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| 2 June 2016 | ESMA/2016/773 RF |

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| **Reply form for the** **Discussion Paper on the Distributed Ledger Technology Applied to Securities Markets**  |
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| Date: 2 June 2016ESMA/2016/773 RF |

**Responding to this paper**

The European Securities and Markets Authority (ESMA) invites responses to the specific questions listed in the ESMA Discussion Paper on the Distributed Ledger Technology (DLT) Applied to Securities Markets, published on the ESMA website.

***Instructions***

Please note that, in order to facilitate the analysis of the large number of responses expected, you are requested to use this file to send your response to ESMA so as to allow us to process it properly. Therefore, ESMA will only be able to consider responses which follow the instructions described below:

* use this form and send your responses in Word format (pdf documents will not be considered except for annexes);
* do not remove the tags of type <ESMA\_ QUESTION\_DLT\_1> - i.e. the response to one question has to be framed by the 2 tags corresponding to the question; and
* if you do not have a response to a question, do not delete it and leave the text “TYPE YOUR TEXT HERE” between the tags.

Responses are most helpful:

* if they respond to the question stated;
* contain a clear rationale, including on any related costs and benefits; and
* describe any alternatives that ESMA should consider

**Naming protocol**

In order to facilitate the handling of stakeholders responses please save your document using the following format:

ESMA\_DLT\_NAMEOFCOMPANY\_NAMEOFDOCUMENT.

E.g. if the respondent were XXXX, the name of the reply form would be:

ESMA\_DLT\_XXXX\_REPLYFORM or

ESMA\_DLT\_XXXX\_ANNEX1

***Deadline***

Responses must reach us by **2 September 2016.**

All contributions should be submitted online at [www.esma.europa.eu](http://www.esma.europa.eu) under the heading ‘Your input/Consultations’.

***Publication of responses***

All contributions received will be published following the end of the consultation period, unless otherwise requested. **Please clearly indicate by ticking the appropriate checkbox in the website submission form if you do not wish your contribution to be publicly disclosed. A standard confidentiality statement in an email message will not be treated as a request for non-disclosure.** Note also that a confidential response may be requested from us in accordance with ESMA’s rules on access to documents. We may consult you if we receive such a request. Any decision we make is reviewable by ESMA’s Board of Appeal and the European Ombudsman.

***Data protection***

Information on data protection can be found at [www.esma.europa.eu](http://www.esma.europa.eu) under the headings ‘Legal notice’ and ‘Data protection’.

# Introduction

***Please make your introductory comments below, if any:***

<ESMA\_COMMENT\_DLT\_1>

Despite continuous effort to streamline and automate operational processes, traditional banks and insurance companies are tied up with costly resources. The maintenance of middle and back office functions, as well as the cost of keeping proper operations and IT systems for financial institutions represent around $100-$150 billion annually. Lack of interoperability between front-to-back processes and interbank networks also increases operational risk exposure, causing scalability issues.

The utilization of distributed ledger technology (DLT) reduces the need for reconciliations and discourages fraudulent behaviours thereby reducing operating costs and optimising settlement workflows.
This DLT is meant to serve as a sustainable foundation to build enterprise-class business applications that are more secure, collaborative, efficient and cost-effective. The transition from legacy systems to the distributed ledger technology may generate new revenue opportunities and reshape financial services, but requires careful collaboration with other emerging technologies, regulators, incumbents and additional stakeholders to be successful.

The DLT is meant to:

1- drive simplicity and efficiency by establishing new financial services infrastructure and processes
2- create the foundation of next generation financial services infrastructure in conjunction with other existing and emerging technologies
3- transform traditional business models
4- require deep collaboration between incumbents, innovators, and regulators.

<ESMA\_COMMENT\_DLT\_1>

##### 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?

<ESMA\_QUESTION\_DLT\_1>

The benefit of **enhanced reconciliation processes** is not necessarily unique to the DLT. For instance, straight through processing solutions have been existing without DLT to reduce the efforts needed to be spent on reconciliation. More emphasis might be needed on why and how DLT is better than other existing solutions. For instance, the way repurchase agreements (repos) are currently managed and settled is a source of discrepancies. Multiple clearing and netting processes take place everyday, requiring financial institutions to maintain and audit their own reconciliations tools. The DLT may help to compress the size of the trades, thus reducing not only discrepancies but also risk and capital requirements.

The **reduction of multiple intermediaries** required in clearing and settlement processes however, is quite a significant benefit of the DLT. The distributed nature of the network will itself serve the function currently held by the existing intermediaries. Additionally, the decentralized nature and its network-based feature prevents the architecture from being constrained by borders.

As mentioned in the paper, the concept of **unique security identifiers** is not new. For instance, the ISIN system has been in existence and widely adopted for years now, being integrated in various stages of transaction lifecycle management. It has to be determined whether the value added by a DLT-based unique security identifier system (v.s. the existing system) is significantly beneficial enough to compensate for the costs associated with developing and implementing the new solution. However, with the DLT, once a digital ID has been created and validated, it may be added to any workflow. The use of a single digital ID to represent a client profile or an asset reference into a system without having to manually re-create it may eliminate duplication of efforts (e.g. eKYC ecosystem). Interoperability through the use of digital IDs between the repository and other trade capture or compliance systems is an advantage the DLT may bring to the post-trade process.

On the other hand, the use of **smart contracts** for the enhancement of corporate action processing could indeed prove to be of high potential. Corporate actions are known to have processes which are highly manual and involves a lot of conventional back-and-forth communication of important information related to the corporate action events.

While traceability may be a feature in many existing technologies, the **extent of traceability** provided by DLT is much more significant due to its consensus protocol and its immutable nature. Supervisory authorities could be nodes of the DLT and be provided with complete and direct access to the records, such that the need for financial regulatory reporting processes constantly done by the market participants (e.g. banks, buy-sides, etc.) would be minimized, or maybe even omitted entirely, due to automation.

The **shortening of settlements** by DLT is indeed only significantly beneficial for cash spot transactions. This benefit is therefore more irrelevant for derivatives and other complex products, where the extended settlement cycles contribute to the way these products are structured. Running on real-time and continuous basis, as opposed to traditional batch runs, has the potential to significantly shorten processing times in general. However, as previously mentioned, this is only relevant for those operations with tight deadlines or short settlement cycles.

DLT offers a lot of promise in terms of **security and resilience**. However, it is too early to actually say if the technology can deliver it in the long-term because, as technology gets more sophisticated, so do methods of ‘attack’. Technologists must not become complacent on the security and resilience currently provided by the DLT, and must continuously find ways to further enhance resiliency features to prevent potential compromises.

**Cost reduction** is indeed the focal point of most, if not all, of the benefits in implementing any new technology solution. The implementation of the DLT may help to eliminate redundant and non-value added tasks. Each party involved in the lifecycle of the product has access to the same piece data. Two aspects of the cost base are under attack. First, the internal costs of operations and IT systems, including capital costs maintained by Banks, and secondly, the fees paid to external service providers of services, such as back office outsourcing or booking systems. Savings from DLT would need to come from the decommissioning of redundant or duplicative systems. The reduction of the financial requirements may help to decrease economic costs of business.

<ESMA\_QUESTION\_DLT\_1>

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

<ESMA\_QUESTION\_DLT\_2>

The network of authorized participants uses a common ledger to execute and verify transactions with near instantaneous settlement, thus removing frictions, and reducing counterparty and operational risks. Being a member of a DLT network allows participants to transact in an environment traceable at any point of time.

Market participants need to optimize sources of information but also adopt a more standardized and established communication ecosystem. The current segregation of data and the opacity surrounding it causes longer reconciliation and settlement times. The same goes for the clearing process.
Securities’ trade have a two-three day settlement period to clear before the buyer and seller can officially switch the cash for the ownership of the fund.

The DLT may offer instant settlement and help reduce operating as well as opportunity costs. It also creates additional data and points that can be helpful for data mining and portfolio strategies.

<ESMA\_QUESTION\_DLT\_2>

##### 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?

<ESMA\_QUESTION\_DLT\_3>

Theoretically speaking, the full extent of the benefits could be realized if the DLT is applied across the entire lifecycle of securities.

Realistically speaking, however, DLT will not be implemented on a large scale immediately, but rather, in order to test it out in early stages, applied to a few selected activities. It is only after successful implementations and tests that the DLT will be gradually applied to other activities, processes, and functions.
The benefits of DLT might not be fully realized immediately, but it will happen if tests and proof of concepts are successful, and at the same time the adoption wide (i.e. when fears and doubts will shrink).

The interoperability feature of the DLT becomes even more important. Technologists need to focus on this aspect of the technology and to the potential costs associated to the fact of running the DLT as well as parallel processes and systems at the same time (at least on the first stages).

<ESMA\_QUESTION\_DLT\_3>

##### 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.

<ESMA\_QUESTION\_DLT\_4>

It would depend on the type of DLT implementation that occurs. For instance, Situation B (“changing/replacing the current set up of market participants and market infrastructures”) would most likely impact cash spot transactions more significantly, whereas Situation A (“a mere internal technological improvement”) would most likely impact transactions of derivatives and other complex products more significantly. Situation A would indeed still impact cash spot products, but not to the same extent as derivatives and complex products.

In a DLT network, the extent of access of each participant may vary depending on permissions applied on the different categories of nodes. For instance, the regulators may be provided with a privileged viewing access as compared to others, thereby reducing the need for regulatory heavy compliance investments. The DLT brings the opportunity to streamline and optimise anti-money laundering (AML) compliance procedures. By using a distributed database of payment transactions to better validate transactions, financial institutions could reduce manual surveillance that currently represent a significant cost.

In addition, a shared database of validated customer information could help streamline the KYC process that is involved in client onboarding and that requires to manage a high number of staff, and perform multiple redundant actions.

The implementation of the DLT may help to eliminate redundant and non-value add tasks.
Where smart-contracts add value is when actions are taken with no human intervention other than validating a step on a workflow. On Exotic derivatives for instance, smart-contracts have the ability to automate the calculation of coupons and the observation of barriers, thus highly reducing the risk of manual miscalculation and settlement failures from current Back/Middle Offices workflows.

<ESMA\_QUESTION\_DLT\_4>

##### 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.

<ESMA\_QUESTION\_DLT\_5>

To begin, the implementation of the DLT within the internal systems of a financial institution is a more cautious strategy. Testing the quality of internal trades settlements is a good way to assess the potential problems that could occur in an open loop environment. (e.g. Bank consortium).

The next step includes asset classes which involve bilateral capital market transactions, possibly within 2-3 years. It will take some time for market practice and judicial precedent around DLT and smart contracts to be designed. Nevertheless, all financial innovations must go through this adaptive process. Massive growth will occur until wide scale adoption in capital markets occurs, possibly in about 5 to 10 years.

<ESMA\_QUESTION\_DLT\_5>

##### How might your organisation benefit from the introduction of the DLT?

<ESMA\_QUESTION\_DLT\_6>

As a technology and solution provider, our organization would benefit from DLT introduction by opening up more opportunities to work with firms in developing more use cases and creating proof-of-concepts, as well as to potentially position ourselves in the market for the sale of our products and services.

<ESMA\_QUESTION\_DLT\_6>

##### 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.

<ESMA\_QUESTION\_DLT\_7>

We currently have use cases and mock-ups for capital markets post-trade, escrow management, corporate actions, KYC, structured products and trade finance. We are also in talks with some large banking and financial firms regarding the building of DLT solutions for them.
We are currently working on the creation of Proof of Concepts for our clients. We target the delivery of real-marketable solutions in 2017. As a DLT provider, we want to make sure that every single application and solution is sharply analysed in order to avoid any rush in real-market implementations.

<ESMA\_QUESTION\_DLT\_7>

##### 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.

<ESMA\_QUESTION\_DLT\_8>

**Scalability** has always been a foreseen problem of DLT. In particular, large-scale deployment potentially undermines a number of the benefits said to be provided by the DLT. It is important to ensure that concrete implementations of the technology is limited to the most appropriate market activities or asset classes - those that would not be significantly impacted by such. The benefit of low latency was mentioned as an example becoming irrelevant as the scale of DLT deployment becomes extensive. However, low latency itself is only relevant in some capital markets applications as well, for instance in high frequency trading. It is important to note that DLT is not meant to replace every system in every aspect of capital markets, e.g. DLT is not meant to be implemented in high-frequency trading. However, there are many other activities or functions of capital markets which can benefit from the DLT, regardless of its low latency capabilities, e.g. many post-trade operations. Thus, this is where the more appropriate implementations of the DLT lie.

It is certainly not easy to implement DLT in the entirety of capital markets, replacing every existing system all at once. Ideally, some specific operations or asset classes would deploy DLT first, and then the others would follow gradually. Therefore, **interoperability** with existing systems is indeed key because of this transition period where old and new will be running at the same time before full deployment is achieved.

Technical and legal issues were also mentioned specifically related to the requirement of a ‘bridge’ between DLT and fiat currency ledgers in settling transactions via full DvP. This might actually be an opportunity instead of an issue since now DLT has gotten the attention of central banks as well due to this reason. Many central banks are now actively looking into DLT and the possibility of getting involved in DLT initiatives related to **central bank operations**.

**Data privacy** is indeed one of the more relevant and critical issues that need to be addressed, especially when it comes to managing private client information. This places great emphasis on the continuous development of sophisticated encryption techniques to constantly protect the participants and their data.

While privacy issues remain significant, the development of data tokenization techniques can help to provide anonymity and maintain privacy for the users of DLT. Using such methods, data is **tokenized** into something that only the participants relevant to the transaction would recognize. The real interest of the token is to add a layer of security on the top of the secure blockchain cryptographic technique. The details of the document are partially hidden on the blockchain and a full read access to third parties might only be given upon special approval from the supplier or the client.

Developing a **governance framework** for a decentralized network is also very important, and definitely poses as a serious challenge. Existing governance frameworks for centralized structures are much more straightforward than a decentralized one. By definition, in a decentralized environment, control should not be limited within any central body. This makes the issue quite the oxymoron and thus might require a new framework to be established, one that is quite different and unique compared to existing ones, especially before large-scale implementations can take place.

<ESMA\_QUESTION\_DLT\_8>

##### Do you see any other potential challenges? If yes, please explain.

<ESMA\_QUESTION\_DLT\_9>

Apart from the regulatory, legal, interoperability and scalability challenges, the implementation of the DLT in securities market raise another major hurdle with the **data standardisation.**

Financial institutions started in 2015 to build blockchain consortiums with the purpose of creating and testing DLT based solutions through Proof of Concepts. These banks have started to fix standards on the way document should be presented and which fields are or aren’t mandatory. (For instance on Exotic Derivatives, what are the mandatory fields to create and fill in, in order to make a product or a note “blockchainable”. In other words, recordable into the distributed ledger). Tomorrow these consortiums will have to start making synergies and make their DLT systems communicate with other DLT systems from other consortiums.

This challenge doesn’t need to be faced once synergies will emerge, but today while a majority of financial institutions haven’t completed proper and solid proof of concepts.

<ESMA\_QUESTION\_DLT\_9>

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

<ESMA\_QUESTION\_DLT\_10>

While the challenges might appear severe, potential solutions or workarounds are within reach for these issues.

The issue of undermining benefits due to scaling, as previously mentioned, can be resolved by focusing on DLT applications which do not rely much on the undermined benefits. The benefit of low latency was given as an example previously. For this instance, if DLT applications are focused on post-trade functions, for example, then low latency might not be relevant enough as a benefit.

Creation and implementation of DLT “adaptors” can solve possible interoperability issues.
For challenges specifically related to the need for a ‘bridge’ between DLT and fiat currency ledgers in settling transactions via full DvP, central banks must be convinced of the immense potential that the DLT can deliver, focusing directly on what is in it for them, the central banks. Once they are convinced, they will support and become more involved in the DLT implementations which benefit them at the end of the day.

It is the same for the regulators, they would need to be convinced basically that DLT is technically, fully under control. It is always important to present tangible and concrete information - documenting comprehensive use cases, creating mock-ups and developing experimentation on proof-of-concepts, reporting the findings of these studies, and so on.

Regarding the data standardisation challenge, DLT builders and financial institutions need to discuss and work together now if they wish to anticipate the upcoming standardisation issues.
We think that standardisation should not be a problem and that participants and DLT providers need to include flexibility to the business protocols. For example, participants could just have the possibility through consensus and vote to agree on on the mandatory fields to keep. Hence while a DLT network keeps growing, new joiners will join a wide network with full knowledge of the data they must provide to become a new node into the network.

<ESMA\_QUESTION\_DLT\_10>

##### 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.

<ESMA\_QUESTION\_DLT\_11>

All the mentioned risks *(cyber risks, fraud, and money laundering risks; operational risks; market volatility, interconnectedness, and new pockets of risks; fair competition and orderly markets; added complexity; uncertainty of new environment)* are extremely significant in the analysis of DLT. However, while all of these key risks are indeed valid and relevant, it is important to note that they are not specific to DLT alone. On a general level, such risks exist with any new technology being implemented, only the underlying details for each risk type would vary.

As with all new technological developments, risk management must always be done meticulously in order to achieve a successful roll-out, with **operational risks**, **cyber risk, fraud and money laundering** **risks** being the more relevant ones compared to the remaining ones.

Operational risks are particularly relevant since they directly affects the operational outputs. Glitches and failures can definitely cause negative impacts in running any business. Associated with this type of risks are costs because any type of anomaly can result in added costs or penalties.

Cyber risk, fraud and money laundering risks are present even with the current existing technologies. For DLT specifically, this is quite relevant because the potential for negative impact might be large due to its shared, distributed nature. And nowadays, there have been several reports of bitcoin, cryptocurrency and blockchain-related hacking and theft. It is concerning and more clarity needs to be given on these events in order to make potential users of the technology more confident about it. Also, if there are areas of weaknesses in DLT that are discovered or exposed because of these events, then technologists need to seriously focus on strengthening those weak points and show tangible results on the developments and improvements.

<ESMA\_QUESTION\_DLT\_11>

##### Do you see any other potential risks? Please explain.

<ESMA\_QUESTION\_DLT\_12>

**Adoption and stickiness** could be added to the potential risks list. The same way there were doubts and fear towards the Internet in the 90’s, the DLT and the blockchain technique generate a lot of questions. The scalability, the resilience, the speed are some of the topics that are mentioned the most during the discussions we have with our clients.
The role of the DLT providers including ourselves at XNotes Alliance is to clearly explain what DLT can bring and what it can’t as of today. We have the duty to bring the discussions to concrete and feasible use cases and examples. The hype around DLT creates a good momentum but the picture needs to stay serious (For example, making high frequency trading transactions through the DLT is as of now impossible due to the nano-seconds required for these multiple transactions to happen).

<ESMA\_QUESTION\_DLT\_12>

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

<ESMA\_QUESTION\_DLT\_13>

As previously mentioned, if there are areas of weaknesses in DLT that are discovered or exposed from recent incidents of hacking around the systems operating the DLT (the blockchain itself hasn’t be hacked) and theft of cryptocurrencies and crypto-assets, then technologists need to do a better job in strengthening those weak points and show tangible results on the developments and improvements. In order to prevent the key pairs from being lost, stolen and used fraudulently, our organization has designed a disposable key feature for this. Additionally, it is important to note that concealing identities is indeed an effect of encryption or tokenization, but only temporarily as it will still remain highly traceable.

In order to control and manage operational risks, continuous development, monitoring and testing of the DLT must be performed alongside the operations to ensure that issues, glitches and failures are effectively addressed, if not eliminated.

<ESMA\_QUESTION\_DLT\_13>

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

<ESMA\_QUESTION\_DLT\_14>

The most suitable scenario shall be the 1.1 OTC derivative transactions subject to the clearing obligation by CCPs as defined by EMIR. That means that each Member States shall grant authorisation only to CPPs that comply with all requirements of EMIR and that have been designated as a securities settlement system under the SFD.

The clearing obligation applies to EU firms that are counterparties to an OTC derivative contract including interest rate, foreign exchange, equity, credit and commodity derivatives.
EMIR identifies two categories of counterparties to whom the clearing obligation applies:
1- Financial counterparties (FC) such as banks, insurers, asset managers, etc.
2- Non-financial counterparties (NFC) which includes any EU firm whose positions in OTC derivative contracts (unless for hedging purposes) exceed the EMIR clearing thresholds.

<ESMA\_QUESTION\_DLT\_14>

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

<ESMA\_QUESTION\_DLT\_15>

In the scenario where OTC derivative transactions subject to the clearing obligation by CCPs as defined by EMIR, part of OTC derivatives must be cleared through central counterparties. Any company willing to set up a DLT network to provide clearing services would answer to those regulatory requirements issues:

1- How compliance must reduce credit and systemic risk?
2- How compliance must control the collateral positions and prevent frauds?
3- How compliance must improve operational procedures (legal, documentation, timing of the collateral exchange)?
4- How compliance must improve procedures related to intragroup derivative contracts?

Both compliance and legal departments bear the lack of efficiency of the current KYC repository. The process of researching the right information about the right client is currently not optimised knowing that the data is located and copied in different sources and that the client might not have a single recognition ID (e.g. several clients may have the same name, which still leads to confusions in today’s workflows).Banks may use the DLT and other statistical tools or technology (Big data) to better manage the fight against fraud and money laundering. The possibility of generating real time follow up reports between the transaction recording system and the client profile and risk assessment would automate most of the current compliance actions. It also helps to identify fraudulent or split transactions.

<ESMA\_QUESTION\_DLT\_15>

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

<ESMA\_QUESTION\_DLT\_16>

We think that the DLT will be used as a security settlement system. DLT is the best candidate to build the foundation of a globalized security settlement system: enabling the maintenance of data records, that are immutable,tamper-proof and globally available to protect a great number of peers all around the world.

The key point in this scenario is to comply with the SFD requirements:

1- Article 2(a) specifies that a ‘system’ shall mean a formal arrangement between three or more participants, with common rules and standardised arrangements for the clearing or execution of transfer orders designated as a system by the Member State whose law is applicable.

2- Article 2(f), participants to a securities settlement system shall mean an institution, a CCP, a settlement agent or a clearing house. Article 2(d) of the Directive clarifies the functions of a settlement agent but does not specify the type of entity that can fulfil the functions of a settlement agent.

According to those two points of the article 2 of SFD, a formal arrangement would be needed between the participants to the system and a system operator would have to be identified. This condition is mandatory in a DLT solution because the existing “real-life assets” are managed and exchanged according to more sophisticated issuance/supply policies and validation rules. Assets are either issued by agents (who have the authorisation to issue assets), or supplied according to predefined rules.

<ESMA\_QUESTION\_DLT\_16>

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

<ESMA\_QUESTION\_DLT\_17>

If the DLT network is designed as a securities settlement system it will have to comply with one or both of the SFD or the CSDR: the Settlement Finality Directive (SFD) and the Central Securities Depositories Regulation (CSDR).

* SFD provides that transfer orders and netting shall be legally enforceable and shall be binding on third parties.
* SFD provides that the rights of holders of collateral security should be insulated from the effects of the insolvency of the provider.
* A ‘system’ shall mean a formal arrangement between three or more participants, with common rules and standardised arrangements for the clearing or execution of transfer orders designated as a system by the Member State whose law is applicable.
* Participants to a securities settlement system shall mean an institution, a CCP, a settlement agent or a clearing house.

<ESMA\_QUESTION\_DLT\_17>

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

<ESMA\_QUESTION\_DLT\_18>

The DLT will be without doubt used for safekeeping and record-keeping purposes. The Blockchain technique is a cryptographic technique to tie freely created blocks of data in a timely sequence that everyone can verify and trust. A blockchain digitally cements both the contents of each block of data and the overall order of all the blocks of data. It is extremely difficult to tamper with data stored in a blockchain and the difficulty increases exponentially as the blockchain grows. Blockchains and DLT add a level of security and transparency by creating an immutable record disseminated across a network that is party to the transaction (e.g. buyer, seller, each side’s lawyer, banks, escrow services provider etc).

The traceability may help to establish a more transparent and secure secondary market. (e.g. Depending on the permission level, it is possible to trace when and by whom assets were exchanged.)

<ESMA\_QUESTION\_DLT\_18>

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

<ESMA\_QUESTION\_DLT\_19>

The implementation of the DLT needs to be done after having brought answers to the following sensitive questions:

Once the DLT is implemented into one single Bank for instance to improve the a KYC repository, where are stored the servers?
Is there any issue of onshoring-offshoring of data in the country(ies) where the DLT will be implemented?

The cryptographic technique of the blockchain technology used in the current DLT solutions is an outstanding asset. No one can tamper with the data, that is immutable.
However being compliant, requires to know where the data is stored and if the local rules are respected (for instance in China, the client's KYC data will need to be physically stored into China from 2019, no offshoring will be allowed).

This questions need to be answered by both service providers and financial participants. That’s why we consider the first half of 2017 to be still a Proof of Concept period. There are still a lot of deep dive to be done and it can only be done if collaboration emerges between DLT service providers, financial participants and of course regulators.

<ESMA\_QUESTION\_DLT\_19>

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

<ESMA\_QUESTION\_DLT\_20>

DLT will be used for regulatory reporting purposes. Regulatory bodies will be nodes on the DLT and would have direct access to secure and reliable transaction information among the market participants. Therefore, from the perspective of the market participants, the requirement of regulatory reporting processes within their operations would then be automated, and manual reporting will be minimized, or even omitted.

For instance, with regulatory requirements for trade repositories, smart contracts on DLT can be implemented for the transparent and efficient reporting of derivative contracts. Smart contracts enhance the existing process of trade repository reporting, which currently faces issues on data quality, data reconciliations, timing and costs. The need for data reconciliations is greatly reduced with DLT while at the same time maintaining data quality. Additionally, its automated nature produces more timely outputs and reduces costs for running this process.

<ESMA\_QUESTION\_DLT\_20>

##### If the DLT is used for regulatory reporting purposes, how could compliance with the applicable regulatory requirements be ensured?

<ESMA\_QUESTION\_DLT\_21>

Compliance could be ensured since regulatory bodies themselves being nodes have direct access to the information among the market participants, and therefore have oversight entirely.

<ESMA\_QUESTION\_DLT\_21>

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

<ESMA\_QUESTION\_DLT\_22>

With DLT, the issuance of securities, debt and equity, would involve the creation of corresponding crypto-assets, wherein the issuer ‘mints’ a digital record of the security and its ownership on the DLT. Here, digital safe-keeping of the crypto-asset is secured, transparent, and reliable, and could therefore be easily exchanged among participants.

Referring to trading simply as the exchange of records of ownership of securities, then yes, the DLT could definitely be used. However, referring to trading in terms of the electronic platform for the execution of trades in the securities exchange, then it would be dependent on the product type. Trading different securities would have different requirements in terms of frequency and volume. For instance, as mentioned previously, the DLT might not be suitable for securities involving large-scale, high frequency trading.

While these two applications of DLT are indeed possible, issuance seems to have more overall benefits over trading.

<ESMA\_QUESTION\_DLT\_22>

##### Do you see potential regulatory impediments to the deployment of the DLT in securities markets?

<ESMA\_QUESTION\_DLT\_23>

There would definitely be regulatory impediments to the deployment of DLT in securities markets. The main impediments are coming from IT, legal and compliance department. It seems to us that operational departments and dealing rooms are the most curious and interested in the automation and security capabilities the DLT provides.

IT departments already have a lot of systems to manage and enhance. They might see the DLT as a threat and as a destabilizing technology. Service providers need to bring guarantees on the quality of the codes and the strength of the interoperability connections.
Legal departments are foreseeing a lot of work in terms of redefining new rules in case of conflicts. Some of the financial participants (Investment Banks) already started to create DLT thinking groups into their Legal departments in order to be ready to face the new ways of managing securities.
Compliance departments are interested in having real time reporting and alert raising tools but they need to make sure that the transition happen smoothly and meticulously. Anti money laundering techniques may be significantly modified through the use of DLT.

<ESMA\_QUESTION\_DLT\_23>

##### 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.

<ESMA\_QUESTION\_DLT\_24>

Regulators already reacted in most of the developed countries and made positive statements on DLTs. MAS in Singapore or HKMA in Hong Kong are strategically and closely working with fintech startups (XNotes Alliance included) in order to get as much information as possible on the upcoming DLT-based solutions and anticipate demands of implementation from the main financial institutions.

As previously explained, the creation of new standards will be required on the market, (e.g. determine which criterias are necessary to validate options, swaps, structured products, etc). Secondly, blockchain solutions providers, regulators and legal departments will have to collaborate amongst themselves and all other involved parties in order to standardise and define the legal scope and responsibilities of each nodes into a network.
We are currently in the phase of proof of concepts that will most likely continue in 2017, but real operational solutions might be implemented sooner than expected and probably not from the institutions we expect the most.

<ESMA\_QUESTION\_DLT\_24>