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The Mindful IT Company

BLOCKCHAIN

THE KEY TO RE-IMAGINING SUPPLY CHAIN FOR B2B E-COMMERCE

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INTRODUCTION

The technology world is always teeming with ideas that carry with them the smell of disruption and few ideas have captured the imagination of visionaries and pundits alike, as has 'BlockChain'. While the underlying technological components, processes and standards are still far away from reaching maturity, it hasn't stopped a swathe of interested observers from imagining the unending possibilities.

Although, enough has been written about blockchain and the tremendous potential it carries to change the realm of digital business, it is perhaps important to simplify the concept so we don't lose ourselves in a spider web of complex jargon.

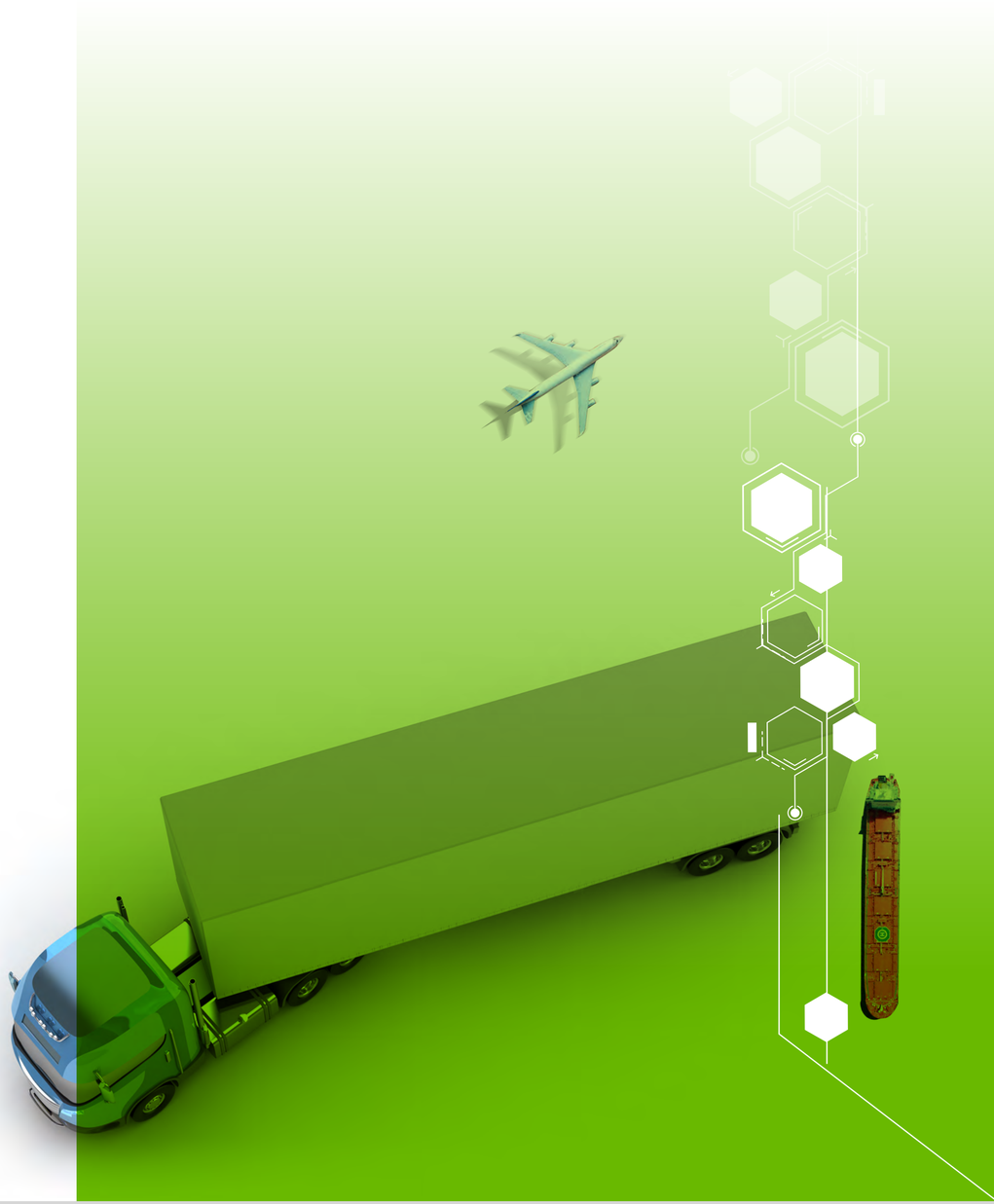
So, what is blockchain and why is everyone talking about it especially in the usually conservative supply chain industry? If we were to go with the most matter of fact definition, blockchain is a glorified ledger that cannot be hacked to tamper with the integrity of a system of record. The transactions which have occurred along the entire chain are captured with transparency and it is practically impossible to alter or compromise this information. This is made possible due to all nodes in a blockchain having visibility of all transactions that have taken place since the creation of the network. Hence, compromising a transaction would require a majority of the nodes to be compromised fairly quickly, which isn't practically possible.

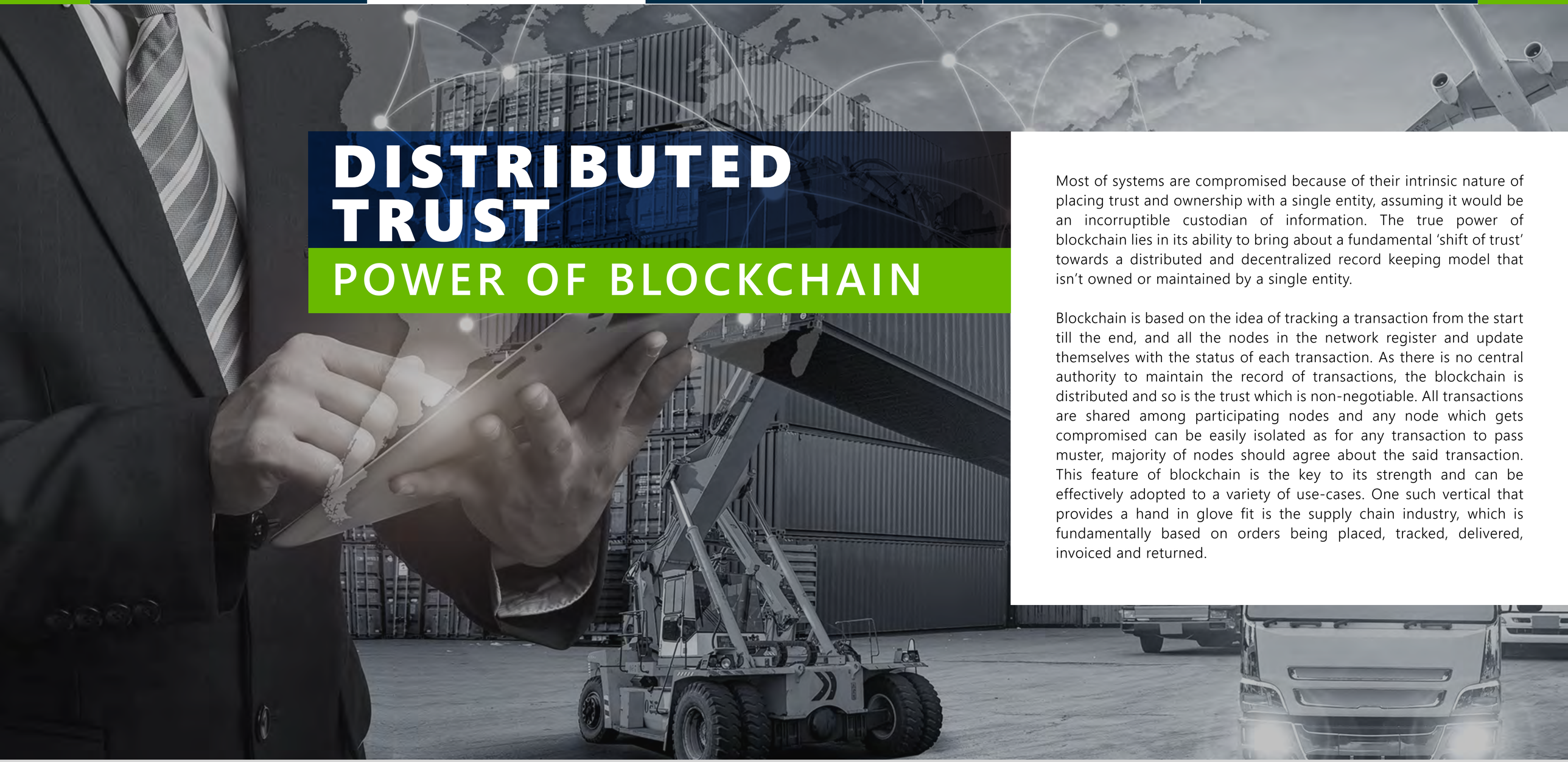
Arising from the emergence of 'Bit Coin', the idea of BlockChain has taken on a life of its own because of its potential to create an evolutionary 'shift of trust' from centralized to decentralized record keeping models in complex, interlinked and distributed business environments. Slowly, people have started realizing that blockchain technology can be used for other use-cases where distributed trust or trustless networks are needed.

For example, in areas like land records where documents need to be traced back to several decades and every node needs to authenticated, contracts can be made smart by using blockchain to register and maintain the contracts. Any change in such a system can be tracked meticulously ensuring that these contracts are completely secure.

The same goes for a supply chain where there are various entities with their own unique systems and views. Applying the principles of blockchain in such a scenario provides for an order to be seamlessly tracked from inception to delivery.

We are now in the age of blockchain in the supply chain industry and this could be just what was required to address the regulatory mandates in the pharma industry and others which require substantial trust.



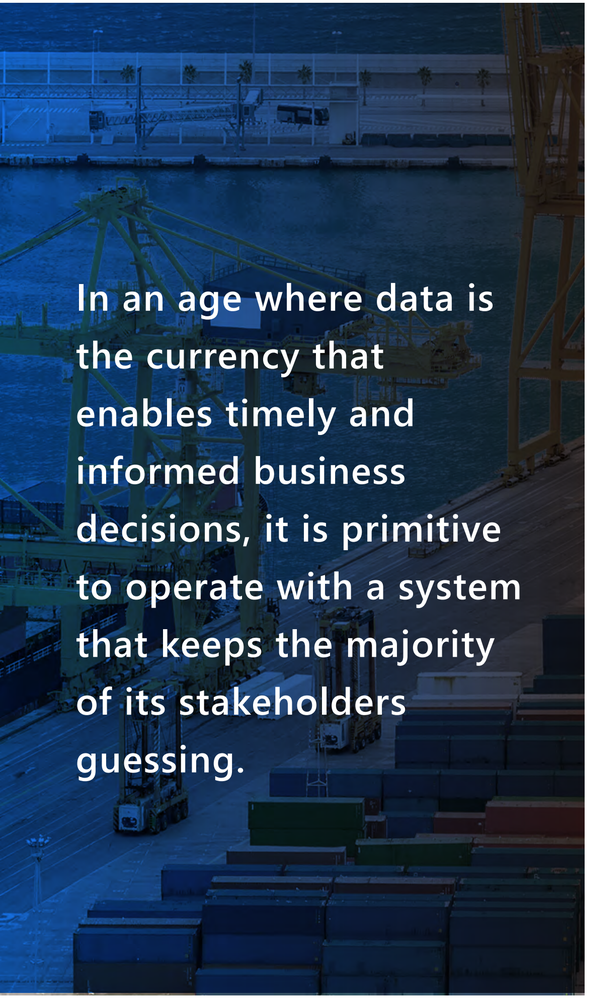


DISTRIBUTED TRUST

POWER OF BLOCKCHAIN

Most of systems are compromised because of their intrinsic nature of placing trust and ownership with a single entity, assuming it would be an incorruptible custodian of information. The true power of blockchain lies in its ability to bring about a fundamental 'shift of trust' towards a distributed and decentralized record keeping model that isn't owned or maintained by a single entity.

Blockchain is based on the idea of tracking a transaction from the start till the end, and all the nodes in the network register and update themselves with the status of each transaction. As there is no central authority to maintain the record of transactions, the blockchain is distributed and so is the trust which is non-negotiable. All transactions are shared among participating nodes and any node which gets compromised can be easily isolated as for any transaction to pass muster, majority of nodes should agree about the said transaction. This feature of blockchain is the key to its strength and can be effectively adopted to a variety of use-cases. One such vertical that provides a hand in glove fit is the supply chain industry, which is fundamentally based on orders being placed, tracked, delivered, invoiced and returned.



BLOCKCHAIN IN SUPPLY CHAIN

Few industries lend themselves as naturally to Blockchain as does an industry where the placement of orders and delivery of items is all enmeshed together in a gigantic mesh or perhaps to some a gigantic mess. Each participant in the supply chain has their own unique but limited view and there is often a great sense of disparity between them. As a result, a customer placing an order and a supplier fulfilling it do not see eye to eye for most of the transaction.

It goes without saying that any supply chain is defined and maintained based on transactional data. As this data is spread across various modules and accessed by a significant number of parties across the globe, it is should come as no surprise that there are frequent accessibility issues and errors. Also, a supply chain is comprised of several interlinked and complex equations between the involved participants – for instance, a customer to one is also very likely to be a supplier to another. As a result, the true 'end consumer' will not have any visibility of his orders unless the first customer updates his system, provided he has a system, with the data from the previous system through which the items were ordered. To put it mildly, this is a cumbersome process that results in gross inefficiencies and escalating costs.

As things stand right now, any supply chain's digital infrastructure is opaque to anybody except for a few who are the direct consumers or producers. The reason for this opaqueness is trust or more precisely, the lack of it. Except for entities who place orders and the producers who fulfill them, the present systems are designed to exclude everybody else for the sake of security. Can it go along like this keeping all the other stake holders guessing.

In an age where data is the currency that enables timely and informed business decisions, it is primitive to operate with a system that keeps the majority of its stakeholders guessing. At a minimum, a producer would benefit from knowing the amount of unused merchandize still available with his customer so they can predict their next order. The ability to do this across all customers would enable a producer to accurately forecast the raw materials required, labor to be employed while also being able to appropriately manage sales and marketing efforts to ensure revenues aren't slipping.

At present these scenarios are heavily dependent on the customer willfully and proactively sharing details about his inventory or order history solely for the purposes of benefiting other parties in planning better. This is very unlikely to happen as there isn't a very strong incentive at play along with security being a grave concern.

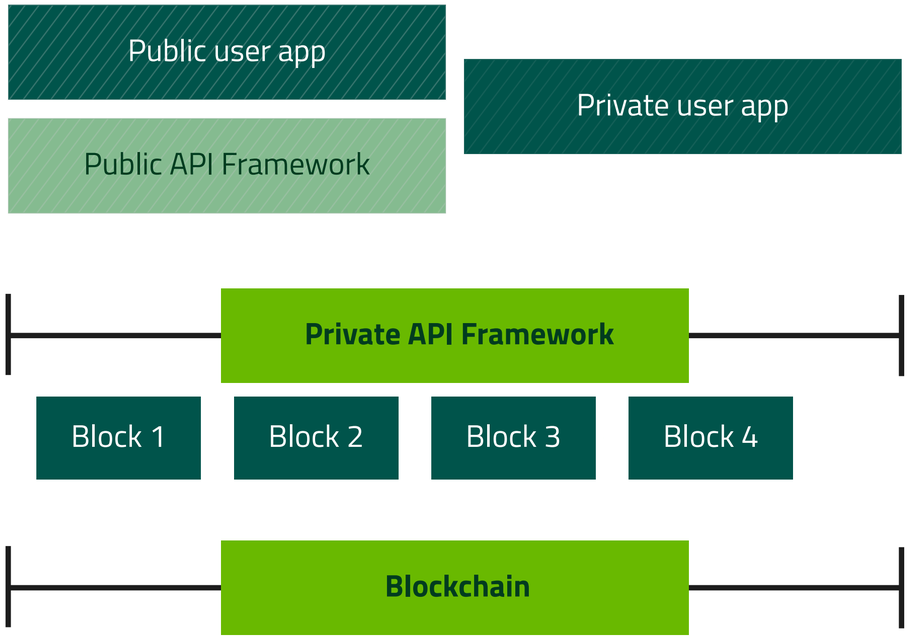
Quite evidently, Blockchain is just what the Doctor ordered to address these concerns. Let's take a second to imagine a customer placing an order on a system which has blockchain as the underlying platform.

In this new system, the blockchain registers all the transactions including the one the first customer has placed. While the producer who has received the order will start servicing it, if the said customer has another customer on behalf of whom the order was placed, the blockchain will enable the other customer as well to see the status of the order. Blockchain can enable this kind of transparency as the underlying data of the blockchain is not hackable by any normal means and would require enormous computing power and time to do any damage to data.

WHY BLOCKCHAIN CAN BE A GAME-CHANGER IN THE WORLD OF SUPPLY CHAIN?

As has been pointed out before, the fit between blockchain and supply chain is quite organic and together this union could be termed 'Supply Chain platform with blockchain' (SCBC). In its most optimal sense, a blockchain has to be the underlying infrastructure for all the data flowing through a supply chain infrastructure and this data should be segregated into individual chunks that can be compartmentalized easily such as an order or an invoice. This compartmentalization can help in preserving the continuity of data into the next morphing if needed. The SCBC should have a public interface and interested entities would be able to gain entry with proper credentials. These credentials can be issued in such a way so as to enable an entity to see data pertaining only to their interests while shielding other information they do not need access to.

A REPRESENTATION OF A POSSIBLE BLOCKCHAIN-SUPPLY CHAIN ARCHITECTURE



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FACILITATING SMOOTH ACCESS TO THE UNDERLYING BLOCKCHAIN

An important consideration in the entire process is figuring out how to provide access to the underlying data in blockchain? One of the most popular ways is to use APIs - if the APIs are standardized, then any entity which would like to consider the data and act upon it will be able to do so without any hassle. These APIs will be part of any blockchain based supplychain platform and the resulting applications that can be built from it are only restricted by one's imagination. For instance, the use case explained in this whitepaper of a producer accurately predicting their own manufacturing volume based on real time consumption patterns of their customers would be a reality instantaneously.

While in another realm, an end user of a product can also track the inputs of the product he or she has bought. People who are interested in purchasing top of the line diamonds are often very interested in knowing its exact origins and ensuring that the product in question was sourced in an ethical and environmentally friendly manner without flouting any rules.

It is safe to say that these kind of consumers are on the rise in several other industries as well and blockchain will enable them to be acutely aware of their purchasing choices.

While Retail would be just one example where blockchain can enable all the constituents from the supplier to the end consumer to be seamlessly connected, there are several other industries that stand to benefit as well. For instance, the pharmaceutical industry that needs to prevent the influx of spurious drugs or the spare parts or luxury goods industry that is constantly inundated with grey market or imitation goods.

It is no longer sufficient that a manufacturer certifies the legitimacy of their products as consumers want to take charge themselves by knowing all of the pertinent details to ensure the products they are using are clean in every sense of the word.

THE HAPPIEST MINDS ADVANTAGE

Happiest Minds has been working with Blockchain technologies in the non-financial transactional space and has expertise in defining and developing Blockchain based implementation for Supply chain and Identity management.

We have combined block chain with deep learning to provide better visibility to all the stakeholders of a supply chain with the ability to detect and reduce frauds. With this approach, we at Happiest Minds work together with organizations in understanding their unique requirements to provide 'state of the art' product development using the latest technologies.




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ABOUT HAPPIEST MINDS TECHNOLOGIES

Happiest Minds enables digital transformation for enterprises and technology providers by delivering seamless customer experience, business efficiency and actionable insights through an integrated set of disruptive technologies: big data analytics, internet of things, mobility, cloud, security, unified communications, SDN-NFV, etc. Happiest Minds offers domain-centric solutions applying skills, IPs and functional expertise in IT services, product engineering, infrastructure management and security. These services have applicability across industry sectors such as retail, consumer packaged goods, e-commerce, banking, insurance, hi-tech, engineering R&D, manufacturing, automotive and travel/transportation/hospitality.

Headquartered in Bangalore, India; Happiest Minds has operations in the US, UK, The Netherlands, Australia and Middle East.

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