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In the first article in our series on "Disrupting Financial Markets", we discussed the advantages of digital securities and how they benefit the issuer. Some of those advantages build a case for why issuers should consider a digital offering, but in a vacuum it's hard to gain real traction without the market infrastructure adapting at the same time. What you end up with are digital representations of securities that promise benefits like global 24/7 trading, but are actually in effect just private equity holdings which are almost as illiquid as previous instruments.

This is where we are today.

Digital securities are being created but we are not really seeing the market penetration that is needed to make these a commonplace. So, what will make financial institutions stand up and take notice?

We believe the answer lies in the post-trade process. To understand this, first we need to look at a traditional trade.
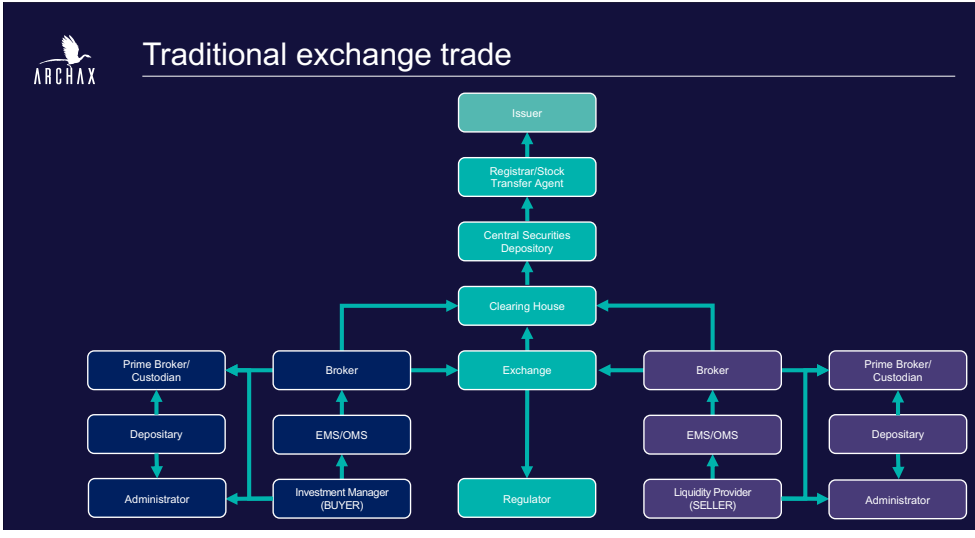
The market diagrams in this article are inspired by Richard Brown of R3. His blog is full of information across a lot of the DLT space, which is as thought provoking as it is educational.

In the traditional world, the typical trade flow could be an investment manager placing an order into an execution or order management system. This trade then gets routed to a broker. The broker submits the order to an exchange, where it rests until it is matched and the trade occurs. At this point execution data is captured and relayed to the parties involved and their various counterparties — usually into each party's own internal accounting or portfolio system. The two main reasons that they all do this is that they have regulatory responsibilities to keep books and records and that they do not necessarily trust the other parties involved.

What is interesting is the fact that even though only one trade took place, everyone has their own version of events. Meaning multiple data silos that then all have to reconcile with each other.
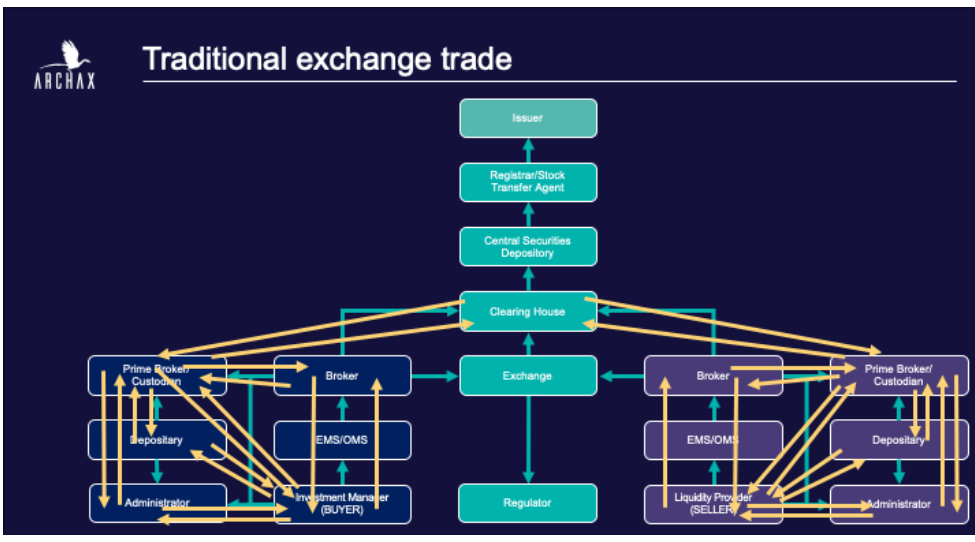

Despite only one transaction taking place, multiple and different versions of the trade can often be recorded — due to miscommunication, incorrect allocations, incorrect commissions being applied and a multitude of other reasons. The point is that discrepancies occur which prevent a trade from settling and flag it as a breaking item from a reconciliation point of view.

When this happens, it isn't just one person fixing the problem. Since everyone maintains their own records, each party identifies the break and goes about trying to fix it despite the fact their counterparts are likely doing the same thing. Investment managers and brokers will see differences in pre-matching systems, prime brokers will generate failed trade reports, portfolio managers will complain that their books are out of line. It is hugely inefficient, costly and time consuming. When the break is resolved, the trade information is re-entered and hopefully now matched and settled.

So how can this be improved using distributed ledger technology?

For inspiration, when designing the Archax exchange, we looked at concepts used within cryptocurrency exchanges for ideas on how to re-imagine financial markets infrastructure.
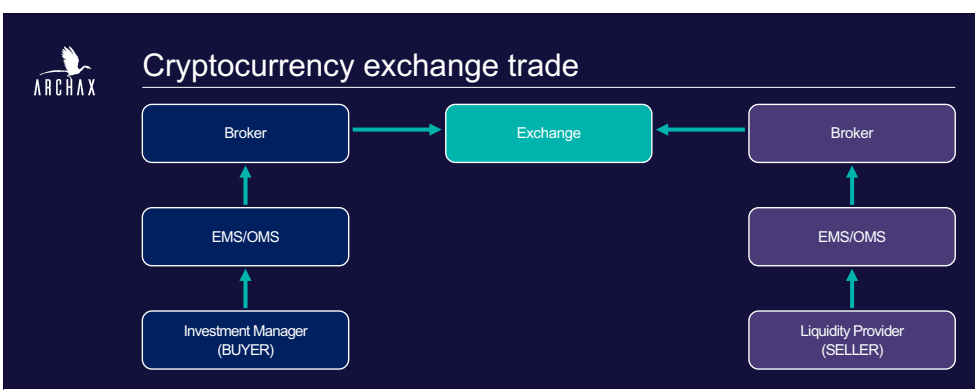

As you can see, it looks like a far more straightforward model. The main reasons, however, as mentioned in the previous article, are to do with the fact that trading is pre-funded and is largely unregulated. A result of being pre-funded is that trade fails are rare, and the lack of regulatory requirements means that all the additional traditional intermediaries are unnecessary. Therefore, investment managers use the cryptocurrency exchange providers as their execution management system, trading venue, custodian, clearer and risk reporting platform, which do not need to reconcile with third parties.

The issue for Archax or anyone looking to create a regulated marketplace is that you cannot ignore regulation for regulated instruments such as securities, we therefore need to cater for the intermediaries that exist in the traditional capital markets ecosystem still.
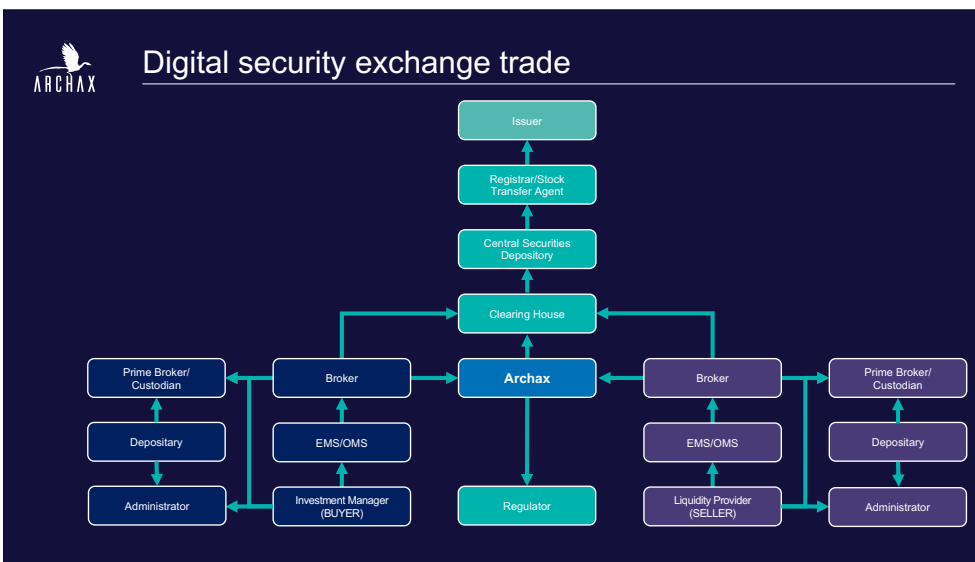
So, initially it appears to be the case that the ecosystem is largely unchanged and whilst we can all argue whether there is any need for CSDs or clearing houses in a blockchain dominated world, right now regulation requires them to be present. So how does a digital securities exchange get disrupted by blockchain?

As we mentioned earlier, we believe the answer lies in improving the efficiency in post-trade, and in this example we will consider a private permission blockchain network. Archax intends to run a Corda blockchain network to store transactions that take place on our trading venue. This network will be permissioned so that each of our members are able to see their trades and further permission their counterparties to have access to their trades too. As a result, Archax transactions will be immediately available across the network and everyone will see the same trusted source of data and have access to the exact same transaction details as shown
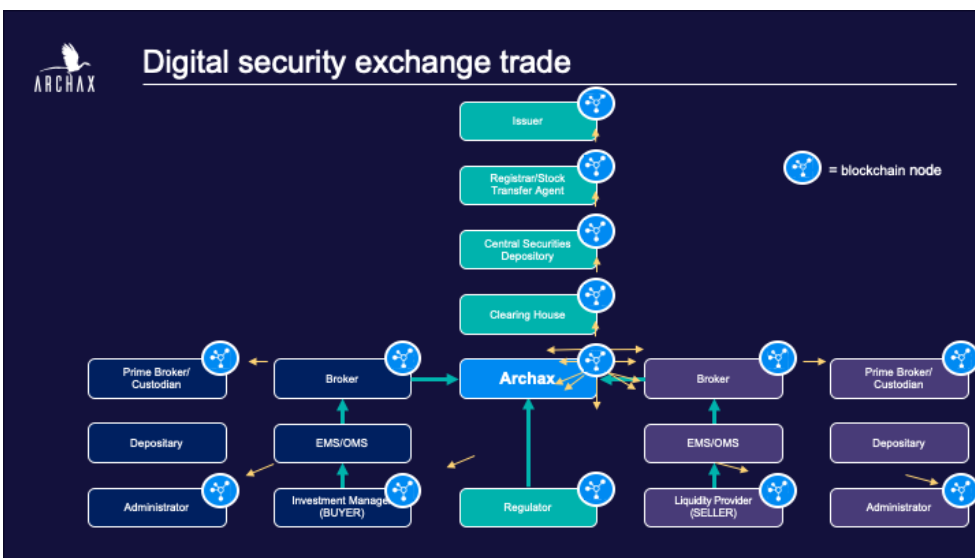
Compare that to the example we saw earlier where each counterparty is maintaining their own records. Now we have a situation where everyone can see their transactions and know that all other parties see the same transaction at the same time. A truly distributed ledger. Taken to extremes, this streamlines and removes a lot of the post-trade inefficiencies that exist today and has real potential to disrupt all traditional financial markets, as well as other financial institutions and their processes too.

There are obviously hurdles to overcome, such as adoption and interoperability, some of which are discussed on this podcast. But this is all genuinely achievable and is already being explored by existing and emerging market infrastructure players.

In both this and the previous article we have looked at the advantages of digital securities to issuers and the market infrastructure that underpins trading. In our next article we explore how this will affect all classes of assets, where it will begin and the potential overall market opportunity.