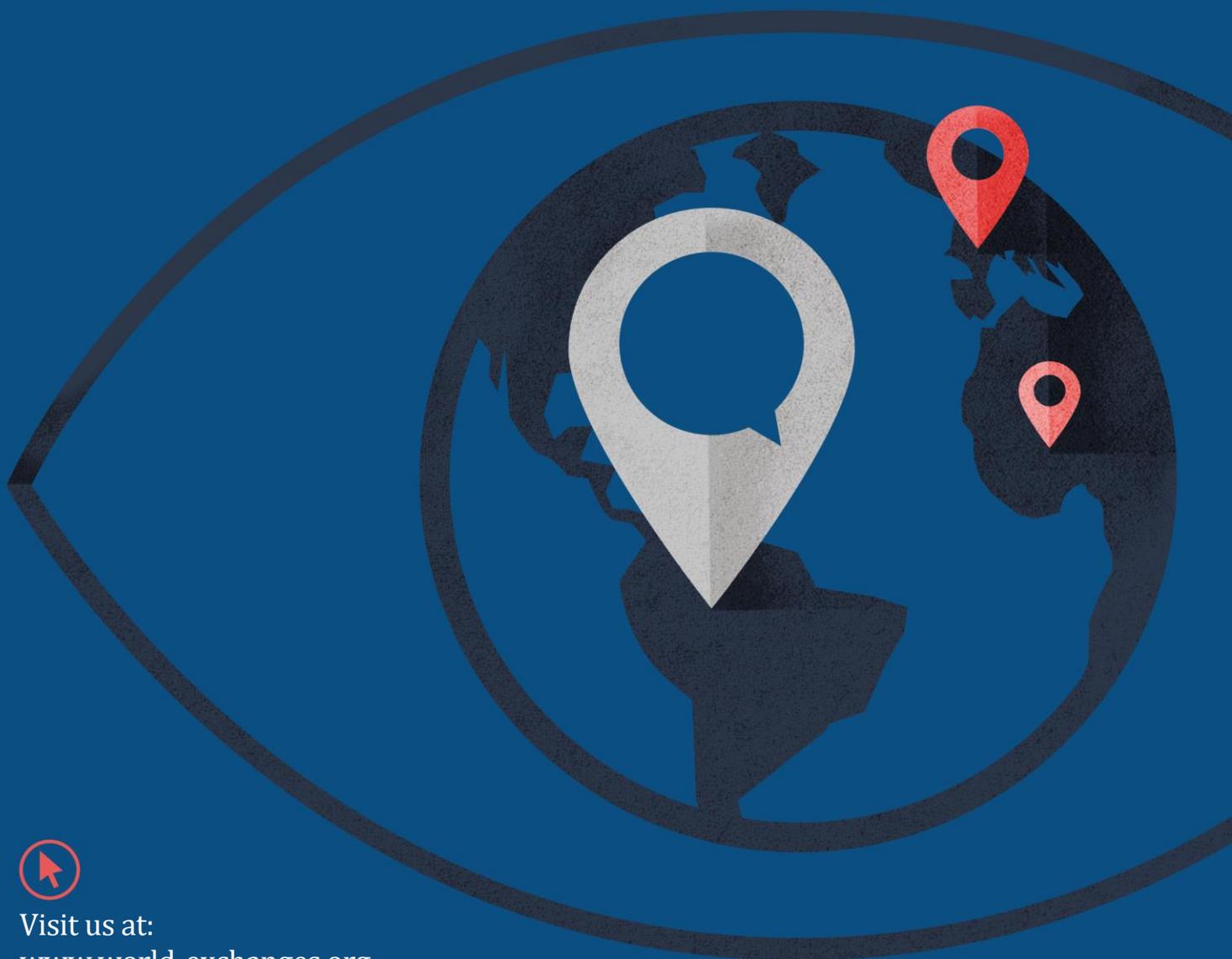


July 2017

**UK Financial Conduct Authority Discussion
Paper:
Distributed Ledger Technology (DLT)**



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Background

The World Federation of Exchanges (WFE) is the global industry association for exchanges and clearing houses. We represent more than 200 market infrastructure providers, of which more than 100 are Central Counterparties (CCPs) and Securities Depositories (CSDs). Our members include exchange groups and standalone CCPs.¹

Our members are both local and global, operating the full continuum of financial market infrastructure in both developed and emerging markets. Of our members, 41 percent are in the Asia-Pacific region, 40 percent in EMEA and 19 percent in the Americas. WFE exchanges are home to nearly 45,000 listed companies, and the market capitalisation of these entities is over \$67.9 trillion; furthermore, around \$84.18 trillion in trading annually passes through the infrastructures our members safeguard.²

The WFE works with global standard setters, policy makers, regulators and government organizations to support and promote the development of fair, transparent, stable and efficient markets. We share their goals of ensuring the safety and soundness of the global financial system. There are significant benefits to the wider population of integrated financial markets, and we think it important to have strong common principles, approaches and supervisory coordination to promote financial integration and market integrity, whilst safeguarding supervisory coordination. This is fundamental to well-functioning and safe markets in which investors can have confidence.

Executive Summary

We welcome the opportunity to provide comments on the FCA's Discussion Paper and applaud the proactive and considered approach to the examination of the various issues surrounding DLT's impact on UK financial markets. The FCA has been a thought leader in this space. Whilst applications such as DLT can bring significant benefits to the industry, we note also that risks must be carefully managed, and the WFE offers up its further assistance and engagement with our soon-to-be-launched FinTech/DLT Working Group. In particular we note:

- Markets are increasingly international, and FinTech innovations such as DLT may have global applications and uses. As such, national and regional authorities should continue to work alongside international regulatory organisations and groupings³ to develop common approaches and ensure an appropriate level playing field.
- We believe the scope of existing regulations should be sufficient to extend to most potential DLT use cases (which are typically new *technologies* as opposed to new *activities*). Legislation, rules and supervisory practices should only be adapted if strictly required, and avoid conferring undue advantage to one technology over another or inadvertently limiting competition by unnecessarily increasing barriers to entry.
- We consider it important innovation should be market driven and needs to take place in a safe and controlled environment in which participants can have confidence. Any regulatory approach should encourage innovation whilst ensuring appropriate investor protection and security in the system.
- Authorities should continue to proactively engage with industry to identify the nature of the application, understand the technology behind it, and ensure an appropriate regulatory framework (if existing frameworks are not deemed appropriate).
- We note a potential risk where non-financial, unregulated firms lead the development of DLT solutions related to core market functions. A lack of awareness of the regulatory environment and different risk culture may result in negative consequences for investor protection, and secure and orderly markets.

¹ The WFE membership list [can be found here](#)

² As at end 2016

³ Such as IOSCO and the G-20

Introduction

The WFE membership is exploring how DLT can be applied to the exchange and CCP space to improve processes and efficiency. Not only are our members developing first “proof of concepts” and investing venture capital in promising FinTech initiatives, they are also participating in industry consortia (for example the Linux Foundation HyperLedger Project⁴ and the Post-Trade Distributed Ledger Group⁵).

Alongside this, given the increasing importance of FinTech generally, and DLT specifically, the WFE is in the process of setting up a Working Group specifically focused on DLT and FinTech. The intention of this group is to share intelligence and best practice, develop standards and provide technical input to inform the WFE’s engagement with policymakers and regulators including, we hope, the FCA.

Regarding areas of focus, exchanges and CCPs tend to see potential for DLT within four broad areas:

- Replacing legacy systems in a way that incorporates DLT;
- Offering new products and applications to market participants and others on a commercial basis;
- Deploying DLT to improve the efficiency of existing systems;
- Deploying DLT in markets, segments or products where sophisticated post-trade infrastructure and processes do not yet exist

Below we highlight work that the WFE has undertaken on FinTech and DLT over the past year, which forms the basis for this submission. We would be happy to discuss any element of this with the FCA at its convenience.

WFE/IOSCO WORK ON DLT

In July 2016, the WFE, in conjunction with the Affiliate Members Consultative Committee (AMCC) of the International Organisation of Securities Committees (IOSCO), surveyed FMI operators regarding their use of, and perspectives on, DLT - including the Blockchain. The questionnaire was developed in collaboration with IOSCO’s Committee on Emerging Risk (CER) with the survey results⁶ also feeding into broader IOSCO research into FinTech and its application in capital markets⁷. The WFE chairs the IOSCO-AMCC workstream on DLT.

ESMA DISCUSSION PAPER

In September 2016, the WFE submitted its response⁸ to ESMA’s Discussion Paper “The Distributed Ledger Technology Applied to Securities Markets”⁹.

EUROPEAN COMMISSION PUBLIC CONSULTATION

In June 2017, the WFE submitted its response¹⁰ to the European Commission’s Public Consultation “FinTech: A More Competitive and Innovative European Financial Sector”.¹¹

⁴ [HyperLedger Project](#)

⁵ [Post-Trade Distributed Ledger Group](#)

⁶ [WFE/IOSCO Survey Results: Financial Market Infrastructures and Distributed Ledger Technologies](#) – Aug 2016

⁷ [IOSCO Research Report on Financial Technologies \(FinTech\)](#) – February 2017

⁸ [WFE Response to ESMA Discussion Paper on DLT](#)

⁹ [ESMA Discussion Paper – The Distributed Ledger Technology Applied to Securities Markets](#)

¹⁰ [WFE Response to European Commission Public Consultation on FinTech](#)

¹¹ [European Commission Public Consultation – FinTech: A More Competitive and Innovative European Financial Sector](#)

Specific Comments

The WFE's membership is involved with FinTech projects including big data / data analytics, cloud computing, artificial intelligence / machine learning, and DLT. While the comments we provide below relate specifically to DLT, much will be relevant to other types of FinTech.

DISTRIBUTED LEDGER TECHNOLOGY - OPPORTUNITIES:

We believe that DLT has the potential to deliver significant benefits to financial market participants and end users. However, risks must also be managed carefully to preserve the central role that trusted, neutral, third-party venues play in well-functioning markets.

WFE members believe DLT may be able to reduce operating costs, increase clearing and settlement efficiency, and improve collateral management. Where DLT effectively mitigates risk, there is the potential for a reduction in capital requirements.

Specific benefits of DLT are envisaged to include:

- Further automation and streamlining of processes;
- Reducing the need for manual reconciliations and authentications;
- Reducing the time needed to finalise transactions; and
- Facilitating greater data integrity and system resilience.

Exchanges and CCPs are also exploring a variety of potential use cases for DLT which include:

- Clearing and settlement;
- Trade matching and confirmation (not in traditional exchange-traded areas but rather in less standardised asset classes not typically heavily traded on-exchange, such as fixed income, OTC derivatives, the repo market and the private securities market);
- Corporate actions (particularly voting rights, proxy-voting and dividend payments);
- Securities issuance (particularly for SMEs, private issuances);
- Crowd-funding;
- Trade registration, asset transfer and record keeping;
- Identity management;
- National/International Know Your Client (KYC)/Anti-Money Laundering (AML) registries;
- Trade finance facilities;
- Asset registration facility (such as real estate);
- Database on agricultural receivables; and
- Digital assets and associated products

As use cases are developed, authorities should invite industry engagement to identify the nature of the application, to understand the technology which underpins it, and to work with firms to ensure an appropriate due diligence by the regulated entities using the technology. Regulatory sandboxes such as those pioneered by the FCA have proven to be a useful tool for the FinTech industry and so we suggest these should be extended where relevant in order to ensure that appropriate collaboration and exchange of information occurs between industry (whether regulated, or not) and regulator. This will also enable regulatory applications to be tested and examined before they go to market.

Whilst the WFE supports robust national supervision and supervisory engagement, we also advocate for global consistency based on international guidelines and principles. Markets are increasingly international, and DLT innovation may have global applications and uses. As such, we suggest national authorities such as the FCA should work alongside international regulatory organisations and groupings, such as IOSCO and the G-20, to develop a common approach and understanding in order to ensure international regulatory coherence amongst the wide range of current and potential DLT providers and participants.

DISTRIBUTED LEDGER TECHNOLOGY – CHALLENGES:

Privacy Issues – information sharing and data protection:

- Financial services organisations are required to keep certain information confidential. The identity of a party to a transaction is usually not public unless regulation requires the disclosure of this information. As such, it is important that DLT-based networks are designed in a way that protects privacy when necessary without hampering the benefits of the technology.
- Whilst blockchains provide a secure way of storing and managing information using cryptography (including economic incentives for network maintaining entities), DLT may nevertheless pose challenges to data protection because:
 - As blockchains are decentralised and distributed, it is not necessarily possible to identify entities processing data, nor how they might go on to use it. While it may be possible to centralise and/or permission the data-processing entity, this could obviate the benefits of the technology by creating a single point of failure which could, for example, be hacked;
 - You cannot change or delete information contained on a blockchain including personal data as transactions are not reversible;
 - It is not necessarily possible to identify the jurisdiction in which data in a blockchain is being processed, and therefore what data protection laws apply.

Cyber Risk & Resilience:

- Systems based on DLT are inherently more resilient to single point of entry failures due to their distributed nature, with the potential to facilitate recovery of both data and processes in the event of a cyber-attack. On the other hand, the complexity of DLT protocols, potential lack of oversight and accountability, and the risk of contagion may pose new risks. In particular, the lack of centralised governance in blockchain-based systems might pose challenges to updating security protocols. However, we consider this to be a question of ensuring appropriate governance of such systems rather than a shortfall of the technology itself.
- Non-financial companies active in this space may lack awareness of the regulatory environment and financial sector risk culture, including but not limited to cybersecurity. As such, if any regulatory framework is deemed necessary, such regulations need to apply consistently across regulated and non-regulated entities, so as to avoid regulatory arbitrage and ensure adequate and effective systems resilience and investor protection – including the safeguarding of personal data and other privacy issues.
- As with all technologies, DLT is susceptible to crime. It is however important to distinguish permissioned distributed ledgers applied in the context of securities markets from the permission-less peer-to-peer network upon which Bitcoin and other virtual currencies are operated which are inherently more susceptible to intrusion and criminality due to their more “open” nature (i.e. in a permission-less ledger, actors do not have to “prove” their identity). Whilst we believe that there are security benefits derived from the cryptographic encryption techniques employed within DLT, industry and regulators must work together to ensure the application of best practices for resilience and security within a DLT environment.
- CPMI-IOSCO guidance, other global standards (e.g. NIST, ISO, et al.), and industry-developed standards of cybersecurity best practice like those [produced by WFE](#) in April 2017, are often relevant and applicable to DLT. Regulators should ensure any new technical or regulatory standards are coherent with existing standards and best practices.

Scalability:

- The scalability of DLT-based systems is a key determinant of efficacy in financial services. Systems need to be able to process large volumes of data daily and to handle market stresses, volatility and peak trading volumes.

Applicable Law:

- Challenges remain in determining relevant jurisdictions and applicable laws for a decentralised system. In certain instances, it may not be possible to identify the jurisdiction in which data in a blockchain is being processed.

Recourse Mechanisms:

- A key challenge in the practical application of DLT to financial markets is the correction of errors, given no application is able to guarantee zero-failure.

Governance Framework:

- Appropriate oversight and accountability for DLT-based systems is crucial, including responsibility for claims resolution and addressing misbehaviour.

Migration and Support:

- There may be risks associated with *migrating* to a DLT environment, including those associated with running parallel systems, testing internal systems and connections to firms participating in the ledger, and monitoring in the period after launch. Interoperability between various DLT and legacy systems will be a key requirement for realising the anticipated efficiency gains associated with most use cases.
- Because DLT is designed to be a live record, with no associated downtime in the applications conceived of to date, there may be risks to ensuring on-going system support. Furthermore, system updates may require the agreement and technological support of every firm connected to the DLT, making such maintenance comparatively difficult.

THE LEGAL AND REGULATORY FRAMEWORK

Generally, we consider the current legislative framework for financial services should not hamper the introduction of DLT-based services. However, services based upon new technologies need to be subject to, and satisfy, the same rules that apply to incumbents in the interests of maintaining the integrity, stability and fairness of the system.

Below we note some legal and regulatory issues identified that need to be addressed or clarified to enable use cases of interest to WFE members. These range from the general (data governance considerations, data privacy and conflict of laws issues, intellectual property laws, and investor protection laws) to more specific examples, including:

- DLT use cases being examined have typically focused on integrated processes across clearing and settlement (although some examination has also occurred relating to trading). However, the legal and regulatory frameworks often see these elements of the cycle in a discrete or distinct fashion;
- In collateral management use cases, it is important to have certainty regarding the legal status of digitised assets as a means of transferring and granting security over interests in such assets as well as treatment in insolvency, and applicability of insolvency protection;
- Central banks in different jurisdictions often have contrasting interpretations of how digital or crypto-currency can be represented on DLT. This can create challenges for realising the full potential of cross-border transactional applications;
- Further, certain types of DLT applications do not fall neatly into current regulatory frameworks dealing with settlement finality. In fully decentralised DLT schemes, it is not clear who would define the relevant finality concepts under EU law (i.e. what constitutes a ‘transfer order’, moment of entry, moment of settlement, law governing the ‘system’, etc.). An extension of the legal protections provided under the Settlement Finality Directive (which are a precondition for legal certainty of settlement) to DLT schemes would require changes to the existing legal regimes;
- Smart contracts - widely deemed part of the innovation of DLT - still require the need to clarify how errors are identified and resolved, questions on liability, and in what circumstances ‘undoing’ a smart contract would be permitted; and
- Identifying the applicable jurisdiction/relevant laws in a decentralised system will be an inherent challenge for DLT.

Further, we note a potential risk where non-financial players lead the development of DLT solutions, resulting in fewer regulated entities performing core market functions. The risk is that a lack of awareness of the regulatory environment, or lack of formal oversight whilst DLT solutions are being developed, may result in negative consequences for investor protection and orderly markets.

Thus, as DLT use cases gain validation and transition into the securities and derivatives markets, there may be a need for regulators to provide clarification as to how existing regulatory regimes (e.g. EMIR, MiFID2) may apply to certain future financial services incorporating DLT.

TECHNOLOGY AND OUTSOURCING

Due to the systemic importance of exchanges and CCPs, regulation and supervision must consider the implications of outsourcing of key functions to a third party. In principle, we see no reason why regulated entities' use of third-party DLT solutions should be any different to the outsourcing of any other function.

It is a well-established supervisory principle that the responsibility for the outsourced functions should remain with the regulated entity. This would include ensuring the fitness and properness of the outsourced provider, and responsibility for aspects of governance, policy definition, management of services (i.e. contracts, service levels, monitoring), SLA reviews and control audits.

Whilst the technology itself may present unique risks (operational, cyber, etc.), the underlying principles of outsourcing remain sound and appropriate

INNOVATION AND THE ROLE OF REGULATORS

Our view is that innovation should be market-driven as opposed to driven by regulation. Nevertheless, innovation needs to occur in a safe and controlled environment in which market participants can have confidence. We therefore encourage national authorities such as the FCA to remain focused on ensuring investor protection and the safety of markets whilst at the same time enabling financial technology which improves capital markets.

Notwithstanding the proactive nature of regulatory engagement from the FCA, we advocate that it is highly desirable for a globally harmonised approach in a topic as internationally relevant as DLT. DLT is innately international with global applications and uses; therefore, any regulatory principles and/or guidelines should ensure international coherence.

Whilst we believe that the scope of existing EU/UK regulations should be sufficient to extend to most potential DLT use cases (as they are typically relating to new *technologies* as opposed to new *activities*), we note the nature of FinTech innovation is such that non-financial companies may enter this market, some of whom may not have any experience of regulated environments. As such, any regulatory framework needs to apply consistently to unregulated and regulated entities (such as exchanges and CCPs) to ensure effective investor protection and system resilience, as well as to maintain a level playing field.

Authorities should be proactive in engaging with the industry in order to identify the nature of the application, to understand the technology which underpins it, and to work with industry to ensure the existence of an appropriate regulatory framework (if existing frameworks are not deemed appropriate).

Regulatory sandboxes such as those pioneered by the FCA have proven to have been a useful tool for the FinTech industry and so we suggest these should be extended where relevant in order to ensure that appropriate collaboration and exchange of information occurs between industry (whether regulated, or not) and regulator.

Interoperability between various DLT and legacy systems will be a key requirement for realising the anticipated efficiency gains associated with most use cases, particularly given the expectation of a gradual deployment of such applications and co-existence of different DLT-based systems. The development of global technical standards would aid such interoperability, though experience tells us this may not be realistically achieved in a timely manner (for example, the complicated process to establish a Legal Entity Identifier).

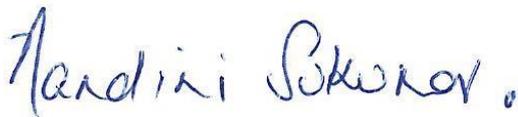
The WFE would thus argue for markets-based solutions, including a commitment to interoperability generally.

Conclusion

The WFE and its members are focused on ensuring transparent and orderly public markets; as such, we applaud the willingness of regulators such as the FCA to evaluate the benefits as well as the risks DLT can bring in order to ensure this. We encourage regulatory authorities to remain focused on ensuring investor protection and the safety of markets whilst at the same time enabling financial technology which improves capital markets to advance unimpeded.

Furthermore, whilst much focus to date has been on DLT, we consider other technological areas will develop that are at least as important – if not more so – to the exchange and post-trade infrastructure space. This would include cloud computing, artificial intelligence, big data and robotics. We encourage the authorities to carefully consider the effect of these technologies – alongside DLT – on the wider operation and functioning of the market.

Finally, notwithstanding the proactive nature of regulatory scrutiny from national as well as regional authorities, we consider it is highly desirable for a globally coherent approach in a topic as internationally relevant as FinTech. FinTech is innately international with global applications and uses and therefore any regulatory principles and/or guidelines should be developed at that global level. As such, we encourage the FCA to continue to work alongside IOSCO and other global authorities - including the G-20 - to ensure a common approach that encourages innovation yet maintains the safety and resilience of the system whilst ensuring a level playing field amongst the wide range of incumbents and new providers.



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