

## Distributed ledger technology applied to securities markets

This paper constitutes ECSDA's response to the [ESMA Discussion Paper](#) of 2 June 2016 entitled "the Distributed Ledger Technology Applied to Securities Markets".

### Executive summary

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ESMA's recent consultation on distributed ledger technology (DLT) is a positive sign that European securities regulators are pro-actively monitoring technological developments in securities markets and considering the implications for post trade regulation.

Several ECSDA members are currently assessing the potential of DLT to support and/or renew their business model, but most projects remain experimental at this stage. As an industry association, ECSDA focuses on the high-level impact of DLT and on regulatory aspects, rather than on technical and business implementation aspects.

Generally speaking, ECSDA thinks that ESMA should look at the full potential of DLT to improve the way securities markets operate. Regulations like the CSDR and EMIR are a mix of institutional and functional approaches and market players using DLT will not always "fit" within the existing regulatory framework. We however agree with ESMA that *"entities or groups of entities willing to use the DLT should be mindful of the existing regulatory framework"*. **As long as DLT is applied to perform regulated services or functions, this should be done under existing regulatory requirements.** There is otherwise a risk of creating unregulated areas in post trade that could bring about a new form of systemic risk.

**CSDs and other financial market infrastructures (FMIs) are expected to maintain a central role in securities markets and will be key actors in ensuring a smooth and successful implementation of DLT in post trade.** The contribution of FMIs will be especially important to guarantee an effective and sound governance framework around DLT as well as real-time monitoring of critical functions and activities. FMIs can also leverage the efficiencies of DLT to improve their operational processes, in

particular as regards record keeping and reconciliation processes. Provided that a level playing field is maintained vis-à-vis DLT players performing post trade functions not currently captured by EU regulatory requirements, this could help achieve greater investor protection.

Holding securities in a DLT environment is not directly comparable to an environment where the notary and registration functions are performed by CSDs. These functions are essential to maintain the integrity of the issue. Given the decentralised nature of DLT networks, there is no legal entity bearing responsibility for reconciling individual holdings with the number of total assets having been issued, and for managing any potential discrepancies. **Assessing the implications of decentralised models for investor protection will thus be an important task for regulators.**

Moreover, in a securities settlement environment, **the enforceability of asset transfers performed through a DLT system seems a key regulatory issue.** In particular, the fact that DLT is used to settle a transaction should not interfere with the applicable issuance and account maintenance rules at national and EU levels. Further DLT capability to process high volumes of transactions should also be verified in terms of reliability and efficiency of processes.

The work performed by ESMA to date is extremely helpful in monitoring developments and assessing potential regulatory challenges and solutions. **The next stage of the reflection will require a broad policy discussion, both at global and EU levels.** Apart from the regulatory challenges identified in ESMA's consultation, other legal aspects will need to be addressed by national and EU legislators. At EU level, ESMA, the European Commission, the ECB and relevant stakeholder groups, can play a key role in formulating and aligning views on the future regulatory environment supporting DLT. At global level, we expect IOSCO and the CPMI to play a leading role in coordinating regional approaches and in issuing early regulatory guidance.

## 1. Possible benefits of DLT for securities markets

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**Q1: Do you agree with the list of possible benefits of the DLT for securities markets? Please explain, e.g., are these benefits unique to the DLT, are some more important than others, are some irrelevant?**

ECSDA generally agrees with the list of potential benefits described in section 3 of the ESMA paper. The title of paragraph 3.1 (“Clearing and settlement”) is however a bit vague and we understand that this paragraph primarily aims at outlining the benefits of DLT in terms of enhanced reconciliation processes in post trade. Indeed, the potential of DLT to simplify reconciliation processes is very significant. By relying on transparent and real-time data contained in the ledger, market participants no longer need to perform certain data enrichment processes which constitute a source of operational risk, such as aligning trade data with settlement data.

As regards the recording and ownership of assets, we agree that DLT has the potential to facilitate the recording of ownership and access to beneficial owner data by replacing several layers of custody by a flat accounting structure. However, as stated in the [ECSDA response](#) of July 2015 to the ESMA call for evidence on virtual currencies, holding securities in a DLT environment is not directly comparable to an environment where the notary and registration functions are performed by CSDs. These functions are essential to maintain the integrity of the issue. Given the decentralised nature of DLT networks, there is no legal entity bearing responsibility for reconciling individual holdings with the number of total assets having been issued, and for managing any potential discrepancies. Assessing the implications of decentralised models for investor protection will thus be an important task for regulators.

The use of a “unique security identifier”, as described in paragraph 14 of the ESMA paper does not seem to qualify as a potential benefit of DLT, since such identifiers already exist – ISINs are at the very heart of securities processing in all European CSDs.

**Q2: Do you see any other potential benefits of the DLT for securities markets? If yes, please explain.**

Provided that the relevant safeguards are put in place to maintain the integrity of the issue, DLT could contribute to better investor protection thanks to higher transparency on the registration of securities holdings and higher resilience of financial market institutions. Moreover, it could considerably improve the speed of cross-border securities settlement.

**Q3: How would the benefits of the technology be affected, in the case where the DLT is not applied across the entire lifecycle of securities (i.e., issuance, trading, clearing and settlement, safekeeping of assets and record of ownership) but rather to some activities only?**

DLT would bring the greatest benefits if applied to the entire lifecycle of securities. Indeed, one major drawback of DLT is its current incompatibility with central databases. Activity-specific DLT networks might thus not work seamlessly with the networks behind other activities, and there is a risk of latency issues or even errors if the validation nodes are not working properly.

At the same time, in the transition phase, it may be possible to achieve targeted benefits by applying DLT horizontally to specific activities or markets.

**Q4: Which activities (e.g., post-trading, other activities), market segments and types of assets in the securities markets are likely to be impacted the most by the DLT in your opinion? How is the DLT likely to modify the way securities markets operate? Please explain.**

Although there is still a certain amount of uncertainty as regards which market segments and activities will be most impacted by DLT, ECSDA considers that trading and derivatives clearing are likely to be less impacted than cash clearing, issuance, settlement and custody. The registration of securities holders is also likely to be impacted in a significant way.

In particular, DLT could:

- enable the digital issuance, settlement and custody of new types of assets, or the handling of assets with complicated back office processes (e.g. securities with low liquidity, syndication credits, invoices, copyrights, patents);
- bring about significant efficiencies in the processing of corporate actions (especially where processes are not yet fully automated), of investment fund transactions, and in the settlement of complex derivative contracts, e.g. thanks to “smart” contracts;
- improve the quality of data while reducing the ownership hierarchy to a single, transparent, chain. This could create significant efficiencies for the reconciliation of records, as well as discoverability, analysis and reporting of data. DLT could even be an alternative to central trade repository networks.

**Q5: According to which timeframe, is the DLT likely to be applied to securities markets in your view? Please distinguish by type of activities, market segments and assets if relevant.**

Several initiatives are already under way, including from actors which are traditionally not part of the market infrastructure and whose platforms aim to provide CSD-like services relying on DLT. As far as settlement, custody and issuance are concerned, concrete applications of DLT are expected to take place within the next couple of years, although most likely on a very limited scale. Market segments on which DLT is being tested include the issuance of private company shares and proxy voting, among others.

On the other hand, the introduction of DLT on a larger scale and in the business processes of existing infrastructures is likely to take several years, i.e. at least 10 years. This is primarily because the

regulatory framework will need to be adapted. Anti-money laundering standards and Know Your Customer rules, for instance, currently constitute an obstacle for the widespread adoption of the technology.

**Q6: How might your organisation benefit from the introduction of the DLT?**

In a DLT environment, CSDs could retain their “notary” function and act as trusted guardians of the integrity of the ledger. For instance, they could coordinate the issuance of assets in the ledger, manage access and permissions, or even maintain unique beneficial owner IDs.

Furthermore, DLT creates new opportunities outside of core CSD services and could encourage certain CSDs to develop non-financial value-added services.

**Q7: If you are working on a concrete application of the DLT to securities markets please describe it (i.e., which activities, which market segments, which type of assets and for which expected benefits) and explain where you stand in terms of practical achievements in relation to your objectives.**

ECSDA is an industry association and, as such, it is not involved in any concrete application of DLT.

## **2. Key challenges and possible shortcomings of DLT**

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**Q8: Do you agree with the analysis of the potential challenges? Please explain, e.g., are some more important than others, are some irrelevant in your view.**

ECSDA generally agrees with the challenges described by ESMA in section 4 of the paper.

**Q9: Do you see any other potential challenges? If yes, please explain.**

Data discovery and reporting capabilities remain limited in DLT at this stage. Talks of shortening settlement cycles to 15 minutes would not go without challenges and would require pre-funding, which is an ineffective method. It is also unclear whether a DLT-based system could operate efficiently without a central matching mechanism.

Moreover, a large scale transfer of assets, activities and counterparties from legacy environments into DLT platforms seems very cumbersome and could potentially create high systemic risk. Such a scenario would not only raise operational and technical challenges, it would also create legal challenges, for instance as regards the underlying securities law, and supervisory challenges, since transfers could be made across countries or continents and thus encounter various conflicting legal and supervisory systems.

**Q10: Which solutions do you envisage for these challenges and where do the current initiatives stand in terms of practical achievements to overcome them?**

Due to interoperability issues with legacy systems and among DLT networks, it will probably make more sense to initially apply DLT to the least liquid and operationally most challenging financial instruments, such as commodities.

In the near future, the shift from peer-to-peer (P2P) to hybrid network models could help resolve scalability issues. Moreover, zero-knowledge protocols promise to resolve confidentiality issues, although their practical implementation is likely to take several years.

### 3. Key risks

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**Q11: Do you agree with the analysis of the key risks? Please explain, e.g., are some risks more important than others, are some irrelevant in your view.**

ECSDA generally agrees with the key risks of DLT described by ESMA in section 5 of the paperfre.

**Q12: Do you see any other potential risks? Please explain.**

ECSDA believes that the potential risks are appropriately described by ESMA. The lack of central governance, in particular, exacerbates risks for investor and asset protection.

Furthermore, we wonder whether a coordinated Distributed Denial of Service attack (DDoS) on validation nodes could result in outages and systemic risk, and if so, how investor compensation would be handled.

**Q13: How could these risks be addressed? Please explain by providing concrete examples, especially for the risks potentially affecting your organisation.**

ESMA could initiate a discussion with stakeholders on the need to establish a central mechanism for the oversight and governance of DLT networks.

### 4. Applicable regulatory framework

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ECSDA does not comment on questions 14 and 15 which pertain to clearing activities.

**Q16: Do you think that the DLT will be used for one of the scenarios above? If yes, which one(s)? If no, please explain?**

We believe that ESMA needs to analyse the implications of a possible post trade environment in DLT and determine which type of functions, services or roles can be performed under which regulatory conditions:

- Some of these functions, services and roles will be covered by existing legislation such as the CSDR. This will be the case for the notary function for securities admitted to trading on a regulated venue, for the authorisation to operate as a securities settlement system, for the provision of settlement in central bank money, for the operation of a settlement discipline regime, and for settlement finality rules, among others. Such functions can only be performed by an entity authorised as a CSD under the CSDR, regardless of the underlying technology.
- Others functions, services or roles are not regulated in the CSDR. These functions are essentially of two types:
  - (i) Functions not regulated because of a political decision not to legislate. This is the case for instance for the functions of registrar and transfer agent, which are not regulated at EU level, and which are sometimes - but not frequently - subject to specific regulatory requirements domestically. This is also the case for the notary function for securities not admitted to trading on a regulated venue, and for internalised settlement.
  - (ii) New functions or roles resulting from the introduction of DLT. These include the provision of a DLT platform, the determination of DLT protocols, access and identity management, the provision of access to the DLT network, links or interoperability between DLT platforms, etc. These functions do not fall within the scope of the CSDR or other EU legislation. ESMA, together with the EU legislator, will have to determine whether such functions are critical for investor protection, market functioning or financial stability, and to what extent regulatory coverage is required.

**Q17: If the DLT is used for one of these scenarios, how could compliance with the regulatory requirements attached to each scenario be ensured?**

See our response to question 20.

**Q18: Do you think that the DLT will be used for safekeeping and record-keeping purposes? Please explain, with concrete examples where appropriate.**

ECSDA believes that enforceability of asset transfers and transactions performed through a DLT system is a key regulatory issue when considering the use of DLT for record keeping and safekeeping purposes. We remark, however, that pages 27 and 28 of the ESMA paper seem to mix three separate concepts:

- Maintaining the integrity of the issue, which today is intrinsically linked to the notary service performed by CSDs, although other entities like transfer agents can also be responsible for it;
- The registration of securities and the maintenance of the register of securities holders;
- The safekeeping of securities, which may or may not be registered.

These concepts would have to be redefined in a DLT environment, for instance to take into account the fact that there is no central “notary”.

**Q19: If the DLT is used for the safekeeping and record-keeping of ownership, how could compliance with the regulatory requirements be ensured?**

The fact that DLT is used to settle a transaction should not interfere with the applicable issuance and account maintenance rules at national and EU levels.

**Q 20: Do you think that the DLT will be used for regulatory reporting purposes? Please explain, with concrete examples where appropriate.**

In paragraph 111 (p. 28), ESMA writes *“If market participants would like to set up a DLT network to provide the same exact functions as trade repositories, there would still be a need to have a trade repository that would have to comply with EMIR.”*

ECSDA wonders whether regulators should not rather look at the potential solutions offered by DLT (e.g. in terms of transparency and regulatory access to transactions) and envisage new types of safeguards to address the challenges posed by these new solutions. Such an analysis would probably result in better outcomes than trying to apply existing regulations to innovative solutions developed outside of the infrastructure space.

**Q 21: If the DLT is used for regulatory reporting purposes, how could compliance with the applicable regulatory requirements be ensured?**

As mentioned in the response to question 20, ECSDA believes that a new technology is not in itself an obstacle to *“ensure compliance with applicable regulatory requirements”*. A more relevant question would be whether the use of DLT can allow market participants to achieve the policy objectives of existing regulations (transparency, safety...) while operating outside of the existing post trade infrastructure, and, if this is the case, whether new safeguards need to be put in place to ensure that innovative solutions do not create new risks that would render the current regulatory framework inefficient.

**Q 22: Do you think that the DLT could be used for other securities-related services than those already discussed, in particular trading and issuance?**

No comments.

**Q 23: Do you see potential regulatory impediments to the deployment of the DLT in securities markets?**

No comments.

**Q 24: Should regulators react to the deployment of the DLT in securities markets and if yes how? If you think they should not do so, please justify your answer.**

ECSDA believes that ESMA, together with IOSCO and other international regulatory bodies, should continue to proactively monitor the deployment of DLT in securities markets and develop a solid understanding of the technology and its applications. We recommend that regulators pursue their efforts in assessing the benefits and risks of DLTs from the perspective of investor protection and financial stability. The analysis should also go beyond existing rules applying to post trade infrastructures.

## **About ECSDA**

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The European Central Securities Depositories Association (ECSDA) is a member of the EU Transparency Register under number 92773882668-44. The association represents 41 central securities depositories (CSDs) across 37 European countries. As regulated financial market infrastructures, CSDs play a vital role in supporting safe and efficient securities transactions, whether domestic or cross-border. If you have any questions on this paper, please contact Soraya Belghazi, Secretary General, at [info@ecsd.eu](mailto:info@ecsd.eu) or +32 2 230 99 01.