

Making blockchain real

for customer loyalty
rewards programs

Deloitte Center *for*
Financial Services



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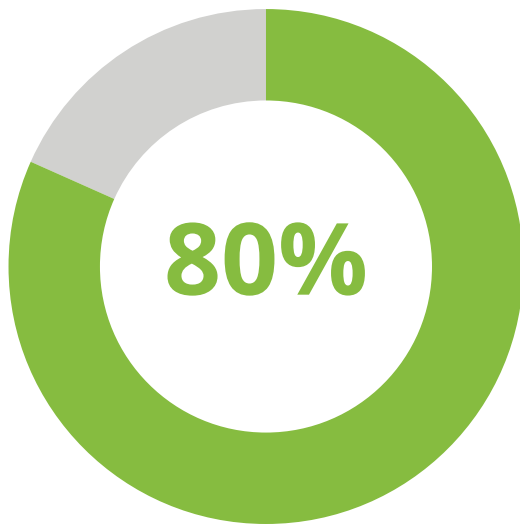
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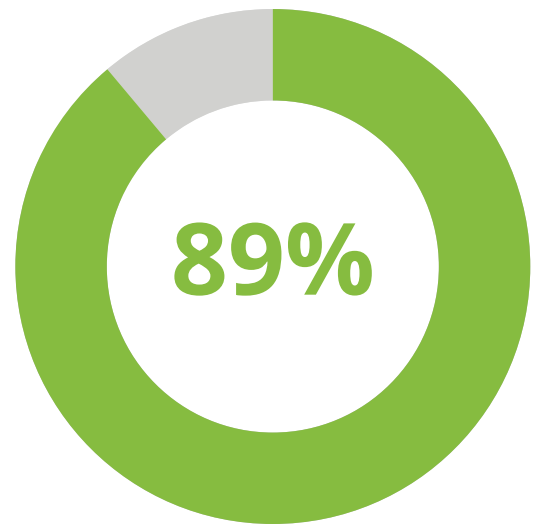
What is ailing loyalty rewards programs today?

Customer loyalty and engagement can make or break companies, and as such, loyalty rewards programs represent strategic investments for all types of organizations. We would guess that you and possibly every adult you know is enrolled in some form of loyalty program. The breadth and variety of reward programs is mindboggling, ranging from Virgin Atlantic's tiered points program (Virgin Atlantic Flying Club), which connects to rental cars, airport parking, hotels, and massage services, to Amazon's upfront fee program (Amazon Prime), which provides free shipping and media services, to Patagonia's and eBay's joint loyalty program (Common Threads Initiative), which allow customers to resell clothing bought from the former on the platform of the latter.¹ And, in fact, enrollment in loyalty programs across various industries in the US grew by 20 percent to 3.32 billion in 2015 from 2.65 billion just three years earlier, according to the industry benchmark COLLOQUY Loyalty Census, and more than tripled since the turn of the century.²

In a recent, comprehensive primary research study by the Deloitte Center for Financial Services (DCFS) on pricing innovation in banking:



80 percent of respondents said that they were much more likely to choose a bank that offered them rewards for being a good customer



89 percent of Millennial respondents said the same³

In another recent study on digital payments, DCFS asked participants to track their daily payment transactions in a mobile diary and to list the main reason for using a particular credit card for certain transactions; 37 percent listed rewards above convenience and security, among other options.⁴

So why do we think that loyalty rewards programs across all industries are “ailing,” if they have been growing so rapidly for so long? The answer is rather simple—loyalty and rewards programs are not realizing full potential, due to account inactivity; low redemption rates; time delays; high transaction and system management and customer acquisition costs; and low client retention.⁵

For example, according to the previously mentioned COLLOQUY study, only 42 percent of those eligible for loyalty programs were active members in the US in 2015.⁶ According to [The 2016 Bond Loyalty Report](#), which queried 12,000 Americans and 7,000 Canadians about their 280 loyalty programs across all industries, the percentage who were active members

was higher, but still only at 50 percent (in 2016). And of those 50 percent, a full one-fifth had never redeemed their rewards. Also, besides customer inactivity mattering to businesses in how it affects loyalty to their brand, unclaimed rewards are accounted for as liabilities on company balance sheets. And the The 2016 Bond Loyalty Report showed that loyalty rewards program members who do not make redemptions are 2.7 times more likely to defect from a program and join another.⁷

In our view, there are several reasons for these inefficiencies, but first and foremost is the paucity of uniform management systems across loyalty and rewards programs, which confuses customers and is a primary source of members’ lack of activity.⁸

A potential solution would be to integrate disparate programs into an interlinked loyalty network, but such collaboration is not easy in an industry with inconsistent digital infrastructure and obligations to protect competitive proprietary information as well as customers' personally identifiable information (PII). Also, large program operators with scaled and developed management systems would understandably be the most hesitant to join an interlinked network that could intersect with their own successful interlinking efforts (e.g., a large credit card issuer) and reduce their competitive advantage. Collaboration also usually means introducing intermediaries that heighten the risk of leaking information while adding more layers of management costs and operational logistics. Finally, a general lack of adequate digitization across programs precludes interlinking many programs, and is a primary cause for loyalty reward programs' lag times between reward points being made available in a manner that affords customers opportune moments to use them.⁹ According to The 2016 Bond Loyalty Report, 57 percent of respondents expressed interest in engaging with loyalty programs via a mobile device, but 49 percent did not know if their programs had mobile applications.¹⁰ In an ideal world, these customers would do better than redeem the points conveniently via a mobile app, rather they access multiple loyalty rewards programs on a single app like a digital wallet, reducing the lag time even further, and enhancing the customer experience.

We at Deloitte believe that blockchain, as a distributed ledger with a fundamentally new way to transact and maintain records in a secure, trustless, digitized interlinked network, will eliminate many inefficiencies. We will discuss how it will reduce costs while benefiting the needs of different types and sizes of loyalty rewards programs, all while significantly improving customer experience by allowing customers to access most, if not all, of their loyalty rewards programs in one digital wallet. Also, we believe there is another compelling reason why blockchain is an ideal remedy for what ails loyalty

rewards programs. For those who are familiar with blockchain (and if you are not, please read [Deloitte's introductory report](#) on the topic¹¹), we remind you that the most successful application of blockchain until now is Bitcoin, the digital cryptocurrency. In short, loyalty rewards are also a type of digital currency, so it is only natural that the engine that enables Bitcoin to be transacted among multiple parties in exchange for services, goods, and even other monetary tender could do the same for loyalty reward points.

Blockchain is an ideal remedy for what ails loyalty rewards programs

Why blockchain is the remedy

This study describes how, as a trustless distributed ledger, blockchain allows participating agents, which in the case of loyalty rewards programs include loyalty reward program providers, administrators, system managers, customers, etc. to intersect and interact in one system without intermediaries and without compromising privacy or competitiveness. For loyalty rewards program providers, we also believe that blockchain has the potential to streamline execution and administration of their programs with near-real-time transparency, resulting in cost savings that can be realized in the medium term. For loyalty rewards programs that currently have competitive advantage through scale, including their own degree of interlinking networks, we still believe that joining a blockchain-based network is a trade-off worth making given that they may join on their own terms, controlling how they wish their customers to interact with their rewards programs and others. And for small operators, an interlinked network provides them unprecedented scale.

Finally, blockchain has proved to be able to be deployed through social media and digital wallets, and can interact with existing loyalty rewards program platforms through smart contracts, which are “self-executing code on a blockchain that automatically implements the terms of an agreement between parties,” and associated digital architecture.¹²

So how will this all look to the customer? Figure 1, which outlines the journey of “Alice”, provides some insight, and we will elaborate on Alice’s rewards experience as we discuss how blockchain, by its inherent design, can connect the largely disconnected world of loyalty rewards programs, reduce costs, eliminate friction, bring loyalty rewards crediting and redemption into near real time, provide a more secure environment, and facilitate business relationships.

Figure 1: Typical customer journey in the blockchain world

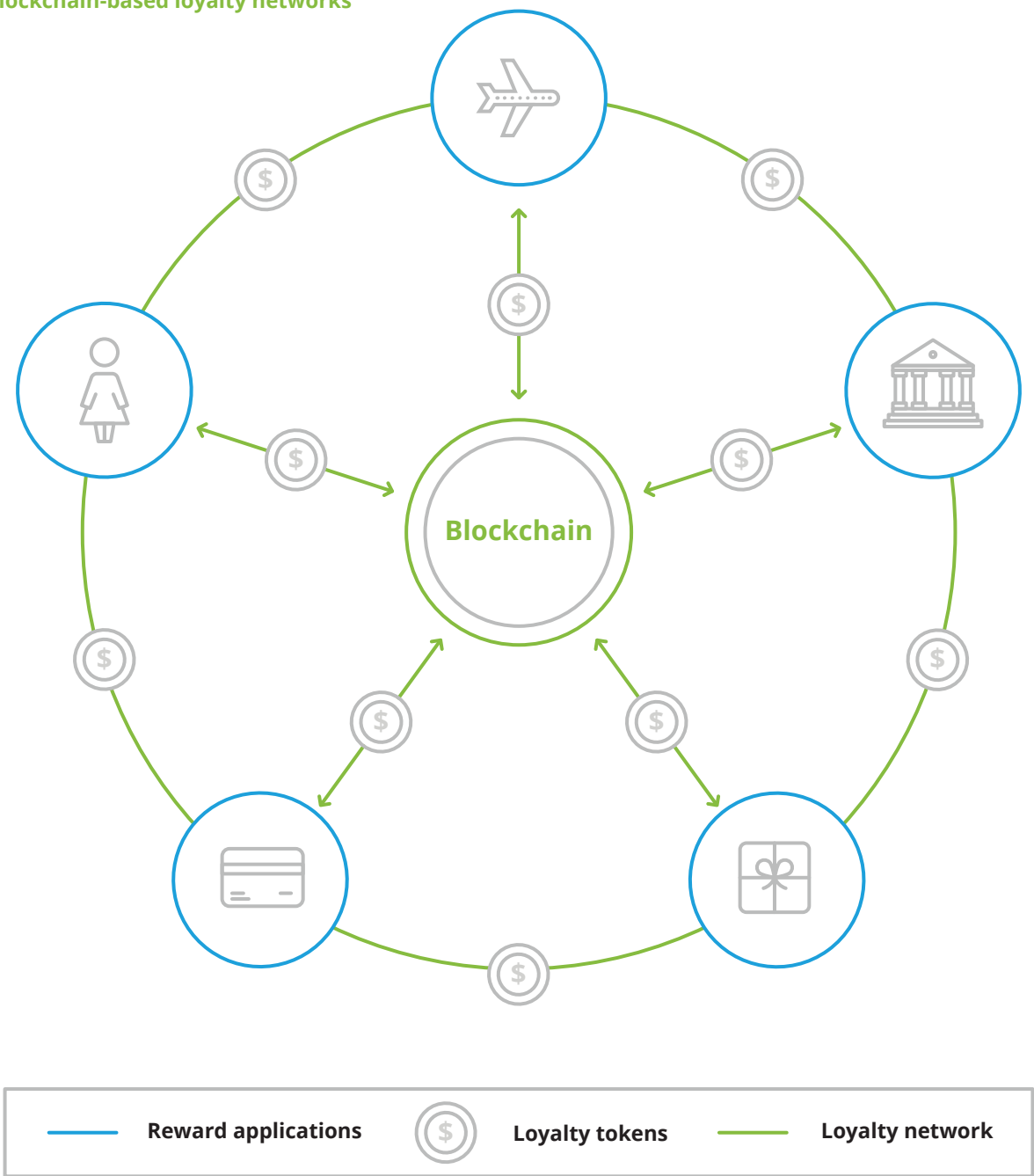


Connecting a disconnected world

We maintain that blockchain will allow instantaneous and secure creation, redemption, and exchange of loyalty reward points across programs, vendors, and industries through a trustless environment using cryptographic proofs in lieu of trusted third parties and administrators. Through a rigorous online protocol, well-programmed building blocks, and

smart contracts, blockchain has the capability to operate without intermediaries. The key elements of such a blockchain solution are a loyalty network platform (hereon referred to simply as a loyalty network), reward applications, and loyalty tokens (Figure 2).

Figure 2: Blockchain-based loyalty networks



Loyalty network platform

The platform that accommodates the loyalty network could accommodate different and multiple organizations and their loyalty programs, facilitating their interaction, especially in terms of the convertibility and exchange of their points. It connects them through all of their agents who reach consensus about a transaction without the need for a middleman or clearinghouse.¹³



Rewards applications

The reward application, via a digital wallet, is the point of entry into the loyalty network. Rewards applications contain identities in the form of digital signatures, which store value in the form of loyalty tokens.¹⁴ The loyalty program provider will have the ability to program its reward application that connects it to the aforementioned loyalty network and is the building block to record and execute loyalty rewards transactions for the program's particular customers and validators. Program providers can program their rewards applications in a manner that they deem best preserves their competitiveness or strategic agendas; in other words, they control exactly how their customers access and redeem their rewards.

Loyalty tokens

On initiation of a loyalty transaction—issuance, redemption, or exchange—the blockchain protocol creates an algorithm-generated loyalty token, which is a base for all types of rewards, including points. The loyalty token's existence and unique identifiers are updated on each participant's ledger and made available across the network.¹⁵ Several online protocol rules and restrictions govern the way the points behind these tokens function. For example, each participant can set his or her own points exchange values. But if we look at Alice's recent trip to Miami in Figure 1, we get a glimpse of how the points work on a purely transactional level. Upon purchasing airline tickets with her credit card, the airline and the credit card company simultaneously credit loyalty tokens to her (digital) loyalty rewards wallet by interacting with the reward applications of the loyalty reward programs of the airline and credit card company, instead of these points residing in separate loyalty accounts that she must access and redeem in separate platforms. Just hours later, she is able to access points and redeem them with another network participant, a national hotel chain. Depending on how regulators choose to view the scenario, digital tokens housed on blockchain also have the potential to distribute the liabilities across participating merchants in the loyalty network, possibly reducing the liability of any one program owner.

To reiterate, loyalty rewards program providers control the nature of their customers' interactions in a loyalty network by embedding certain parameters—such as how loyalty tokens value and disperse points, and how points are exchanged with those of other programs—in the reward applications. Hence, the due diligence that governs rewards transactions is executed during the upfront architecture programming in a blockchain-based loyalty network.

Reducing costs

Many managers of loyalty reward programs are hesitant to incur the cost of implementing new technology. This hesitation is understandable, given that they are being asked to switch to a fundamental overhaul of how transactions, customer acquisition, and systems management are executed. But, we maintain that this “overhaul” should be put into perspective. Despite the fundamental changes it promotes, blockchain is a system facilitator, not a replacement for an existing system. One of blockchain’s attractive aspects is that it interacts with legacy systems through smart contracts that transmit transaction records accessible to permissioned users that integrate them into their systems. These legacy systems continue to perform functions outside of what they specifically need blockchain to enhance or improve on a transactional basis. An existing loyalty rewards management system, for example, will still hold sensitive PII on a customer, as that data will not reside on the blockchain.

This is not to say that blockchain implementation does not incur upfront expenses. However, we believe that the trade-off cost savings will be identifiable on three major levels—system management, transaction, and customer acquisition. A blockchain-based loyalty rewards program should reduce system management costs with smart contracts that report secure, tracked, transparent transactions to legacy systems, reducing costs associated with errors and fraud. A favorable byproduct of reducing these costs permits loyalty rewards program providers to drop minimum points requirements at which customers are allowed to redeem points. For customers, the ability to use points more readily and quickly will increase redemption transactions, reducing costs per transaction. In addition, the cost of acquiring customers through methods such as direct mail, for example, should be significantly reduced through the exposure resulting from social media as blockchain-based loyalty rewards programs will operate on social media platforms.



Lastly, theoretically, blockchain could take millions of dollars of unused loyalty point liabilities off of balance sheets because they reside in a shared network.¹⁶ However, there are two aspects that keep this scenario in the realm of theory for now. First, not every loyalty rewards program provider wants to achieve a 100 percent redemption rate. The loyalty rewards industry has become accustomed to about a 10 percent leakage, which is the proportion of rewards that expire before being used, and are written off of balance sheets. Second, the new, shared reality that blockchain creates for loyalty rewards programs is not yet embraced by regulators, who still will want to see rewards as liabilities on balance sheets of loyalty rewards program providers until they are redeemed, whether this redemption happens quickly or not.

Enabling a frictionless system

Let's turn back to our example, the airline credits Alice's rewards in the same digital wallet from which she redeems points for the hotel. Through a trustless, decentralized technology solution, blockchain is essentially centralizing Alice's loyalty programs. While loyalty providers decide how and with whom Alice uses these rewards, from a consumer perspective, her ability to access and manage them is practically frictionless, allowing her more control of her rewards points management.

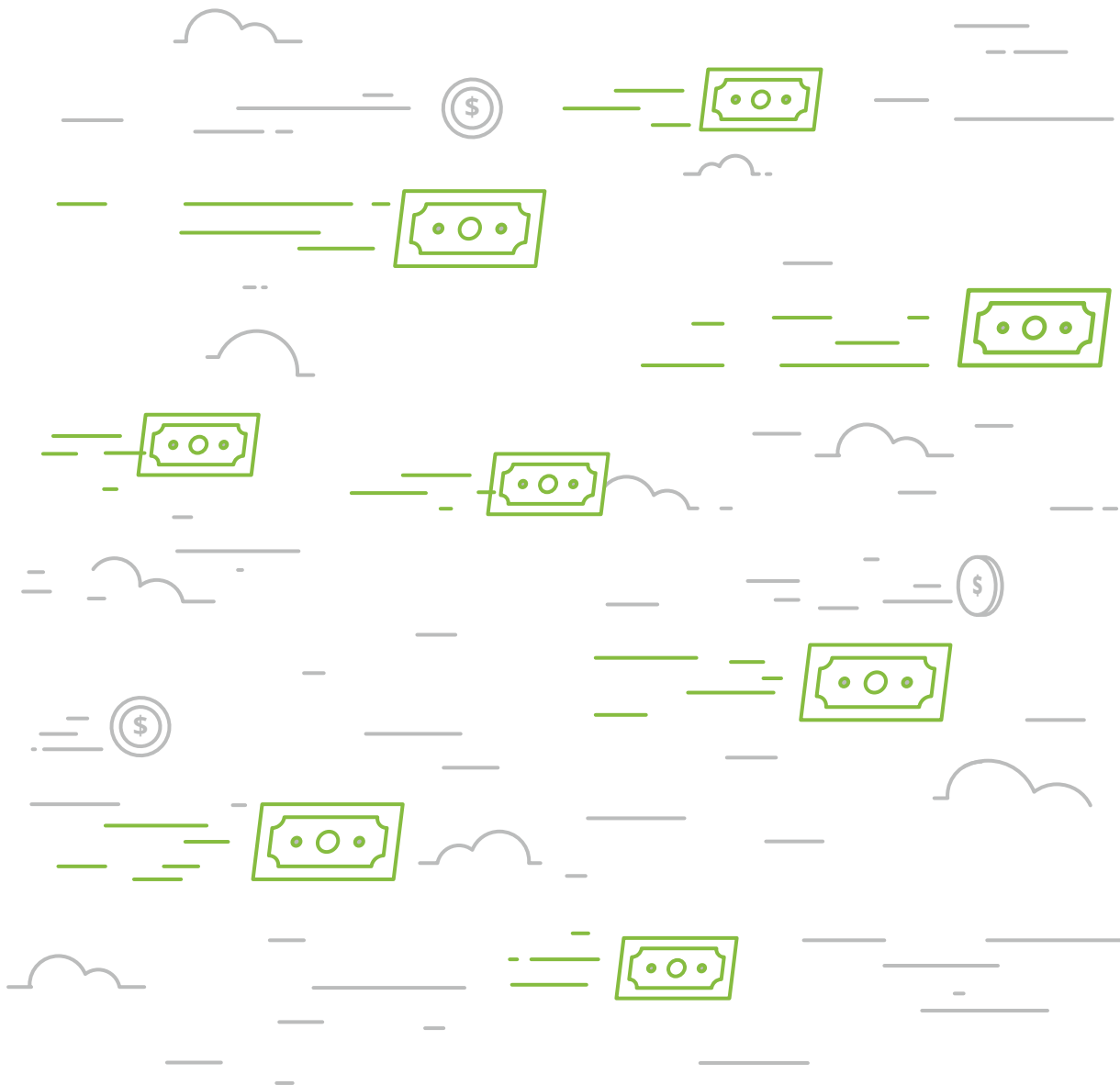
Besides timing issues, logistical shortcomings of loyalty rewards programs usually confine redemption of points to restricted pools of vendors, further limiting the opportunities consumers have to use them. A blockchain-based loyalty network makes it easy to add and drop program partners and vendors.¹⁷ When Alice uses her loyalty tokens earned from purchasing airline tickets to upgrade her hotel room, the tokens are seamlessly working across vendors. Although this agreed-upon exchange rate for cross-redemption already exists among some of today's loyalty rewards programs, and within

interlinked networks, blockchain can make it ubiquitous and closer to real time across more programs. If Alice decided that she wanted to leave her destination early without need for a hotel stay, a blockchain-based loyalty rewards network would increase the chances that she could exchange her hotel reward points for points that are accepted at a nearby restaurant or at a spa. This network also makes possible the scenario in which loyalty reward points more easily serve as a medium of exchange among customers. Alice, in our example, would be able to trade her excess airline loyalty points for her friend's hotel loyalty points. Loyalty rewards program providers, too, could potentially engage in trading of loyalty cryptotokens to manage their liabilities better.

Of course, any exchange of points is governed by the rules loyalty rewards program providers establish to accept, disperse, and exchange points between a customer and another loyalty rewards program, between customers, or between loyalty reward programs.

Blockchain-enabled systems benefit loyalty rewards program providers and their customers in multiple ways:

	Design	Implementation	Customer engagement	Program management
Loyalty program provider	Tokenization of loyalty points makes them unique, traceable, as well as fraud-proof to a large extent ¹⁸	Clear understanding of current, unused loyalty points and where they reside in the loyalty ecosystem	Linking customers to more service providers to give them a fuller customer experience	More transparent reporting and tracking with byproduct of data analysis to provide more insight into customer behavior
Customer	Single wallet platform managing multiple membership programs	Near-real-time credit of rewards points, making them readily redeemable, if the program provider allows	Increased redemption options given near-real-time capability and interlinked programs	Transparent program management reduces the loss of points by expiration or fraud



Making the process near real time

There are a number of reasons why loyalty rewards programs are not credited to customers' accounts in a timely manner. Some reasons are deliberate, such as a loyalty rewards program provider having specific policies in place before authorizing the release of "pending" points, but many are for logistical reasons, such as the lack of coordination between a loyalty rewards program issuer (a credit card, for example) and a loyalty rewards program provider. Blockchain can enable a transaction to be recorded and accessed by multiple involved parties in near real time, increasing the chance that a loyalty rewards program provider can cut through coordination inertia to

credit points faster. As the surveys cited earlier report, customers are craving faster redemption, so that loyalty rewards providers that miss an opportunity to make this happen also potentially miss an opportunity to create a memorable customer experience that would enhance loyalty.¹⁹ If we look at Alice's recent trip to Miami in Figure 1, because the loyalty points she earned for booking a flight were immediately credited to her loyalty rewards digital wallet, she was able to redeem them at a hotel immediately after landing.

Providing a secure environment

Blockchain creates an immutable and time-stamped distributed database entry of every single transaction ever made, making each transaction and its record easily traceable, but also rendering them irreversible, preventing double spending, fraud, abuse, and any other type of manipulation of the transactions.²⁰ In short, blockchain-based loyalty programs are not only inherently tougher to hack, but also have the ability to provide security on multiple levels that were not possible previously. First, all points are tokenized, which gives them unique identities that are extremely difficult to counterfeit. Second, to access or corrupt information recorded on a blockchain, more than 51 percent of its nodes must be hacked. Loyalty programs are already a source of vulnerability from a security perspective due to PII and other quasi-identifiers and pseudo-identifiers that they collect about their customers.²¹ Blockchain does not hold this information, but, instead, records the transaction of it in a secure, irreversible manner.



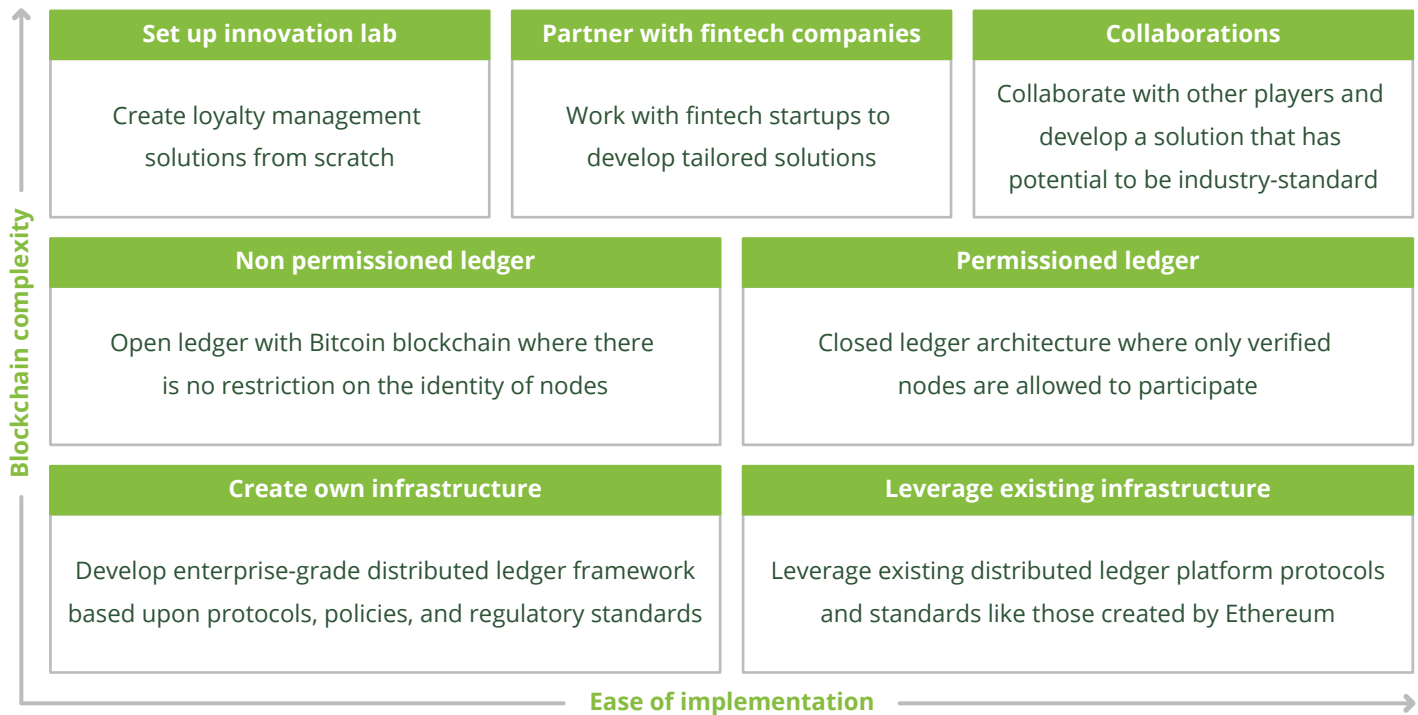
Creating unique business opportunities

At the onset of building an interlinked loyalty network, large loyalty rewards program providers with well-developed programs will have unique opportunities to offer value-added services to other businesses. For example, a small business for which a bank provides merchant banking and treasury management services will gain access to the bank's flexible (smart) loyalty rewards interlinked network. In addition, the bank can now offer the merchant the opportunity to join the overall interlinked network as a provider on the merchant's own terms through its own tailored rewards app. Now the merchant, which previously did not have a loyalty program with scale, would have the option to offer its clients loyalty points that could be redeemed within a wider network. The bank is adding a value-added service to its small business client while the loyalty network gains another vendor that can interact with other loyalty rewards programs to which they previously did not have access. The local coffee shop that was afforded entry into the network by its merchant banking provider, for example, will have flexibility to offer its customers opportunities to use their "bean points" towards accommodations at a business or a hotel in another state in which it previously had little to no brand recognition.

Roadmap to blockchain implementation

Loyalty programs are a relatively low-risk way for most businesses to test the security and efficacy of a decentralized, distributed ledger solution as they are not core to the those businesses' operations, but, rather, a value-added service.²² Yet, moving from a traditional loyalty management system to a blockchain-based network still requires making strategic choices. Figure 3 outlines the implementation roadmap.

Figure 3: Implementation roadmap



Leveraging existing infrastructure versus creating own infrastructure

Whenever a business decides to implement an operating system based on new technology, it must weigh the costs and benefits of “build versus buy.” For loyalty programs, we argue that “buy” is the logical choice for a loyalty rewards program provider because is prudent to prioritize and concentrate its operational resources on its customer base expertise (and expansion) in lieu of building a new technology platform.

Several technology players have threaded niche blockchain paths to particular types of business operations, particularly in financial services, by developing distributed ledger platforms on the back of a protocol that has been developed by leaders in the space, such as Ethereum. An optimal scenario would be to leverage this expertise through some type of partnership.

Through a partnership with a blockchain technology enabler, loyalty rewards providers have two paths that can either lead to each other or be mutually exclusive. Providers can set up blockchain-based innovation labs with proof of concepts catering to their employees that they then leverage as models with established protocols that lend to customer loyalty programs integrated with blockchain-based loyalty networks. Or they can collaborate with other organizations with loyalty rewards programs to develop solutions that could become industry standards. We refer to the latter as the “consortium approach,” which organizations such as Hyperledger and R3 are organizing and executing in the financial services space.



Permissioned versus non-permissioned blockchain

Loyalty program service providers can theoretically base their platform on either a permissioned or a non-permissioned distributed ledger. The non-permissioned blockchain is not a viable option in that it is open-sourced, precluding the control that loyalty program providers would want as rewards issuers. Unlike Bitcoin, which is the poster child for the non-permissioned blockchain, loyalty rewards are issued by an organization. Bitcoins are created, and transactions validated, by miners who solve a proof of work. Reward points do not require mining as they are issued by the loyalty rewards program providers. Instead, encrypted proofs by several designated agents on separate nodes within a defined network is sufficient, so that the permissioned blockchain (with smart contracts that can provide links to permissioned users to secure, proprietary databases) with smart contracts that can provide links to permissioned users to secure, proprietary databases, provides the necessary fraud-proof record of transactions. Within a permissioned blockchain, loyalty rewards providers achieve degrees of openness and control depending on the trade-offs desired for scalability and cross-company and cross-industry participation.



Improving front-end capabilities for customer experience

This is not so much a strategic choice as it is a strategic necessity. For blockchain-based loyalty programs to succeed, loyalty rewards program providers will have to establish an omnichannel presence. Besides traditional channels, such as email and contact centers, providers must consider building a presence on mobile and social media channels, paying close attention to those that are gaining the most acceptance by, and experiencing the most traffic from, their customers.²³

In The 2016 Bond Loyalty Report, only 30 percent of respondents reported being satisfied with their program's website experience, including the website's mobile view.²⁴ A blockchain-based loyalty rewards network will be accessed through a digital wallet, both on a smartphone and online. Therefore, it behooves loyalty rewards program providers to establish front-end capabilities, if they haven't already, to operate smoothly in these environments. Also, loyalty rewards program providers should take advantage of the customer data collected regarding transactions on digitally networked platforms to improve personalization; only 22 percent of the respondents in The 2016 Bond Loyalty Report were satisfied with the level of personalization in the loyalty rewards programs to which they belonged.²⁵



The ROI for improving loyalty programs makes blockchain worth it

Clearly, consumers seek rewards, so the business strategy of creating, or nurturing, loyalty through rewards programs is sound. But what is not sound is executing these loyalty rewards programs inefficiently. Besides reducing ROI, an inadequately orchestrated rewards interaction could work in the opposite direction of loyalty. As we note in the beginning of this paper, an inordinate number of consumers do not even activate their rewards, let alone redeem them, most likely because opportune moments that spur them to do so are not presented to them often enough. For some loyalty rewards program providers, rewards programs are a small aspect of their interaction with a customer, but for others, such as credit cards, they are quite substantial. In both cases, it does not pay to give consumers a negative customer experience.



Blockchain is the answer

So we know what is behind this lack of execution efficiency—fragmented and clunky systems that depend on centralized administration requiring the coordination of multiple parties through trusted intermediaries to move processes along the value chain. Ironically, blockchain answers this problem by taking trust out of the process and decentralizing it. Yes, that seems contradictory, but hopefully this paper has provided the insight that gives it some sense. In a distributed ledger solution, all of the loyalty rewards program participating agents operate in a contiguous network without intermediaries and without compromising privacy (or, in the case of the loyalty rewards program provider, without competitiveness). By design, blockchain is able to streamline execution and administration of loyalty rewards programs, giving all participants near-real-time transparency, within the permitted constraints of the program provider, which taken altogether should result in significant future cost savings that we believe will pay for the design and implementation of a blockchain-based loyalty rewards program in the medium term. And besides integrating with, and enhancing, legacy systems that currently operate loyalty rewards programs, loyalty

rewards providers are able to control exactly how they and their customers interact in the interlinked network to which blockchain provides them access.

So what are we waiting for? Well, for one, critical mass. It is crucial to get buy-in by at least a handful of players that already have well developed loyalty rewards programs and scale. Their success in turning around their programs will open the gates for others. Second, is to ensure that accepted protocols and standardization are part of the process. There are already hundreds of blockchain initiatives underway in various industries, especially financial services, and the technology is new enough that standardization is far from a reality yet. But the attractive feature of loyalty rewards is that they are not core to a business' revenue and operations, so that a company will be more willing to join a consortium effort. A best-case scenario is that a blockchain facilitator builds a network on a solid blockchain protocol and gets enough critical mass buy-in to develop standards for blockchain in the loyalty rewards space in general.

Contacts

Industry Leadership

Kenny M. Smith

Vice chairman
US Financial Services Industry leader
Deloitte LLP
+1 415 783 6148
kesmith@deloitte.com

Contacts

Eric Piscini

Principal
Deloitte Consulting LLP
+1 404 631 2484
episcini@deloitte.com

Tanmoy Jadhav

Innovation Strategy and Experimentation Leader
Deloitte Innovation
Deloitte Services LP
+1 973 602 4528
tjadhav@deloitte.com

Center for Financial Services

Jim Eckenrode

Managing director
Deloitte Center for Financial Services
Deloitte Services LP
+1 617 585 4877
jeckenrode@deloitte.com

Val Srinivas, Ph.D.

Research leader, Banking & Securities
Deloitte Center for Financial Services
Deloitte Services LP
+1 212 436 3384
vsrinivas@deloitte.com

Authors

Steve Fromhart

Research manager
Deloitte Center for Financial Services
Deloitte Services LP

Lincy Therattil

Research manager
Deloitte Center for Financial Services
Deloitte Services India Pvt. Ltd.

The Center wishes to thank the following Deloitte professionals for their support and contributions to the report:

Lisa DeGreif Lauterbach

Financial Services Industry marketing leader
Deloitte Services LP

Michelle Chodosh

Marketing manager
Deloitte Center for Financial Services
Deloitte Services LP

Daren Frankel

Consultant
Deloitte Consulting LLP

Erin Loucks

Lead marketing specialist
Deloitte Center for Financial Services
Deloitte Services LP

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