Digital asset networks are like train lines

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Digital asset networks are like railway lines[1]. An essential feature that makes an efficient and ultimately useful railway network is interoperability. This is not immediately obvious to people in 2021 as most are accustomed to railway networks that are interoperable. Anyone who has had to change trains at a national border does not take this feature for granted – nor did people in the 1850s. The same need for interoperability has become apparent across the digital asset ecosystem – and developers are working on solutions. The networks that are able to create 'bridges' and 'speak' to one another will ultimately deliver greater utility to their users – and thus create greater value.

Many people take various forms of rail transport without thinking for a second about the interoperability between the lines that they take. It was not always so. For decades the first train lines were just that: lines. Each one was built according to the standards that the engineers deemed appropriate given the needs of the line. This led to a situation where different rail gauges were used across different lines. Unfortunately, this meant that train carriages could not easily move from one line to another – so time consuming and ultimately costly transfers of people and/or cargo had to occur to transfer from one line to another. Once these transaction costs became apparent solutions were developed, which included standardised gauges in some (not all[2]) countries.

Standardised gauges… important. (source[3])

One can observe a similar phenomenon with digital asset networks. Each network's code is written in a certain language to accomplish a certain purpose. The end result is that many of these networks cannot 'speak' to the other ones. This adds friction and cost to people who wish to do multiple things across these networks.

The space is evolving though. For a number of years a series of 'bridges' between different networks have been developed. Put simply, "a bridge in the crypto world is like a bridge in the physical world. They connect two distinct locations or communities so that traffic and resources can go back and forth freely[4]." These bridges make it so that one can make transactions on one network that are recognised on another network. In more technical terms, people 'wrap' coins or tokens in a way that allows said coins or tokens to be used on different networks. WBTC (wrapped bitcoin), which is bitcoin in an Ethereum compatible wrapper, is one such example. This solution has largely worked out well – there is around USD$13bn[5] in wrapped bitcoin at present – and that is just WBTC.

Another area where greater connectivity can be seen is the emergence of interoperable protocols. Think of this like variable gauge lines[6]. Instead of trying to build an exclusive space that constrains users some of the fastest growing projects have decided to write their software in a way that makes their service usable across different networks. The largest decentralised exchanges realised that interoperability was necessary well ahead of time. Curve, the largest decentralised exchange presently with USD$17bn[7] in total value locked, is interoperable with seven different protocols. Sushi swap is best in class – it is interoperable with thirteen protocols[8]. This goes beyond exchanges though. Aave, which provides borrowing/lending pools and thus requires as much liquidity as possible, has made it so that their lending/borrowing protocol can be used across the Ethereum, Polygon and Avalanche networks.

The digital asset ecosystem continues to grow and evolve – just as train lines were built separately then evolved into the networks that exist today. The good news is that it is much less capital intensive to retroactively implement interoperability, whether via bridges or directly via protocol updates, in digital asset networks than it is to rip up rails and replace them with rails of a different gauge. This is part of the beauty that is software. Expect interoperability to play a role in the parts of the ecosystem that reach and maintain critical mass – then ultimately deliver greater utility and value to their user base.

[1] https://medium.com/hackernoon/bitcoin-analogies-7066c58df9ec
[2] https://en.wikipedia.org/wiki/Rail_gauge_in_Australia
[3] https://civilcrews.com/gauges/
[4] https://medium.com/chainsafe-systems/bridges-in-crypto-space-12e158f5fd1e
[5] https://www.coingecko.com/en
[6] https://en.wikipedia.org/wiki/Variable_gauge
[7] https://defillama.com/protocols
[8] https://defillama.com/protocols

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