

THE TEN PILLARS OF DIGITALIZATION



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Introduction

One of the first successful implementations of DLT applied to a centralized financial market infrastructure was ID2S, the central securities depository (CSD) created by **Orange**, the telecommunication company, and the fintech **SETL**, acquired by the Turkish fintech Colendi in June 2022. ID2S commenced live operations as a CSD in 2019 in France, authorized under CSDR and the French Monetary and Financial Code.

I am happy to share the experience me and my fellow industry senior experts gained during that time (4 years) which was interrupted only by external factors, in particular the pandemic that the world experienced in 2020/2021. I believe the experience we gained can be used for any future implementation of DLT in post trade financial market infrastructures.

The 10 pillars of digitalization

1 – Suitability and Programmability → DLT may be defined as the technological infrastructure and protocols to support a digital and distributed transaction ledger (system of record or form of datasets) that stores blocks of data shared across a network of computer nodes. Whatever implementation of DLT (at whatever stage of the e2e value chain), or the underlying technology platform you have chosen for your business, it is a reasonable assumption to state that the technology works as the basis for operating a scalable and programmable platform. That allow creating an automated workflow based on self-executing rules. Multiple proof of concepts in the last 10 years have confirmed this. So a lot of credit has to be recognized to those that have created this tremendous opportunity to innovate the financial markets.

2 - Interoperability → By its nature though, the use of distributed ledgers and the cryptographic languages they use imposes restrictions, and limitations due to the nature of their rigid infrastructure. This is due to the fact that, unlike existing legacy systems, the highly secured cryptographic language in this digital world is common to both the infrastructure and the financial instrument that is issued. You cannot have the one without the other. For example, in the conventional world, the form of issuance of a security is separated from the form of circulation, which is the electronic record representing it, but financial instruments can be physical (commodities, global

certificates, etc.). Even when the security is dematerialized, the electronic record remains only the representation of such security. In the digital space, the financial instrument exists only as part of the environment in which it is created, it is entrenched in the infrastructure. The form of its issuance and the DLT language used by the infrastructure are unique and the same. One of the biggest challenges is as a result linked to interoperability between systems, languages and infrastructures. And the second is standardization; today still unclear who are the standards leaders... and what is the role of FMIs and regulators in these standardization efforts.

3 – Ecosystem → The success of any initiative at FMI level (FMIs are key to make it happen despite some DeFi efforts to limit the number of middlemen) is subject to the creation of a proper ecosystem with a large number of participants, which, depending on the FMI (trade or post-trade) and on the model, may include issuers, investors, intermediaries, venues, regulators, payment systems, etc. The ecosystem must be available to all types of participant in both primary and secondary markets.

4 – Liquidity in primary and secondary market → High liquidity is a pre-requisite for (economic) success of the ecosystem without which the market will not be attractive to both issuers and investors alike. The latter will stop buying instruments that become illiquid and difficult to re-sell, the former would find a better way to distribute the securities and fund their activities. High liquidity also enables collateral eligibility. Also here, liquidity drives the demand for interoperability because of its inherent attraction to issuers and the ability to reach investors.

“ID2S was a pioneer solution insofar as it demonstrated, in real life and not as a proof-of-concept, that a DLT-based settlement solution could work. Positioned as the issuer CSD of NowCP, a Commercial Paper issuing platform and using SETL’ innovative DLT technology (subsequently tested at 1M TPS), it made history from a technological perspective. Yet, many of the pitfalls evidenced in this paper barred its way to success: Made of outsiders, the ecosystem never managed to embark the incumbents which represented most of the liquidity. Innovative solution which offered real value to investors (real time settlement at a fraction of the cost), it was perceived as a threat by centralized infrastructures, who could not justify the investment that it’s adoption would entail. It is not surprising therefore that DLT applications have had the most success in the crypto space and more recently, the payment space, where incumbents are more fragmented and innovation, the rule of the game. DLT adoption in the security services space will take time and continue in the OTC rather than organized markets. It will ultimately prevail, at a speed of legacy infrastructures’ choosing rather than investors’ wishes.” Philippe Morel – Former CEO SETL – CEO Railsr

5 – **Legacy** → The stronger the legacy system that exists (often also justified from long term established best practices), the less the likelihood for participants to decide to create a new efficient ecosystem. Not because it might not be possible, but because experience shows that it is expensive to implement and it obliges participants to invest additional resources to replace the existing system which might still works but which may be inefficient. And when not efficient, to replace an environment built around inefficiencies to minimize them might trigger high regression. So it is a hard decision to make, that an FMI can certainly take but itself, but to succeed requires the agreement with all the participants and with the regulator. On the other hand, the less the legacy, higher is the probability that R&D budget is allocated to new systems and infrastructure.

6 – **Centralization** → The absence of legacy infrastructure in combination a low level of market centralization (eg. investment funds, carbon credit, etc.) represents the best environment today to establish a new digital market. In this case, market participants have an opportunity to mutualize costs and create a standardized, efficient environment. Realistically, on the other hand, despite the reconciliation efficiency that decentralization and the consensus

mechanism embedded into DLT offers, the regulatory preference for retaining centralized infrastructures, significantly limits the ability to exploit DLT to its full potential. No regulator has been so far bold enough to consider a fully decentralized approach, maybe supported by a public blockchain instead of a private and permissioned. The solution might be found in an evolution of the role of the FMI suitable to the regulator, but combined with the establishment of new market dynamics between participants, FMI and regulators.

“Though many attempts to deploy DLT in existing FMI have been unsuccessful or are not progressing as fast as wished, this does not mean that the original core aspirations and the principles upon which they were founded were wrong. Quite the reverse. The continued effort to innovate in this space, in spite of the difficulties of adoption, standardisation and regulatory approval highlight the huge inefficiency and waste that costs so much to investors, even though they may be unaware of it. On the other hand, just because a new technology is cool, doesn’t mean it is the right one to use. There may be much more suitable ways to deploy the cryptographic processes that make settlement inexpensive and risk-free without the need for the consensus process that DLT is based on which brings so much overhead with it. What we need is careful analysis of the original defining principles to see if they can be adopted by modifying existing infrastructure, incorporating reconciliation and consensus if absolutely necessary but without the need for wholesale re-engineering for the entire financial community. The original ID2S movers understood this and modified their offering to suit. It was actually the commercial barrier to entry that ultimately made it difficult and so focusing on asset classes that are poorly served by the existing incumbents is the best place to start.” James Zorab – CEO Codemark

7 – **Tokenization** → The appetite for “Tokenisation”, either as the digital representation of ownership of an underlying financial instrument issued in a traditional way , or the “digitally native issuance” of instruments that exist solely in digital form, has yet to be fully determined and indeed even the glossary of terminology has yet to be established. Many wonder why they should add a layer to the former instruments that are already liquid in the conventional environment, adding costs and splitting liquidity. This is the “electric car syndrome”, trying to address a problem with a solution that is not perceived as such. Tokenization is likely to be a medium-term transitional mechanism allowing issuers and market participants who service assets for investors to switch from traditional book-entry systems to their more modern, less costly digital counterparts. Fractionalization is also an opportunity should this be or become a requirement.

8 – **Digitally native issuance** → Successful tokenization and adoption from the buy side may well be a driving force and attractive to existing companies to progressively switch from book entry to digital issuance for IPOs, capital increases and debt issuance. The bolder adopters can move earlier in the digital space, but as mentioned in 4. above, the over-arching reason for adoption will remain the existence of secondary market liquidity for asset managers who assess the risk they bear if they need to re-sell their assets in the future. Further momentum to digitalization may come from the adoption in the asset servicing space.

9 – **Instrument innovation** → Previous introduction of technologies in the industry has often lead to innovation both in the process management and in the product features sphere. Digitalization is an opportunity to develop new products in the form of token / certificates, not only to improve the current processes (see the streamlining of the pre-issuance phase in the bond issuance world), but also addresses new emerging market needs. Examples might include the issuance of tokens bound to verifiable ESG² underlying life-cycle data, or the creation of a proper post-trade infrastructure for the carbon credit market, currently stalled due to excessive fragmentation and non-standardization.

“Going beyond a limited instrument complexity scope or a proof-of-concept will require a tighter process and data integration between primary markets, secondary markets and post-trade; The data and business rules underpinning the genesis of digital assets should be made available to all the actors in the value on-chain ecosystem at creation time. Downstream processes would then benefit from higher quality data and business rules, addressing the current weaknesses/limitations in post-trade as far as asset servicing is concerned.”

Fabian Vandenreydt – NowCM COO – Greenomy

10 - **Adoption or Bubble burst** → the objective and ultimate outcome. The industry has marketed DLT and the likes a lot during the last 10 years, but no one has highlighted the fact that all proofs of concept have been based upon “non-CSD issued standalone (as opposite of programs) and privately placed (as opposite of publicly offered) instruments”. Adoption has failed so far because the industry has undermined one key part of the problem, not to mention the often inadequate and overcomplicated regulators’ response which in many cases has imposed an additional layer of complexity and cost while still requiring participants to maintain their legacy environments. If these issues will not be resolved the likelihood that the bubble will burst will increase, “digitalization” being still far from having reached a critical mass.

“At ID2S, as Chief Business development, I have been uniquely positioned to see the potential of DLT / Blockchain implementation in Financial Market Infrastructures, and in particular its’ ability to redefine, enhance and extend the scope of financial products and services that can be offered, in parallel with developing more efficient and less costly processes and supporting operating models, including the redefinition of the pre-trade, trade and post-trade value chain. However, these ID2S experiences also identified some of the considerable hurdles that a new adopter would be faced with which, summarized here above, I endorse”. **Andrew D. Carter – Principal at KingStone Consulting**

Author

Andrea Tranquillini

Andrea Tranquillini, is a senior financial market infrastructure executive, former CEO of post trade market infrastructures and DLT/digitalization/implementation expert. Andrea has successfully created, implemented and run two CSD, in particular, from 2018 to 2021 the only authorized financial market infrastructure to date partially powered by DLT, the French CSD ID2S, owned by Orange, the telecommunication company. He is currently “CEO Advisor” for the Saudi central securities CSD Edaa, as part of the Saudi Tadawul group, member of the European Securities Markets Authority (ESMA) Post Trade Standing Committee Consultative Working Group, and member of the Advisory Board of ISITC Europe CIC.

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Contributors

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Andrew has over 30 years' experience in Banking and Financial Services, with specific focus in developing and managing securities services businesses, as well as consulting on securities services, most recently as Principal for "KingStone Consult". Andrew has worked, through the years for, amongst others, ICMA/AIBD, Deutsche Bank, Deutsche WertpapierService Bank, LSEG/globeSettle, Credit Suisse, and Deutsche Börse / Clearstream, ID2S.

Philippe Morel

Philippe morel was Managing Director at BCG, and their Head of Capital Markets, before joining SETL as their CEO in 2018. When SETL got sold to Fintech Colendi early 2023, Philippe joined EMI Rail SR in London as their CEO.

Fabian Vandenreydt

Fabian has over 25 years of experience in strategy, market management, business development, corporate innovation and strategic partnership development in international B2B payments, capital markets and fintech. He is a recognised expert in systemically important financial market infrastructures. Focused on the innovative market structures and technologies that enable sustainable and accessible capital markets in Europe and beyond. Currently is the COO at NowCM and Advisor to Greenomy. Advisor and Board Member with several fintechs and fintech hubs.

James Zorab

James is the CEO of The Ascent Group Ltd (TAG), a VC-backed technology incubator based in Wales in the UK and co-founder of the Codel 1.0 and Codel 2.0 digital notary trust service, the world's fastest hash registry and longest running data immutability service. Codel has been publishing hierarchy hashes in the Financial Times continuously since 2005. Codel is developing issuance and corporate actions capability for existing Financial Market Infrastructure that can extend the dematerialization of shares through digital certification without the need for full-scale re-engineering.