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Welcome to possible

Top use cases for Blockchain in Hospitality

Blockchain technology addresses a fundamental need which is at the core of all economic transactions --Trust. All businesses and their stakeholders need to have a certain level of trust in each other to optimally conduct their business, generate profits and create value for their customers. In all cases, this inherent trust is built and constantly reinforced by participants, using various forms of third-party verifications like certifications, inspections, quality assurance (QA), audits, etc.

Traditionally, businesses have leveraged intermediaries or third parties to build and reinforce this trust. This has resulted in additional cost to businesses in terms of effort, time and manpower. It has also added dependency on other entities leading to uncertainty and potential delay in executing business workflows.

Blockchain in Hospitality

Blockchain is like an immutable and incorruptible ledger which provides an auditable record of transactions to secure both digital assets and their value. As a direct outcome, it can also irrefutably secure the ownership of the particular asset or its value to a person or an entity, using an immutable cryptographic audit trail. This fundamentally reinforces the trust without the need for an intermediary.

With this compelling background, let us now consider three use cases of Blockchain in Hospitality to showcase the potential of this technology in the hospitality industry. These use cases are not only relevant to the hospitality context but form the core of the hospitality business, today. The use cases pertain to Supply Chain Management, Loyalty & Rewards Management and Customer Identity Management.

1. Supply Chain Management using Blockchain in Hospitality

Supply chain being a collection of complex events choreographed by multiple parties cutting across geographies, is inherently fragmented. For a supply chain to be efficient, it is essential for all parties to exercise a certain level of trust within themselves. Again, within the Supply Chain Management (SCM) process, let us consider three different workflows where Blockchain is relevant; **Vendor Management, Inventory Management and Payment Management.**

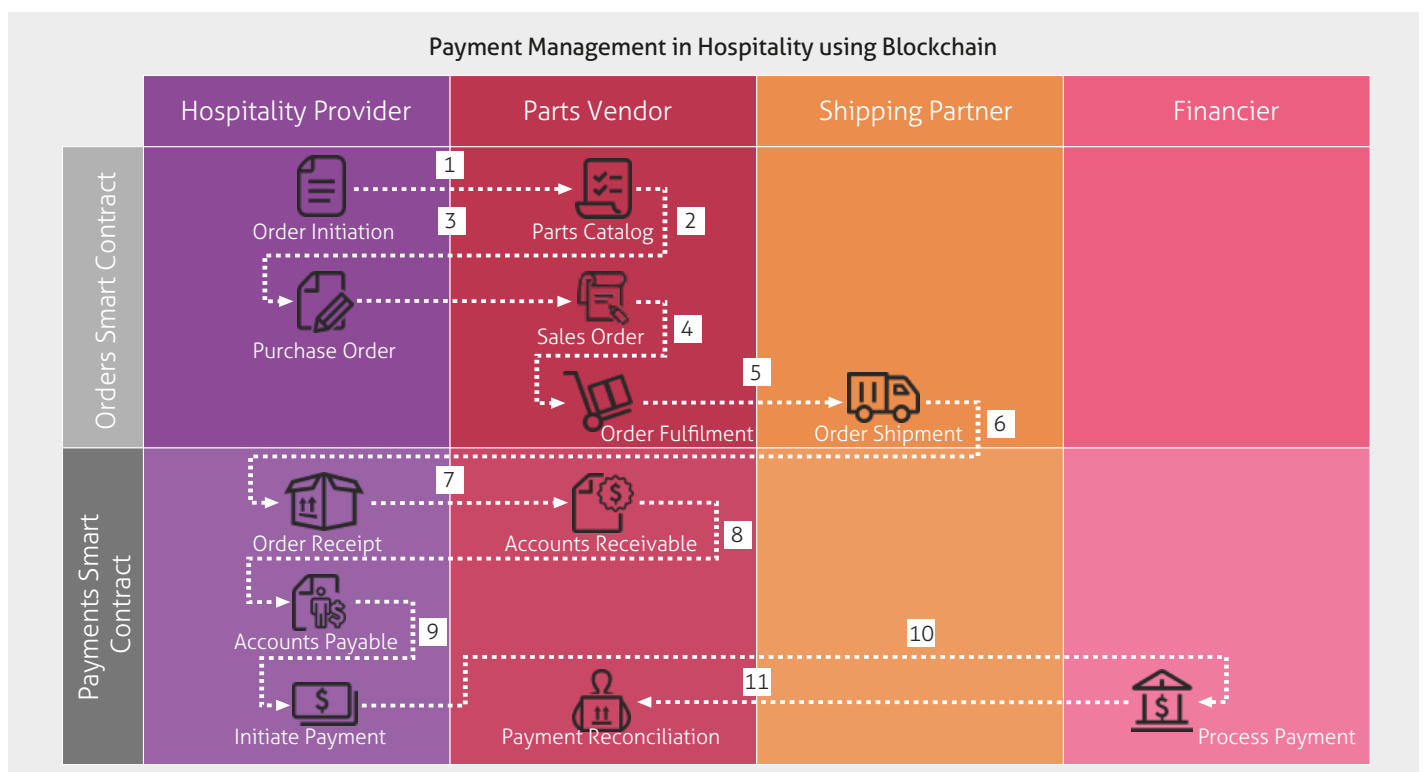
Vendor management within organizations is usually a centralized function aiming to manage a consistent system of records pertaining to the identity and reputation of vendors/suppliers. The supplier onboarding data, the background check data and the quality control data about their previous order fulfillments is sensitive information that is a function of the vendor/supplier differentiation. Additionally, as more subsystems become dependent on this information for their purchase decisions, it becomes critical that this data be made available in a confidential and secure manner throughout the organization.

In this context, a Blockchain based solution could provide coherent data persistence across a distributed system where

records can be secured cryptographically using secure identities. This solution could also establish trust without the need for an intermediary by ensuring data stored is immutable and any updates are appended with appropriate audit trail. This creates an unconditional association between the data and its creator through consensus with undeniable proof of its origin.

One can also use Blockchain technology to manage a consistent system of records for **inventory** that is transparent across integrated subsystems. Blockchain seamlessly manages the complexity of replicating consistent data across multiple nodes to be consumed by down-stream systems in real time.

Additionally, **smart contracts** can be used in conjunction with Blockchain to ensure relevant business rules are enforced both during the order and payment cycles for each purchase order. Within the order cycle, one can leverage smart contracts to ensure the most competitive pricing for a specific item in the order from all the participating vendors/suppliers. Within the payment cycle, one can leverage smart contracts to ensure the payments are made appropriately after the order is received with acceptable quality.



2. Loyalty and Rewards Management using Blockchain in Hospitality

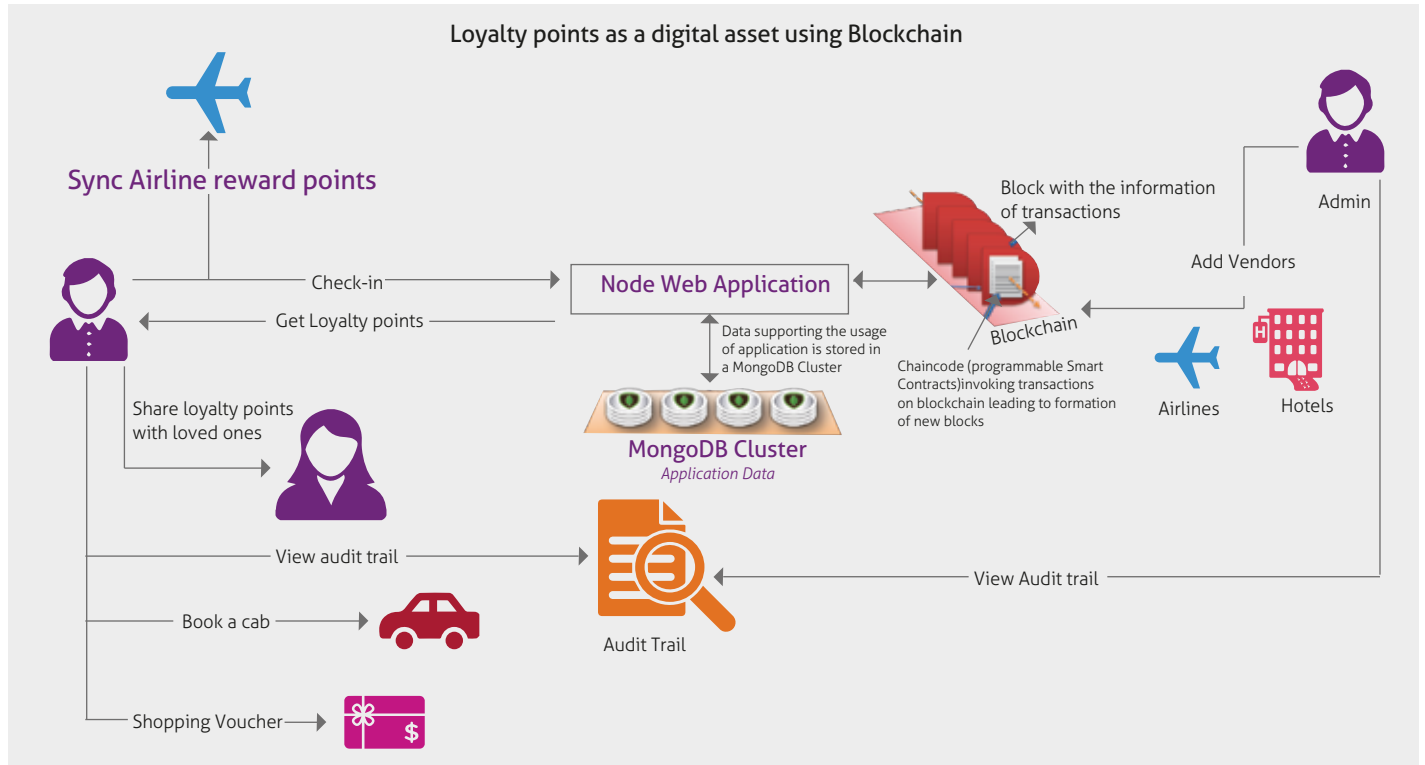
Any business will tell you that retaining an existing customer is far more economical than acquiring a new one. Customer loyalty management has now become a fundamental tenet of conducting business today especially in the hospitality sector. Hence, every hospitality organization will need information systems to manage the reward points awarded to their guests for being loyal and also for tracking the redemption of these earned loyalty points.

Now let us consider the complexities of building such a system which should provide an instant and real-time view of the entire rewards eco-system. It should also simplify the process of partner on/off boarding with easy deployment of point brokerage and rules system. It should support real-time transactions and access to a broader network of partners for customers to redeem their reward points including not limiting benefits just to the hospitality provider with whom they engage on a regular basis. Additionally, it should also provide a transparent audit trail across the entire partner eco-system on how the customer accrues and redeems these points.

Traditionally, a system with such complexity would require one to build multiple point-to-point integrations with each of the partners/vendors sub-systems. The negotiated contracts would need to be codified into business rules and deployed on a Business Rule Management System (BRMS). Daily reports would potentially need to be generated from multiple sub-systems to validate the rate of burn of the reward points against the payables to the various partners/vendors.

Now consider a Blockchain-based platform where the loyalty point is a digital asset and is accrued by customers as part of

their transactions with the hospitality provider. The moment we consider loyalty points as a digital asset and assign a dollar value to it, it simplifies both the partner onboarding and points redemption processes. Every partner on the Blockchain platform can define their own digital asset and the associated dollar value. By doing this, the guests immediately get the flexibility to redeem their loyalty points with any partner/merchant that is participating on the platform. One can also envision the possibility of gifting loyalty points to friends and family members, making the whole rewards program flexible, seamless and highly customer- friendly.



3. Customer Identity Management using Blockchain in Hospitality

Customers are at the core of all businesses, and leveraging their identity to personalize interactions with them can significantly elevate their experience. Consider a scenario, where a guest checks into the hotel with only his/her smartphone and is assigned a room which can be unlocked or locked with just the smartphone. This is now possible with the advent of IoT and Blockchain technology.

On a Blockchain network, every participant is identified by his/her public address. Each participant is assigned a private key which is kept secret and not shared with others. Every time a participant wants to transact, he/she can use the private key to sign the transaction, thereby notifying others about the origin of that transaction.

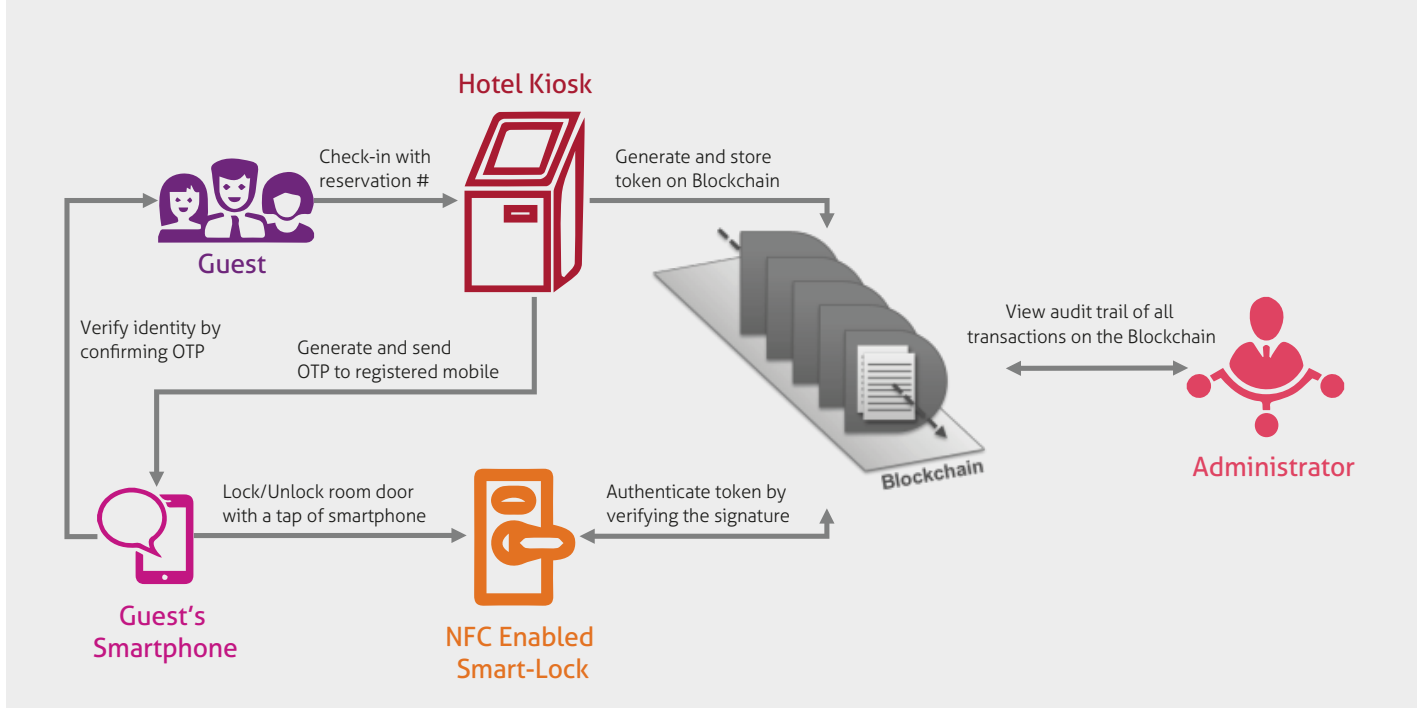
Now, let's consider the use case of a hotel check-in where a guest walks up to a kiosk in the hotel lobby and enters his/her reservation number into the kiosk form. The kiosk would generate an OTP (One-Time-Password) and forward it via SMS/email to the customer's pre-registered mobile number. The guest would then enter the OTP into the kiosk to verify his/her identity. Upon

verification of the guest's identity, the kiosk which is connected to an underlying Blockchain platform, would assign a room as per the guest's preferences, and generate a dynamic time-sensitive token. This token would then be signed using the guest's private key, and pushed to the mobile app on the guest's smartphone, concluding the check-in process. The Blockchain would also record the check-in transaction by storing the room assigned, the guest's public key and the check-out date on to a smart contract instance.

Now consider that every room in the hotel has a Near Field Communication (NFC)-enabled smart lock connected to the underlying Blockchain platform. Whenever the customer taps the smart lock on his/her room, the signed token on the guests smartphone is shared with the smart lock. The smart lock then verifies the token with the smart contract by using the guest's public key and the check-out date to allow access into the room.

Again, the above scenario does not have to be limited to the hotel room. One can fundamentally extend it to health-clubs, game rooms, bars and so on. The possibilities are immense and limited only by how one perceives the various ways in which the guest would interact with the various assets.

Digital Hotel Key using Blockchain



Conclusion

Blockchain as a technology has immense possibilities in the hospitality industry. The use cases I have discussed above are only some examples that I believe can have an immediate impact on day-to-day operations and customer experience.

This technology is constantly evolving and I expect integration and interoperability standards to emerge soon as the ecosystem matures. As more enterprises embrace the technology, I expect to see the emergence of larger Blockchain networks and formation of widespread consortiums. Eventually, this landscape will get saturated enough to achieve critical mass which in turn will fuel ongoing innovations for years to come.

[Learn more about our services and solutions in Travel and Hospitality](#)

To schedule a meeting with our experts or for more information, please write to us at info@mindtree.com

About the Author



Kishan Bhandarkar is the Chief Architect, CTO Group at Mindtree. He is a full-stack architect with over 18 years experience in the Technology space across industries. He is well versed in digital technology stacks such as Bigdata, Cloud, Web and Mobile with special focus on Blockchain-based solution architectures and enterprise integration techniques.

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