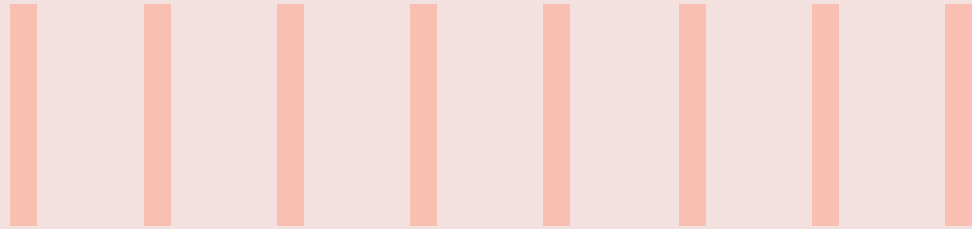# RISE OF BLOCKCHAIN :
THUS FAR AND HENCEFORWARD

Introduction to Blockchain

Counted among the most exciting developments in recent times, Blockchain is now past the hype stage and into active adoption. A type of Distributed Ledger Technology, the greatest appeal of Blockchain is that it establishes trust in transactions involving multiple parties who might or might not know each other. Hence businesses will employ Blockchain for specific transactions, rather than across the board.

At the broadest level, Blockchain is either permissioned, meaning certain actions may only be performed by certain participants who can be identified, or un-permissioned, that is, anyone can join the network and enjoy equal and open rights to read or make legitimate changes. The most famous example of the latter is Bitcoin. Currently, there is greater interest in permissioned Blockchain, and this is where most implementations will occur in the near future.

A number of Open Source consortia – Hyperledger and Ethereum to name just two – have been engaged in defining standards and rules and driving experimentation in Blockchain. These efforts are largely responsible for Blockchain evolving from early experimentation to production implementation. In my view, we are in the third stage of this evolution where the first saw much buzz around cryptocurrency (mainly with Bitcoin) and the second, several Proofs of Concept with companies trying to understand how Blockchain could work for them. In the current third stage we are seeing organizations using Blockchain in a live environment. An example is the Blockchain-based international remittance network between Emirates NBD and ICICI Bank, implemented by Infosys. Apart from Infosys, product companies such as IBM, Oracle, Microsoft and SAP are offering end-to-end services to support developers in building a variety of Blockchain solutions.

Challenges of Platform and Consortium Building

Although Blockchain has made strides, it still faces a number of challenges on the path to progress. The first is a lack of a scalable, easy to use platform for building a Blockchain. Currently, developers need to write code, besides grappling with infrastructure, hosting and security considerations. The majority of enterprises are in the early stages of adoption, and firmly in the grip of this challenge. This is an obvious opportunity for product companies to ease their situation with a viable platform.

The second and most significant challenge is the complexity of the consortium model where a group of entities, often with differing interests, have to work together. The following example will illustrate how difficult this could be: say the Department of Motor Vehicles asks all car manufacturers to put the VIN number of every car on Blockchain so that any prospective buyer can access the vehicle's history. This will require the concurrence and cooperation of all the car manufacturers, vehicle registration entities (like DMV in the U.S.) and traffic police (to intervene in an incident). Since the same information can be used to calculate insurance premium, insurance companies will also need to join the network. All these parties need to accept a common set of rules and protocols.

In order to succeed, this (or any other) consortium will need careful orchestration of activities – and therefore an orchestrator – strong governance, unanimity on terms, common protocols, agreement on roles, responsibilities and rights, and trust among members. One or more of the parties need to take a lead in building this consortium; alternatively a consulting firm can orchestrate the same. Now we are also seeing the emergence of boutique firms that are playing this role.

The process of building a Blockchain solution, from coding to designing to capturing data and deciding the various parties and their rights, also presents some challenges. Large companies such as IBM, Oracle, Microsoft and SAP are addressing this by coming up with easy to use, enterprise grade, packaged solutions encompassing everything from infrastructure to security. Consulting firms and system integrators can play the role of orchestrator and also help to integrate Blockchain solutions within the enterprise.

Use Cases Beyond Financial Services

The Distributed Ledger's characteristics – immutability, transparency, network consensus, trustworthiness, and the fact that posted transactions cannot be repudiated – make it eminently suited to the needs of the financial services industry. According to Gartner, in 2017, as much as 82 percent of Blockchain activity was in financial services. Other industries caught on quickly to adapt the technology to their requirements, and currently, they account for about 54 percent of the use cases reported this year.

Today, Blockchain helps to carry payments and other financial transactions, digitize trade finance documentation, track provenance of assets, maintain official records, and prove rights to intellectual property in sectors as diverse as banking, insurance, media, consumer goods, retail, utilities and government.   Here are some examples:

• Walmart developed a Blockchain focused on China's massive pork industry supply chain. This enabled the company to track the provenance and content of its products, right from the point of origin until the point of sale.

• Infosys has implemented a similar solution for a coffee manufacturer that allows the client to track the coffee beans harvested from the plantations, record soil, fertilizer and other additives used in farming, and track the entire coffee production life cycle from plucking to roasting to grinding to storing to distribution.

• We at Infosys created a Blockchain-based solution jointly with Oracle in the area of (country of origin) compliance to track the origin of import shipments so that importers don't end up procuring from blacklisted sources.

• Even the education sector is adopting Blockchain for its needs. MIT has digitized degree certificates using Blockchain, making them accessible to authorized parties as well as assuring their validity.

• Since June 2016, Sweden's land registration authority has been testing a pilot to record property titles on Blockchain, and is keen to pioneer the use of Blockchain for buying and selling property sometime this year.

• Even the traditionally slow-to-adopt energy sector is finding use for Blockchain in energy trading. The usage activity of consumer-producers, who both take from and give back to the grid, is recorded on Blockchain to automate billing..

Way Forward

What is the next stage of evolution for Blockchain?

I believe Blockchain will combine with other disruptive technologies, such as the Internet of Things (IoT) and Artificial Intelligence (AI), to solve the really big problems faced by businesses today. What's more, the IoT could even automate the writing of the Blockchain ledger and add to its efficiency. As more and more transactions – and therefore data – come aboard Blockchain, there will be opportunity to use artificial intelligence and machine learning to extract insights. Hence the future Blockchain will be part of a smart system of many technologies.

I also see an increase in the number of enterprise solutions with Blockchain integrating tightly with business systems. Product companies like IBM, Oracle, Microsoft and SAP will launch out-of-the-box solutions that enable plug and play integration between their ERP and Blockchain. In time, Blockchain will become like the Internet, huge and all pervasive, and perhaps as big a game changer.

About the Author

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Srikanth Sripathi is a Senior Industry Principal with Infosys and is part of Oracle practice for last 17 years. He heads the Oracle Supply Chain competency along with Oracle Blockchain competency for Infosys. He was part of mutiple trasformation programs for major clients across the globe and a thought leader in Supply Chain and emerging technologies like IOT, Blockchain and AI/ML.

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