potential showstoppers



Major barriers

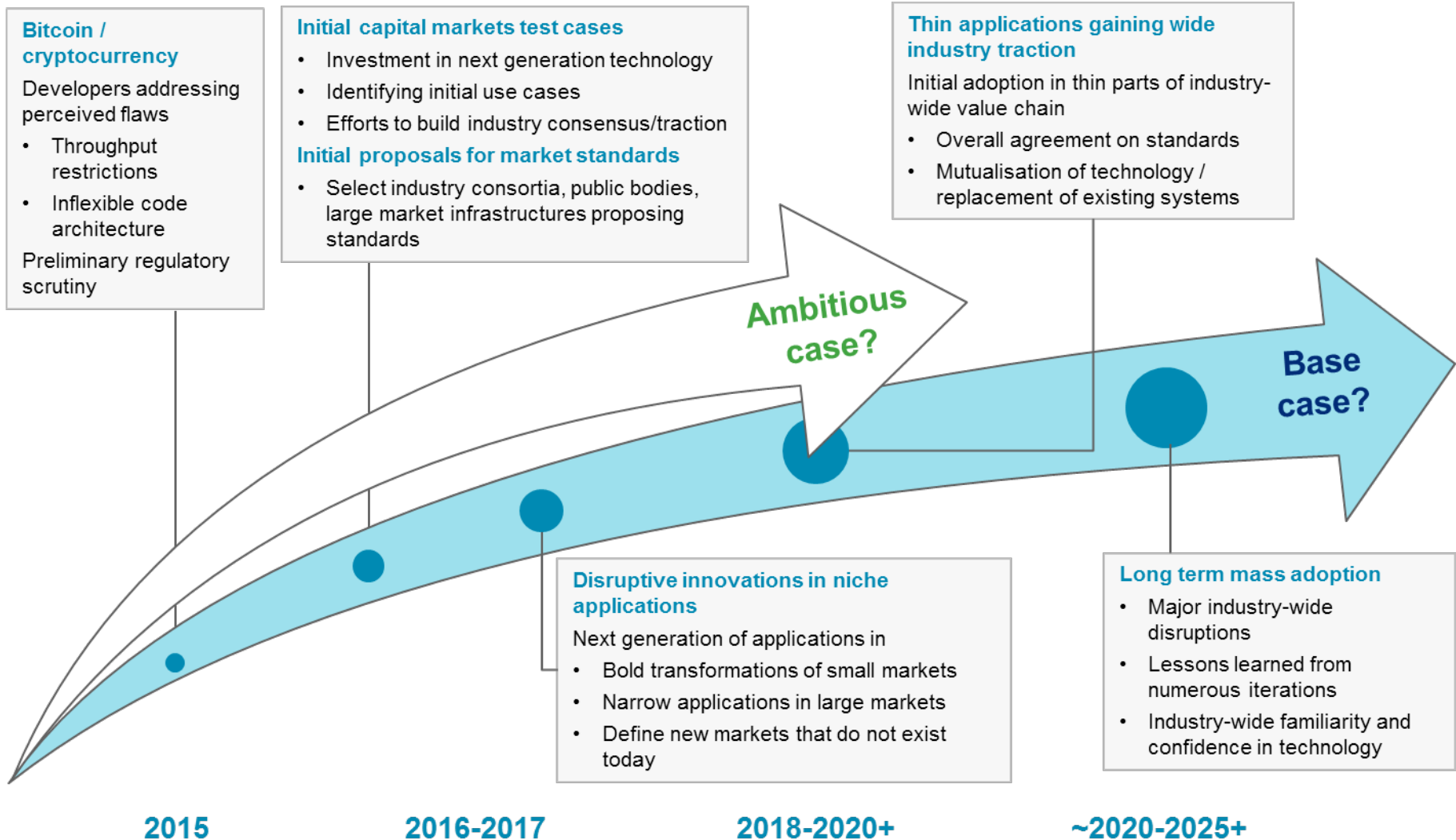


Viable with investment



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# Industry participants have already started investing in use cases, but there is a long road to large scale adoption







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# Blockchain could enable Market Infrastructures to improve existing business models and improve security and transparency

Objective	Opportunities
<b>Internal efficiency</b>	<ul style="list-style-type: none"><li>• Opportunity to replace <b>ageing technology stacks</b> (e.g. mainframe systems) with significantly better architecture</li><li>• Significant increase in <b>processing capabilities and efficiency</b></li><li>• Reduce <b>long term technology cost pressures</b></li></ul>
<b>Security &amp; enhanced supervisory features</b>	<ul style="list-style-type: none"><li>• Secure and robust data architecture <b>minimising failure points</b></li><li>• <b>Enhanced transparency</b> for regulators on trade supervision, KYC / AML, and position monitoring</li></ul>
<b>Platform for growth</b>	<ul style="list-style-type: none"><li>• Enable <b>end client growth</b></li><li>• Access to broader <b>pools of liquidity</b></li><li>• Reduced <b>operational risk</b></li><li>• <b>Adjacent value added products &amp; services</b> (e.g. corp actions processing)</li><li>• Part of a broader “<b>innovation centre</b>” to collaborate with members</li><li>• <b>Diversification</b> broadening geographical profile and scale of exchange</li></ul>
<b>Defend against competitive / disruptive threats</b>	<ul style="list-style-type: none"><li>• <b>Ability to list</b> on a more efficient infrastructure elsewhere</li><li>• Potential for <b>cross-border solutions around data / collateral</b> etc.</li></ul>



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