

## Have you heard the news about Stella?

### **The ECB and Bank of Japan's first "Project Stella" Report: How will this impact FinTech and financial market infrastructure in the EU-27 and the Eurozone's Banking Union?**

On 5 September 2017, the European Central Bank's (ECB), acting in its central bank and not its supervisory role, together with the Bank of Japan's (BOJ) published a joint research report: "Payment systems: liquidity savings mechanisms in a distributed ledger environment"<sup>1</sup> (the **September report**). This publication is timely inasmuch as it is forward-thinking in its findings and proposals. This Client Alert provides an evaluation of the September report and how "Project Stella", a joint research project that was set up by the ECB and BOJ in December 2016 might shape the future of financial markets.

Project Stella's mandate is to assess the applicability of "distributed ledger technology" (DLT) solutions in the area of financial market infrastructure and relevant providers (FMIs). Both the ECB's TARGET2 and the BOJ-NET payment systems were put through their paces by Stella to see whether those existing systems could be replicated using DLT as the method of transmission. In short, Stella's initial findings show a promising future for DLT if honed for use as a complementary alternative and possible future replacement to central bank payment systems. Whilst promising, Stella's September report tempered any prospect of immediate replacement by stating that: "Given the relative immaturity of the technology, DLT is not a solution for large-scale applications like BOJ-NET and TARGET2 at this stage of this development." As Stella continues to progress and FinTech comes of age, this initial conclusion might change.

#### **Stella's set-up**

Central banks are certainly market movers and they have been quick to join the debate on how FinTech may affect the resilience of both the traditional financial market ecosystem as a whole but also specifically for FMIs. That being said, many central banks may themselves be slower adopters of new technology irrespective of the fact that 'cyber-security' and 'cyber-resilience' have become buzzwords of supervisors and policymakers alike. Stella aims to change that in that it aims to harness FinTech in a manner that promotes innovation without disrupting financial market stability or altering who owns the channels of monetary policy transmission.

That approach certainly makes sense. The same is true of Stella's methodology, which provides a focused yet hands-on approach to testing the ability to replicate existing payment system functionality using a DLT application. In many ways this

<sup>1</sup> See: [http://www.ecb.europa.eu/pub/pdf/other/ecb.stella\\_project\\_report\\_september\\_2017.pdf](http://www.ecb.europa.eu/pub/pdf/other/ecb.stella_project_report_september_2017.pdf)



approach mimics the upgrade of a legacy operating system that whilst tried and tested may benefit from some replacement.

The September report's two key sections namely: Section 2, which presents the most salient results of the testing; and Section 5, which presents an assessment of whether a DLT-based solution could meet the expected service levels of existing central bank payment systems, make for exciting and encouraging reading.

Future testing of Stella plans to look at efficiency, market integration and supervisory oversight of DLT. Those workstreams will likely tie-in both by influencing and being influenced by the FinTech workstreams run by both the European Banking Authority (**EBA**) as well as the Basel Committee on Banking Supervision (**BCBS**). Please see our recent two Client Alerts on those developments.

### **So how has Stella testing performed according to the September report?**

Building upon Stella's "salient findings", Section 2 of the September report sets out some good news and encouraging prospects for the DLT code that was used in the initial testing phase. According to the September report, the code used some basic "smart contract" features. Consequently, this code could serve as a basis for future expansion. In the interim it is not clear to what degree this code operates on the basis of a permissioned and trust-based DLT operating framework.

Stella's September report's "salient findings" include:

1. **DLT-based solutions could meet the performance needs of a real-time gross settlement (RTGS) system:** both in the Eurozone-19 and Japan and could handle high-volume at high-pace without compromising performance;
2. **DLT performance is affected by network size and distance between nodes:** Stella's analysis confirmed the:

"...well-known trade-off between network size and performance. Increasing the number of nodes, led to an increase in payment execution time. Furthermore, the impact of the distance between nodes on performance was found to depend on the network configuration: provided the minimum number of nodes (quorum) required to achieve consensus was sufficiently close together, the effect of dispersion in the rest of the network on latency was limited. That being said, the nodes on the periphery of the network may produce inconsistencies with the quorum. If the quorum is sufficiently disperse, the latency will be greater."

This is an important finding in its own right; and

3. **DLT solutions have the potential to strengthen resilience and reliability:** Stella's non-exhaustive findings here concluded that the potential of a DLT network to withstand issues such as: (A) validating node failures; and (B) incorrect data formats did present themselves. The key to that resilience was found to rest with having a sufficient amount of nodes in

the network that were operational and capable of performing the relevant validation functions. This might raise questions as to whether any central bank-led DLT will require nodes, whether as a failsafe or otherwise that are central bank owned or with trusted counterparties.

### **How might Stella affect the market?**

Stella's results, and the on-going research in this area, will likely define and refine how FinTech, across the EU/Eurozone, will be both regulated and supervised. The fact that it is the central bankers as opposed to the supervisors that are driving policy output from Stella is noteworthy and telling in its own right.

Will this however in the longer term lead to a DLT-based TARGET2? The initial conclusions suggest that this will not be the case. TARGET2 is being reformed and merged with TARGET-2 Securities. Moreover, most participants are still embedding these systems as a core central component or how they access FMIs.

Will DLT eschew the ECB's work on TARGET - instant payments (TIPS) solution that is due to come online? Probably not, given that TIPS builds upon some real-time gross settlement payment systems that already operate across the EU-27 and replicating those national successes as a prelude for further harmonisation remains an ECB priority.

Lastly, could, irrespective of President Draghi's dismissal<sup>2</sup> of Estonia's own E-currency proposal for an "EstCoin" this be the first steps towards a DLT-Euro? Probably not quite yet....a lot would still need to be done before central bankers allow the "robots to dream of electric sheep" but the pace is quickening. That quickening pace is not down to Moore's law, but more on a consensus to calibrate and foster convergence and use FinTech to achieve that supervisory and monetary policy relevant objective. Even the Bank for International Settlements<sup>3</sup> has begun to contribute to the debate on what central bank digital currency or cryptocurrencies for the retail and wholesale space might look like and why they might be useful from a central banking perspective.

However, the fact that Project Stella is looking at proof of concept, use cases as coupled with assessments of DLT's degree of resilience first and cost efficiencies and the remainder of research priorities at a subsequent date, might mean that the ECB and other components of the Eurosystem national central banks might want to "own" the debate as to who will set standards on DLT.

That is quite a move and one that does not conflict with but which will nevertheless shape the EBA's pressure on harmonising what FinTech activity is regulated and how it is supervised or the BCBS' similar priorities as well those additional factors that aim to make technology (not just Fin- or Reg-tech) more prevalent and embedded across central banks, regulators and supervisors. That latter point is likely to be a long journey in its own right, with a number of changes to programmes, working habits and how work is done.

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<sup>2</sup> See: Q&A Session from ECB's press conference on 7 September 2017 following the ECB's Governing Council meeting.

<sup>3</sup> See: Contribution from Bech, Morten and Garratt, Rodney to the BIS Quarterly Review, September 2017: [https://www.bis.org/publ/qtrpdf/r\\_qt1709f.pdf](https://www.bis.org/publ/qtrpdf/r_qt1709f.pdf). Market participants might find the "BIS Money Flower" and other visual representations of where concepts fit in from the BIS' perspective quite useful.

## Hot Topics

Another issue on the horizon is the fact that President Draghi will be replaced in 2019. This issue comes on top a range of regulatory, supervisory and people-driven changes both within the ECB but across a wide array of institutions that make and shape the European System of Financial Supervision as well as the Eurosystem of Central Banks. Continuity, certainly at the policy and political level, may curb the ability to fully capture the moment in the longer term. This is separate to any concerns on how to ensure DLT's resilience or the adequacy of investment commitment to data architecture and connectivity that is so very central to FMs and those interacting with them. In the interim, Project Stella and its mandate is welcome, timely and thought-provoking. It provides the right impetus for action by a wide body of stakeholders and a serious sign that FinTech is becoming a focal point for central banks.

It also gives hope that with central banks on board, that the need for harmonisation of standards, who supervises what and how to create an environment of uniformity and certainty for developers, users and ultimately consumers of financial services is important. This is especially the case as it is all stakeholder types who will likely be affected by how FinTech's transformation of the operation and engagement across EU and Eurozone financial markets that are set to become a much more digital Single Market. The hope will thus be that both the ECB and the BOJ will continue to do "whatever it takes" to make Stella a stellar success and to see more of Stella.

**If you would like to receive more analysis from our wider Eurozone Group or in relation to the topics discussed above or anything FinTech, including what these EU, Eurozone and ECB workstreams might mean for specific market participant types within or looking to enter the EU and/or the Eurozone, then please do get in touch with any of our Eurozone Hub key contacts below.**

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