

The Internet of Value-Exchange

“[The] Bitcoin protocol and network today is that foundational layer. It is [a] value transfer network. Beyond that, it is a core, backbone security service securing contracts, physical and digital property, equities, bonds, robot AI and an enormous wave of applications which have not yet been conceived.”²⁸

Jeff Garzik, Bitcoin core developer and CEO, Dunvegan Space Systems

How does a blockchain deliver value?

The way in which many established transaction processing systems work is very different from the decentralised and distributed nature of a blockchain. For certain applications, the current model of value creation is likely to be bettered by faster, cheaper, more reliable and transparent processes enabled by the blockchain. This is illustrated in Figure 3. However, Jeff Garzik, one of Bitcoin's core developers, cautions against trying to do too much with a blockchain: *“Do not try to stuff every feature into the Bitcoin protocol. Let it do what it does best. Build systems on top of Bitcoin which use its strengths.... Putting all the world's coffee transactions, and all the world's stock trades, and all the world's Internet of Things device samplings, on the Bitcoin blockchain seems misguided”*.²⁹

There are clearly both practical and philosophical limits to the scope of applications amenable to blockchain approaches. But with a little careful thought, linking users and organisations directly together through a shared ledger and distributing processing across a network, we should be able to remove the friction that makes existing transactions slow and expensive. And because a blockchain breaks many of the rules and conventions that traditional business processes are built upon, it forces organisations to think differently about how they create value.

The problem for many organisations at the centre of traditional value-exchange processes, especially banks, or credit card and other types of payment company, is that blockchain technology is a double-edged sword.

Public blockchains, like Bitcoin, Litecoin and others, threaten disintermediation as they empower peer-to-peer networks. The value they create is taken away from central institutions and returned mainly to consumers. However, early predictions of the demise of our global banking system or national governments seem hasty and premature in the cold light of day. The reality is that while many transactions will benefit from a decentralised approach, many others will still need to be handled via an intermediary, which can, despite additional complexities and regulation, veto suspect transactions, provide guarantees and indemnities, and deliver a range of associated products and services that consumers cannot yet access on the blockchain.

Figure 3. Value of a blockchain

Characteristic	Consumer blockchain	Single organisation blockchain	Collaborating organisations on a blockchain
<i>Decentralised processing network</i>	<ul style="list-style-type: none"> Increases speed of exchange and reduces time delays Reduces price of exchange (if a fee is charged) Improves quality, reliability and availability of services 	<ul style="list-style-type: none"> Increases speed of exchange between departments/divisions, which reduces backlog and overall costs Improves availability, reliability and maintainability of services 	<ul style="list-style-type: none"> Increases speed of exchange, which reduces backlog and overall costs Improves availability, reliability and maintainability of services
<i>Distributed ledger</i>	<ul style="list-style-type: none"> Increases transparency (in the case of public blockchains) Increases confidence 	<ul style="list-style-type: none"> Increases efficiency by standardising data formats across departments/divisions and ensures process integrity Improves auditability because records are verified in near real-time 	<ul style="list-style-type: none"> Increases efficiency by standardising data formats across multiple organisations, enabling interoperability, and ensures process integrity Reduces risk of fraud, error and invalid transactions across the group because records cannot be altered Improves auditability because records are verified in near real-time
<i>Digital signatures</i>	<ul style="list-style-type: none"> Reduces risk of fraud or theft 	<ul style="list-style-type: none"> Helps identify customers and participating departments/divisions 	<ul style="list-style-type: none"> Helps identify customers and participating organisations
<i>Programmable logic</i>	<ul style="list-style-type: none"> Enables transaction criteria to be strictly enforced 	<ul style="list-style-type: none"> Enables new capabilities to be added to existing services and processes 	<ul style="list-style-type: none"> Enables new capabilities to be added to existing services and processes across the group Enables collaboration criteria to be strictly enforced
<i>Private vs. public</i>	<ul style="list-style-type: none"> Public blockchain enables anyone to participate in any capacity 	<ul style="list-style-type: none"> Private blockchain restricts processing to members or employees of the organisation but opens up use to consumers 	<ul style="list-style-type: none"> Private blockchain restricts participation to members of the group of organisations but opens up use to consumers

Source: Deloitte

There are considerable opportunities for organisations that adopt blockchain technology internally, using bespoke blockchains or so-called ‘side-chains’, which provide some interoperability with public blockchains, like Bitcoin, while adding new functionality.³⁰ Perhaps the most significant opportunity, though, comes from blockchains that link currently disparate parts of one enterprise together or even many different organisations from within the same sector.