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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 2016  ESMA/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>

Interest in blockchain technology is rapidly increasing across different markets. By providing an utterly new trust layer for handling trade relationships, blockchain peculiarities grasped the attention of corporations and start-ups beyond financial services sector. Nowadays it is not uncommon to face blockchain applications for e.g. sharing healthcare records, tracking assets along supply chains or registering people identities for service authentication.

Reply has long been particularly active on this paradigm shift. Reply created its Blockchain Competence Center, which focuses on studying how blockchain could disrupt Financial Institutions and other industries. Its large team of analysts and consultants specialised on this subject, experienced related software technologies and established a highly interactive dialogue with key players in the market, such as start-ups, financial institutions and IT vendors.

The Blockchain Competence Center has been observing market initiatives for over a year. Based on this analysis, we matured a comprehensive understanding of this paradigm, which generally discloses these main technological components:

* A digital signature system for authorizing transactions between different users;
* A pluggable consensus mechanism for maintaining ledger replicas consistent, regardless which trust level has been established between users;
* A historical record of transactions where data cannot be tampered with after confirmation, lending blockchain systems high auditability;
* Smart contract deployment, which allows external stakeholders to let their own business rules trigger automatically and be permanently verifiable.

This allows for deployment of transactional systems where trust relationship with central counterparties can be loosen in a controlled fashion, or definitely re-intermediated in a pure peer-to-peer configuration. Notably, Blockchain Competence Center managed to embed these features in serviceable software applications, which address recurring issues (e.g. asset tracking, product counterfeiting, record-keeping of information, voting, network security, etc.) across multiple industries (e.g. Financial Services, Energy, IoT, Healthcare, Retail, etc.).

In particular, as we evaluated possible effects of blockchain technology on securities markets, some important evidences emerged, which we delve into in the next sections:

* Since such technology mitigates counterparty risk, clearing and settlement activities are those which most benefit from blockchain application;
* Strong benefits have been detected even for pre-settlement processes relying on record-keeping capabilities of decentralised ledgers;
* Step-by-step adoption is the best way to trade-off cost and benefits in the early stages of technology diffusion;
* Challenges for adoption have to be addressed looking at four main categories, i.e. Organizational, Market, Technological and Regulatory ones;
* Key risks are associated with cyber-attacks, fraud attempts and possible cartels rather than with operational malfunctioning and market volatility;
* When OTC derivatives are not subjected to clearing obligations by CCPS, DLT is expected to produce benefits in confirmation clearing and settlement activities.

<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>

Yes, we agree with the benefits listed in chapter 3. Improvements concerning clearing and settlement processes are probably the most important benefit as they minimise the collateral amount to be posted and limit the capital consumption connected with settlement risk. Keeping track of the ownership and safekeeping of assets, reporting and oversight, reduction of counterparty risk, and an efficient collateral management may also play a significant role.

To make the most of blockchain technology, it should be applied to each step of the securities market process. However, given its complexity, choosing some specific areas of interest to start with would probably be helpful. These areas may include, for instance, real time collateral exchange activities or pre and post-trading activities. It would bring real benefits to bank units.

Finally, we agree with what stated about Counterparty Risk. Namely, even though the DLT limits the CCP‘s role, their presence will still be necessary considering how OTC market works (i.e. in the case of derivatives transactions, obligations remain through the entire life of the contract).

<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>

DLT benefits would improve pre-settlement activities, and specifically:

1. Orders definition with ad hoc deadlines at the same value Date;
2. Self-instruction instrument position netting;
3. Flexible schemes to aggregate orders and ad hoc booking models;
4. Derivative pricing;
5. Agreements on different levels including General Clearing.

Points 1, 2, 3 remand to smart contract peculiarities. Indeed, thanks to auto-execution that characterises smart-contracts, real time clearing and settlement, as well as automated servicing of contract terms and orders, would be both possible.

With reference to point 4 (derivative pricing), the use of DLT technology will allow information sharing related to contract-specific content. This lets multiple parties support contract execution simultaneously.

Finally, point 5 is about the agreement that involved parties reach on contract terms before smart contract issuance.

Moreover, DLT could provide a trustable and interoperable layer for storing identity information. Such improvement is going to facilitate Know Your Customers (KYC) procedures for financial services providers: they will not replicate due diligence activities anymore, but will rely on a common source of verified data where authorised identity providers could store information about potential customers.

<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>

In our opinion the wider the application the higher the benefit. Indeed, in case DLT applies across the entire lifecycle of securities, then integrating current systems with new ones would be a necessary step to achieve cost advantage, lower risk and minor complexity.

Nevertheless, a step-by-step application could be a good approach for analysing how the industry and markets will get the change. We think there are some parts of the securities lifecycle, which better fit a partial application of the technology (e.g. back/middle-office, legal).

<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>

As regards market segments, we believe DLT could improve both OTC markets and organised markets. The former will have the highest and earliest impact, the latter require more effort and entail higher costs because of their formal structure.

Looking at activities, we think the following ones will be the most affected by the DLT:

* **Back/middle office activities**: e.g. reconciliation, order confirmation and management, in which blockchain technology would allow faster daily management and process execution.
* **Processing and settlement of derivatives trades**: blockchain technology could speed up the time of agreement between counterparties for derivatives contracts. Contract agreements in the derivatives market tend to be rejected because of errors, delays in updating internal processes, and information asymmetry. Thanks to blockchain-based smart contracts, many of those processes would be automated.
* **Central Counterparty**: blockchain uses a distributed peer-to-peer database of transactions that is protected and verified. DLT means secure transactions can happen between two parties without the need for a centralised third party, and smart contract logic might replace one day central third-parties operations. Moreover, the almost instantaneous settlement related to smart contract will reduce the activity led by CCP.
* **Legal costs**: smart contracts could make dispute resolution more straightforward. While traditional contracts require manual update by legal teams, blockchain technology could allow two parties to run the same contract code at different locations simultaneously being immediately updated on the progress of the other parties.

<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>

In our opinion, it is necessary to distinguish between the two scenarios of a full DLT implementation and a partial one. The former requires an “end-to-end” development, which means applying blockchain to the entire security lifecycle. In such scenario, a key role is played by smart-contract whose development is easier in case of linear instruments (e.g. bond, share) rather than with complex instruments such as derivatives traded on OTC markets. For this reason, we think that the introduction of DLTs in organised markets, in which bond and equity are mostly traded, would be faster than in OTC market. Consequently, we think that the introduction of DLTs could follow a step-by-step approach based on the following order:

1. **Organised markets**: plain vanilla instruments (e.g. bond, shares);
2. **OTC markets**: plain vanilla instruments (e.g. interest rate swap, cross currency swap);
3. **OTC markets**: complex instruments (e.g. Barrier options, Asian options).

Moreover, in early stage the introduction of DLT between financial institutions (e.g. consortium, venture capital investment, partnership) would be easier if we turn to permissioned DLT implementations.

With reference to a partial DLT development, we strongly believe the best and earliest benefit will be registered in OTC market: there, DLT could allow a faster cleaning and settlement as well as a more efficient security keeping.

<ESMA\_QUESTION\_DLT\_5>

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

<ESMA\_QUESTION\_DLT\_6>

As complex organizations face technology adoption, they should usually deal with both technology, market, organisational and regulatory challenges. This is especially true when the considered technology discloses a highly disruptive potential as it holds for blockchain paradigm. Reply, as system integrator, benefits from this scenario providing prompt solutions to adopt blockchain in a fast and effective way for different industries. The experience matured in decentralised applications lets Reply support the integration phase with best-in-class technological, organisational and legal supporting actions.

<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>

Reply approach towards blockchain technology consists in identifying, studying and evaluating blockchain use cases and related benefits in different processes and market sectors, without losing sight of our clients’ business.

Once identified a powerful use case exploiting blockchain core properties, Reply starts developing a software accelerator, which is a fully functional end-to-end application demonstrating the advantages introduced by a blockchain platform.

Software accelerators undergo every stage of software development lifecycle, ranging from requirements analysis, design, and implementation to testing and release. Most importantly, they are built to be readily integrated into client’s IT environment in order to accelerate business operations and achieve quick wins.

At the time of writing this response, we have done eight end-to-end software accelerators for the following sectors:

* **IoT (Internet of Things)**: here objects rely on the use of the blockchain technology to manage the authentication and integrity of messaging between themselves ensuring network safety and reliability.
* **Property**: this blockchain accelerator manages change of property ownership that is ownership transfer of any digital or physical asset (e.g. vehicles, equity, houses, etc.). By registering the transaction message, the identity of the seller and the buyer, the unique identifier of the asset and the transaction time stamp into the blockchain ledger, such information is guaranteed and cannot be modified.
* **Ticketing and Coupons**: creation, management and sale of tickets and coupons using the blockchain technology. Here interoperability between agencies/partners requires to provide the necessary critical mass in creating tickets/coupons. Their relative use/redemption is based on the blockchain registry access standard, which is open-source and therefore reliable, affordable and secure.
* **Voting**: in contexts that require a high level of transparency and security, such as voting in public ballots (e.g. to express a preference in a survey), the blockchain technology relies on cryptocurrencies to guarantee both legal certainty of the vote and transparency of the whole process.
* **Network security**: the rise of new generation ICT technology means that there are new ways for hackers to enter a network or system. This accelerator implements a blockchain solution introducing a security gateway into SDN, whilst creating a forensically auditable and unchangeable log of events.
* **Secure authentication**: this accelerator leverages a blockchain ledger, so that it is possible to manage a private network of smart devices that are mutually authenticated and verified. It is also possible to easily extend the network and connect it to other ones (e.g. service providers, specialised technical support, etc.) while guaranteeing the actual identity of the parties involved and the traceability of access.
* **Insurance**: by adopting a smart contract insurance policy, the accelerator is a solution that facilitates the automation of premium calculations, the management of appraisals and the settlement of certain types of claims, ensuring end-user transparency.
* **Retail**: this accelerator addresses interoperability requirements and issues concerning Supply Chain Management (SCM) and product authenticity. Full traceability of luxury items along with supply chain and customer relationship information enable new scenarios for the retail sector, achieving benefits in both day-to-day business and customer satisfaction.

Considering the financial sector, we are currently developing a smart bond (a smart contract applied to the bond instrument) with these upcoming features:

* Floating coupon;
* Collateral in virtual currency (e.g. Bitcoin);
* Multi-signature escrow;
* Real-time settlement by virtual currency escrow;
* Fully automated cash flow.

<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>

As regards first-level classification of key challenges, we would proceed by organizing them into four main categories. While we agree with identifying technology and regulatory challenges, we would classify business-related ones into two dedicated groups, respectively “organizational” and “market” challenges. This classification lets you capture both internal and external, or industry-related, issues.

Consequently, we classify key challenges for blockchain adoption as follows:

* **Organizational challenges**:
* Cultural shift – blockchain adoption requires to rethink parts of the business and the day-to-day work;
* Organizational restructuring – in order to successfully redefine processes and activities, new structures need to be formed and other existing structures need to change;
* **Market challenges**:
* Standards and processes definition – rapid adoption and transformation can be achieved by defining a common detailed body of knowledge and standards;
* Switching costs – switching to a different system comes to a cost that has to be minimised by carefully planning the change;
* **Technological challenges**:
* Governance (permission levels and consensus) – this is an aspect that must be carefully designed, since the interactions among actors are complex;
* Performance level (scalability, security, resilience, availability) – the system must satisfy strict time and availability requirements;
* Identity & privacy management – the system should implement the right features for satisfying market and privacy regulations;
* **Regulatory challenges**:
* Records & smart contracts legality and enforceability – the actors have to agree on the regulatory status of the smart contract rules in order to automatically enforce rules and solve disputations;
* Multi-country/supranational compliance – an effort is required to harmonise rules and regulations among all countries involved.

As reported above, we treated governance and privacy challenges as technological issues. Indeed, we believe this is the best approach since such outcomes turns into specific parameters during implementation phase, i.e. setting precise hierarchy between network nodes, assigning permission levels, and deploying a devoted Identity and Access Management (IAM) system.

<ESMA\_QUESTION\_DLT\_8>

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

<ESMA\_QUESTION\_DLT\_9>

With regard to the Discussion Paper under review, other challenges we identified are mainly those related to organizational issues. In particular, we reported above how important it is to face cultural resistance to change and restructuring. Moreover, we suggest reorganising the depicted challenges in a more comprehensive framework.

<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>

Here we envision how the challenges reported above could be addressed; at the same time, we try to capture current market initiatives. For each category, possible solutions are here introduced:

* **Organizational challenges**: it is important to spread awareness inside organizations about features and benefits related to blockchain paradigm shift. Effective actions could be organizing seminars, design thinking sessions, and appointing an internal blockchain representative; such figure will monitor market evolutions and propel corrective actions.

**Initiatives**: many big organizations are already experimenting with this new paradigm. Notably, it is important to urge even small and medium enterprises to understand this shift and figure out what could be the impact over their business.

* **Market challenges**: redesigning standards and processes requires collaboration between different actors along value chains. Consequently, different companies and institutions would benefit from joining industry consortia in order to share their understanding and facilitate a positive evolution in terms of standardization.

**Initiatives**: consortia are already established for financial services industry. Practical achievements include successful execution of proof-of-concept and refinement of a common blockchain protocol (e.g. R3 Corda).

* **Technological challenges**: in order to face performance challenges, you have to turn to miners and chief service providers, who should jointly work on protocol improvements. Developing middleware solutions over basic blockchain infrastructures could result as a possible answer to limited performance levels of current systems (e.g. Bitcoin).

**Initiatives**: developers are constantly working on protocol improvement proposals (e.g. Bitcoin Lightning Network for increasing transactions throughput); vendors are about to release Blockchain-as-a-Service (BaaS) solutions which offers value-added components (e.g. IBM Blockchain, Microsoft Bletchley); third-party software providers are launching middleware solutions, which enhance blockchain ground capabilities (e.g. Rootstock aims at realizing a smart contract framework upon Bitcoin ledger).

* **Regulatory challenges**: on the regulatory side, discussion papers and requests for proposal represent a starting point for collective action. Moreover, regulation bodies are suggested to constitute task forces devoted to blockchain issues in order to evolve regulatory process in accordance with technological improvements.

**Initiatives**: we observe different initiatives by governmental bodies, authorities and financial institutions to study the phenomenon, identify regulatory key issues and enact prompt normative action. For instance, EU parliament instituted Blockchain and Cryptocurrency Task Force: particularly, they are going to deal with Anti-Money Laundering (AML) directive update, which would require exchange services to perform specific due diligence procedures for their customers. On the smart contract legality and enforceability, legal firms and start-ups are envisioning domain-specific languages for automatically translating legal terms into code.

<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>

We mostly agree with the key risks presented in the analysis. In our opinion, the most critical risks to account for are cyber and fraud risks, because they pose serious threats to infrastructure components, with ripple effects on the entire application, on the process and in the worst case on the securities ecosystem.

Such risks are not directly related to the blockchain itself, as the underlying protocols make it inherently secure, certified, non-counterfeitable and non-revocable. Instead, a malicious actor could act on behalf of a service provider, write information on the ledger opportunistically and finally harm third party service customers.

We also agree on operational risks, but they are less inherent when strictly considering DLT. In fact, similar risk assessments and mitigation countermeasures are commonplace in traditional systems in securities markets. In the DLT case, it should be sufficient to adopt an analogous risk-minimization approach and adequate plans of action for operational issues. On the other hand, differently from traditional systems, DLT requires to employ both risk managers and operators that are well trained on the subject. This could be a problem since such a skill set is not quite widespread yet.

Beyond that, we deem the market volatility risk to be a low one: the higher degree of interconnection, the higher degrees of market adjustments. Since DLT stresses on the transparency aspect of markets, this should have more positive rather than negative effects in the medium and long term.

Lastly, we agree on competition risks, even though we should also consider the degree of adoption of a DLT solution. In fact, lower entry barriers and better neutrality could foster the gain of critical mass, paving the way to “consumerization” and viability for a large number of actors. In addition, a shared ledger does not always imply full access to information, so we agree that a privacy policy has to be designed upfront and enforced effectively.

<ESMA\_QUESTION\_DLT\_11>

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

<ESMA\_QUESTION\_DLT\_12>

We do not envisage any potential risk on the short-medium term other than those typical of technology innovation projects (e.g. lack of a track record and historical data). In addition, a strategic DLT choice should be made in order to avoid technology lock-ins that could be in effect at a later stage.

Creation, maintenance and employment of open and interoperable standards in DLT is of critical importance for the securities markets.

<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>

These risks should be addressed by employing state-of-the-art risk management and mitigation techniques, as it happens for every new technological system that is introduced in the securities markets. In practice, the majority of actors involved should agree on a set of guidelines, procedures and processes for risk assessment, risk mitigation and crisis management. These items are to be considered mandatory and they should be referenced, updated and put to use by the whole securities ecosystem. In addition, it is important to define a common testbed environment for assessing security, resilience, efficiency and effectiveness of the applications prior to releasing them to users and customers.

Talking about cyber and fraud risk, its mitigation can be achieved by integrating monitoring and identification solutions such as log viewers, alerting systems, Business Intelligence products, Big Data analysis infrastructure and Identity & Authorization Management systems. These additional architectural elements can help to enforce Know Your Customer policies / regulations and detect fraud and money laundering episodes. As stated before, these supportive actions should be adopted by the actors of the system and not at the blockchain level, because it already provides the necessary tools to keep a secure, resilient, distributed ledger. Indeed, a careful supervision of the ledger state is required to protect third party service providers from frauds and cyber-attacks.

<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>

Scenario 1.2 best fits DLT adoption because it is about OTC derivatives, which are not subjected to clearing obligation by CCPS (e.g. equity derivatives).

In this scenario, DLT would produce benefits in confirmation, clearing and settlement activities. Moreover, it would reduce the counterparty risk by effectively verifying counterparty’s collateral (KYC- Know Your Customer) and allow a short settlement cycle of the transactions.

In addition, the scenario also considers the bilateral margin rules for derivative, and it is our opinion that DLT might also be adopted to improve the transfer of collateral across the market participants.

In the other scenarios, transactions are cleared by CCPs and DLT is unlikely to disintermediate the role of clearing house. Hence, the benefits of CCP clearing for derivative instruments are likely to remain unchanged. In such cases, the potential benefits are both cost saving and the reduction of operative risk from the post trading activities.

With reference to IT development, as already stated in Q5, the introduction of smart contracts is easier for plain vanilla instruments when traded in organised markets.

<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>

There are some legal issues to address:

1. **Effectiveness of smart contracts**: digital nature of smart contracts is a problem for effectiveness and fulfilment of contract obligations. Indeed, in a written contract there are mandatory elements (term, intention, object, statement) which do not always match smart contract peculiarities (e.g. self-executing code).
2. **Publication and underwriting**: there are several problems related to both publication (e.g. public act as the Italian Civil Law) and contract underwriting (e.g. digital legal sign).

In addition, as mentioned both in EBA Occasional paper (No 172 / April 2016) and in the “Opinion on virtual currency” paper, virtual currency legal status is another issue to address.

<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>

As stated in section 3 of the Discussion Paper, this new technology streamlines settlement process and reduce the number of intermediaries involved in reconciliation process.

For this reason, the DLT might be applied in all scenarios. In scenario 1.2, DLT acts as a settlement internaliser, which executes orders for clients and replaces financial intermediaries.

In scenario 2, the DLT acts as securities settlement system, which allows, thanks to common and standardised rules/arrangements, orders execution and transfer between:

* Three or more participants;
* A central counterparty;
* A clearing house or a possible indirect participant.

Finally, R3 CEV initiatives suggest that a primary goal for the industry is the development of a securities settlement system with shared and common 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>

In order to ensure compliance with regulatory requirements (e.g. directive 98/26/EU, regulation 2014/909/EU, regulation 2012/236/EU) it is necessary:

* To adapt actual regulation (European Rules and internal laws for each member State of the securities settlement system);
* To comply with national regulation;
* To allow member countries to manage independently the definition of some rules if justified by national peculiarities.

Regarding the settlement internaliser, member countries laws define guidelines about collateral, pre-transaction and post-transaction transparency. These rules should be first specified in order to apply DLT at market level.

Other European regulations involved are CSDR (Central Securities Depositary Regulation) and SFD (Settlement Financing Directive).

<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>

DLT could facilitate safekeeping and record-keeping by achieving following benefits:

1. Reducing uncertainty attached to contract terms;
2. Automating issuer process;
3. Streamlining reconciliation processes.

The technology could be introduced in the organised markets and OTC markets, both for issuers and investors. Through smart contracts (e.g. smart bonds) the DLT may help the issuance and allocation processes.

New distributed ledger with accounting standards might modify the role of custodians as “private key keepers”, who guarantee secure information management and offer further custodian services.

<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>

Introducing new custody approaches entails applying new methodology to traditional business, as well as restructuring law tasks such as contract terms.

To ensure compliance with regulatory requirements, it could be necessary to:

1. Define technical standards for new IT infrastructure;
2. Set new rules for managing permission levels of new members;
3. Define penalties in case of rules infringement in terms of intellectual property.

It is very important that internal law recognises full digitalization of securities. In addition, the DLT must guarantee reporting and reconciliations obligations for custodian services.

In order to prevent law gaps, it is necessary to define guidelines in terms of issuance, allocations, and safe-recording for all member countries.

<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>

Yes, we think this could be the case. DLTs are fundamentally a record of transaction history. It is fundamental for regulators to be master users so that they can access the DLT and download all the information needed to monitor the whole trading activity.

Moreover, looking at blockchain technology as a whole, regulators should understand it as a way to both speed all reporting activities and increase transparency.

For example, financial institutions could leverage existing applications to develop algorithms that identify patterns of abuse related to fraud and money laundering. Blockchain technology will enable banks to track the progressive history of every transaction on their systems to ensure that the origin, ultimate destination and use of funds is clear and traceable. This will improve banks capability of identifying suspicious customers and networks. Private entities already use algorithmic approaches that do not rely on blockchain to monitor and manage compliance (Google’s automated ContentID). Similarly, government agencies will be able to implement blockchain in systems such as Fedwire, enabling bank supervisors to identify systemic payment risks.

Finally, smart contract information could be available for regulators in real time (e.g. individual trade details, counterparty risk metrics and systemic exposure to each reference entity).

<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>

We believe that in order to apply DLT in regulatory reporting a new and innovative process has to be developed. Market operators will report their deal using a smart contract, whose terms include all the aspects required by reporting standards. Easier access to transaction information for regulators would reduce the cost of regulatory reporting but there are some specifications to define:

* Rules for approving/rejecting participants;
* Rules for interactions between different participants;
* Cryptography technology;
* Correction mechanism and penalties in case of infringement of DLT rules (e.g. intellectual property);
* Data representation format.

<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>

We think DLT can be applied to issuance services and, as far as we know, there are already some existing application, e.g. NASDAQ deployed blockchain technology within its Private Market.

<ESMA\_QUESTION\_DLT\_22>

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

<ESMA\_QUESTION\_DLT\_23>

In our opinion in order to reduce as much as possible any impediment, DLT deployment should be governed at international level, i.e. no national autonomy should be possible and each entity should respond directly to European Authority.

<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 should proactively promote and participate in initiatives, which are useful for defining regulatory frameworks. They should also incentivise the adoption of DLT and blockchain technology inside traditional processes and technologies if optimization opportunities are detected.

It would also be important to ensure a level playing field for all providers as well as the same regulatory supervision and requirements.

Furthermore, we strongly believe in the importance of regulatory actions, which do not limit technology development and potential.

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