

Blockchain Services 2020 RadarView™ : Report Excerpt

Experimentation Evolving to Real
Business Value Generation

December 2020

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1

Blockchain has moved beyond the hype as companies have realized business value from select use cases such as identity management, supply chain management, invoice reconciliation, and cross-border payment. They have also understood the advantages private blockchain networks bring across governance, performance, and scalability, promoting adoption.

2

Avasant's ongoing interactions with industry leaders indicate that enterprises must use blockchain for specific, promising use cases. In addition, to drive true value from blockchain with limited adoption challenges, they need to adopt private blockchain.

3

The Blockchain Services 2020 RadarView report is aimed at informing enterprises of the best practices in this space, and to provide information regarding key service providers.

4

Avasant evaluated 30 providers using a rigorous methodology across three key dimensions: practice maturity, investments and innovations, and industry development. Of the 30, 22 are recognized as having brought the most value to the market over the last 12 months.

5

This report also highlights the key trends in the market and Avasant's viewpoint on the future direction of the industry over the next 12 to 18 months.



Executive Summary

Key enterprise blockchain trends shaping the market

Shifting away from exploration, firms adopt proven use cases

- There has been a shift in the trend from blockchain exploration to developing production-grade enterprise solutions. In the last 12 months, the number of production-grade projects has doubled.
- In the wake of hype, blockchain exploration resulted in multiple use cases. Amongst these, six were the most common: identity management, supply chain management, invoice reconciliation, claims handling, cross-border payment, and document digitization.

Industries beyond BFSI witnessing success in moving to the production stage

- Even though BFSI continues to be the leader in blockchain adoption, other industries have seen increased success in moving to the production stage over the last 12 months.
- The success rate in moving from PoC to production is 55% for public sector, 45% for travel and transportation, and 40% for telecom, media, and entertainment.

Business hurdles, not tech barriers, hold back wide-scale adoption

- The core benefits of blockchain technology are only realized through collaborating with other parties in the ecosystem or forging new cross-industry partnerships. However, companies across industries are facing business barriers to large scale adoption.
- The key barriers to blockchain adoption include lack of stakeholder buy-in, lack of funding or economic model, and governance issues.

Private blockchain emerges as the model of choice for enterprises

- Private blockchains are better attuned to enterprise adoption due to several advantages in governance, scalability, and performance.
- Key private blockchain platforms such as Hyperledger Fabric and Enterprise Ethereum are contributing to 55% and 52% of blockchain projects, respectively.

Key recommendations for enterprise blockchain adoption

Temper your expectations but do not give up

- Do not look at blockchain as a silver bullet. It can help solve some specific business problems, but it is not the universal answer to all business needs.
- Invest in blockchain for those use cases that have demonstrated business value. These use cases include identity management, supply chain management, cross-border payments, invoice reconciliation, and document digitization.

Move beyond cost-centric business cases

- Even though blockchain's initial impact is aimed at reducing costs, true disruption lies in other business drivers such as transforming business models, mitigating risks, and creating social impact.
- Generate new revenue streams by combining analytics with data captured by blockchain. Blockchain's ability to reduce counterfeiting and frauds, and to support initiatives such as voting and election management, places it in a strong position to mitigate risks and create social impact.

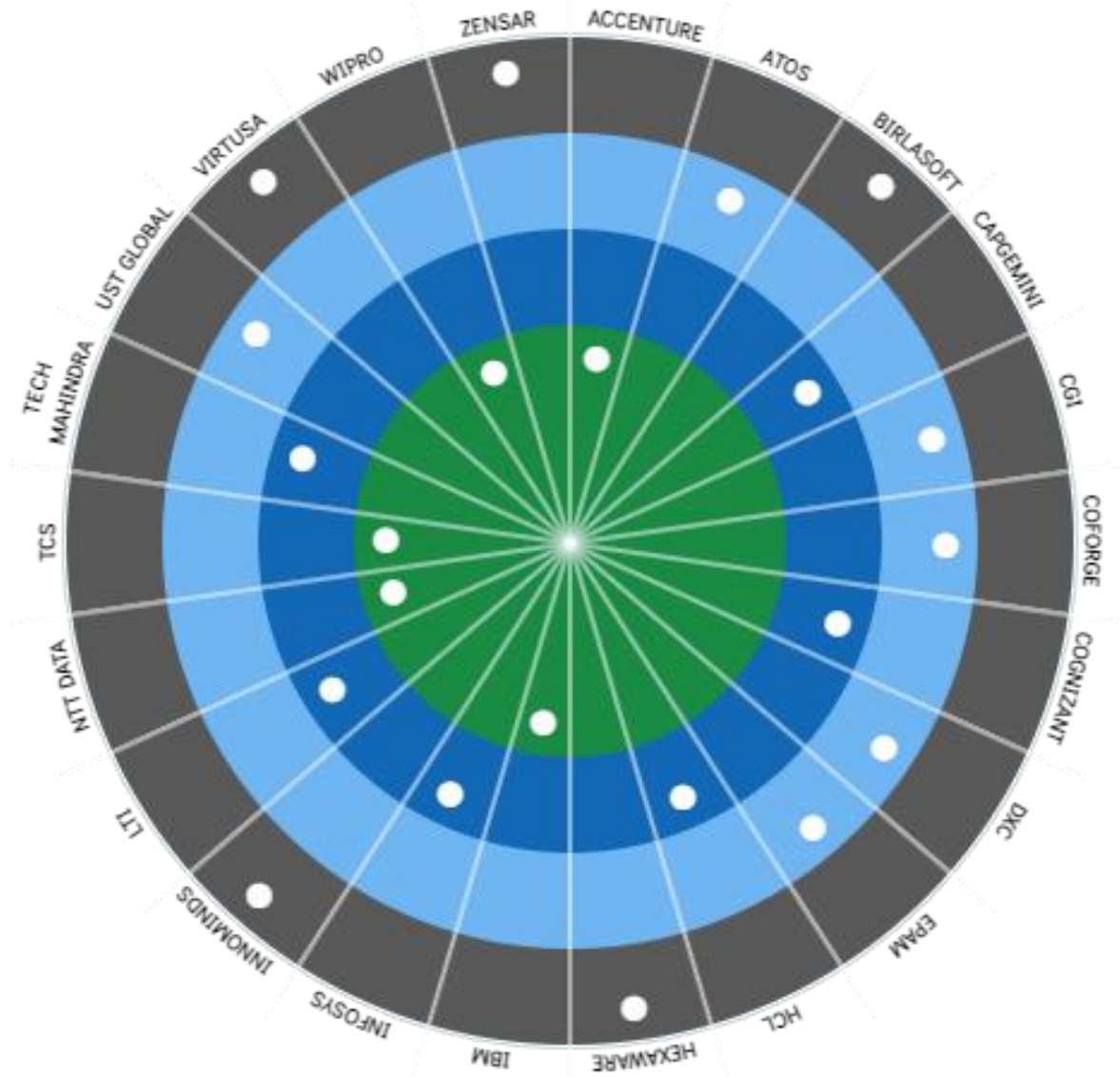
Set a pre-consortium agreement for a road test of a formal consortium

- Benefit from early alignment and buy-in from members by ensuring a road test through a pre-consortium agreement that is more flexible and is intended to govern over a short-term.
- Before joining a formal consortium, document its scope to allocate responsibilities, risks, and liabilities, considering antitrust concerns. Address contributions, operations, governance, modification processes, and rules for exit and entry through a pre-consortium agreement.

Adopt a private model to protect data and overcome business barriers

- Private blockchains such as Hyperledger Fabric, Private Ethereum, Corda, and Quorum are specifically suited for enterprise blockchain adoption because of their features such as full privacy, high efficiency, scalability, and robust architecture.
- The blockchain model gives enterprises more control, setting out clear expectations and obligations of participants, funding model, operating model, and governance model.

Avasant recognizes 22 top-tier providers supporting the enterprise adoption of Blockchain services



LEADERS

| | |
|-----------|-----|
| Accenture | IBM |
| NTT DATA | TCS |
| Wipro | |

INNOVATORS

| | |
|-----------|---------------|
| Capgemini | Cognizant |
| HCL | Infosys |
| LTI | Tech Mahindra |

DISRUPTORS

| | |
|---------|------------|
| Atos | CGI |
| Coforge | DXC |
| EPAM | UST Global |

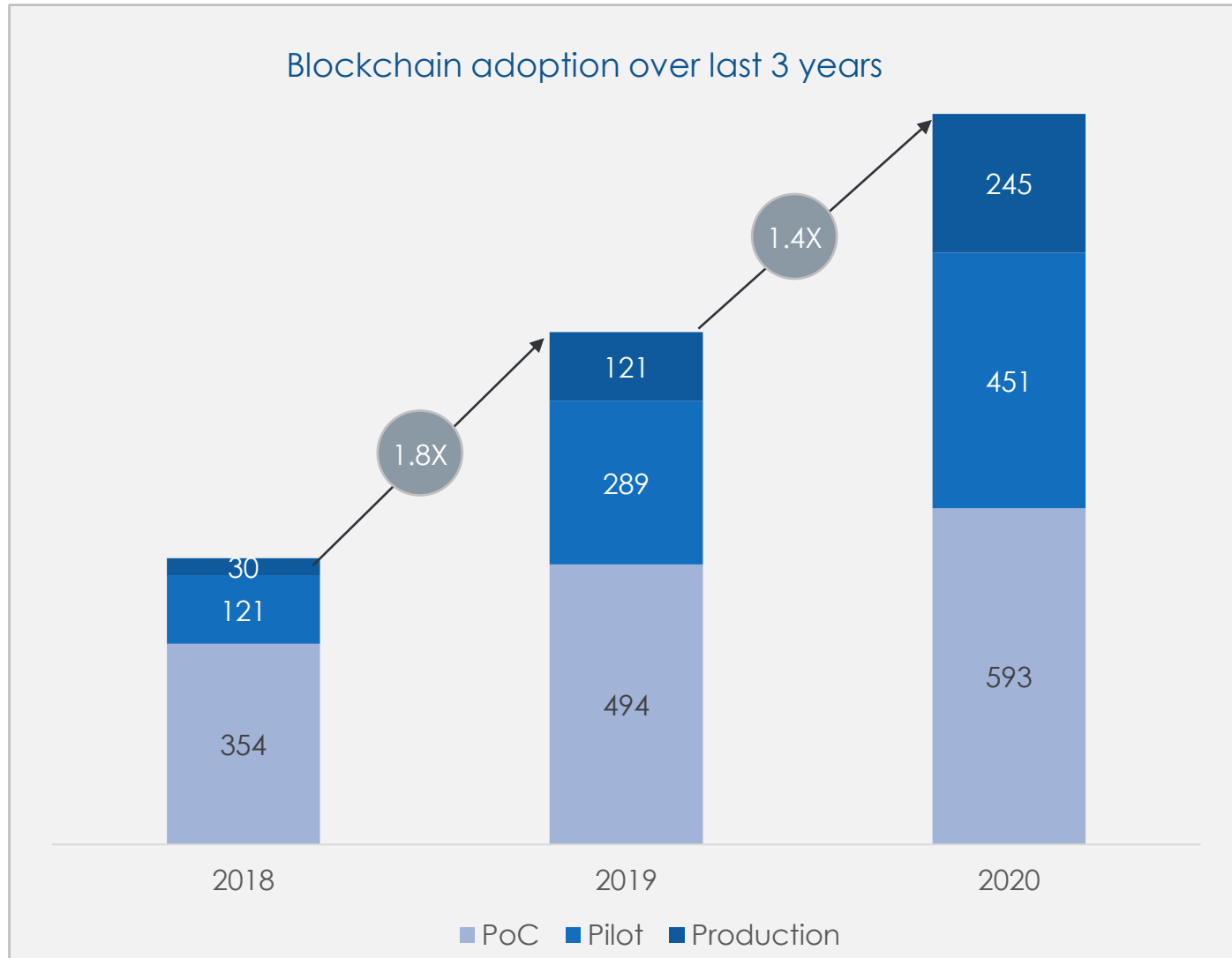
CHALLENGERS

| | |
|-----------|----------|
| Birlasoft | Hexaware |
| Innominds | Virtusa |
| Zensar | |



Blockchain Market: Lay of the Land

While blockchain adoption has slowed down, the number of production-grade implementations has still doubled



1.4X
growth in active blockchain projects over the last 12 months

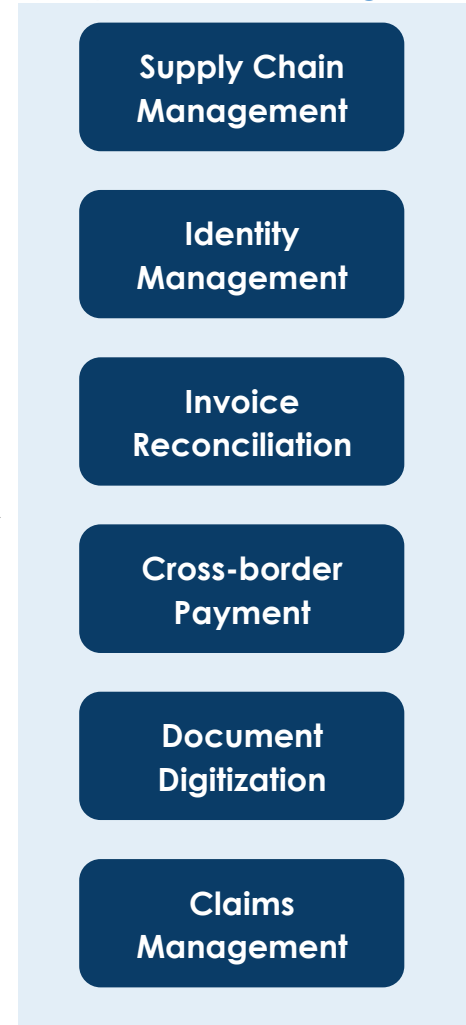
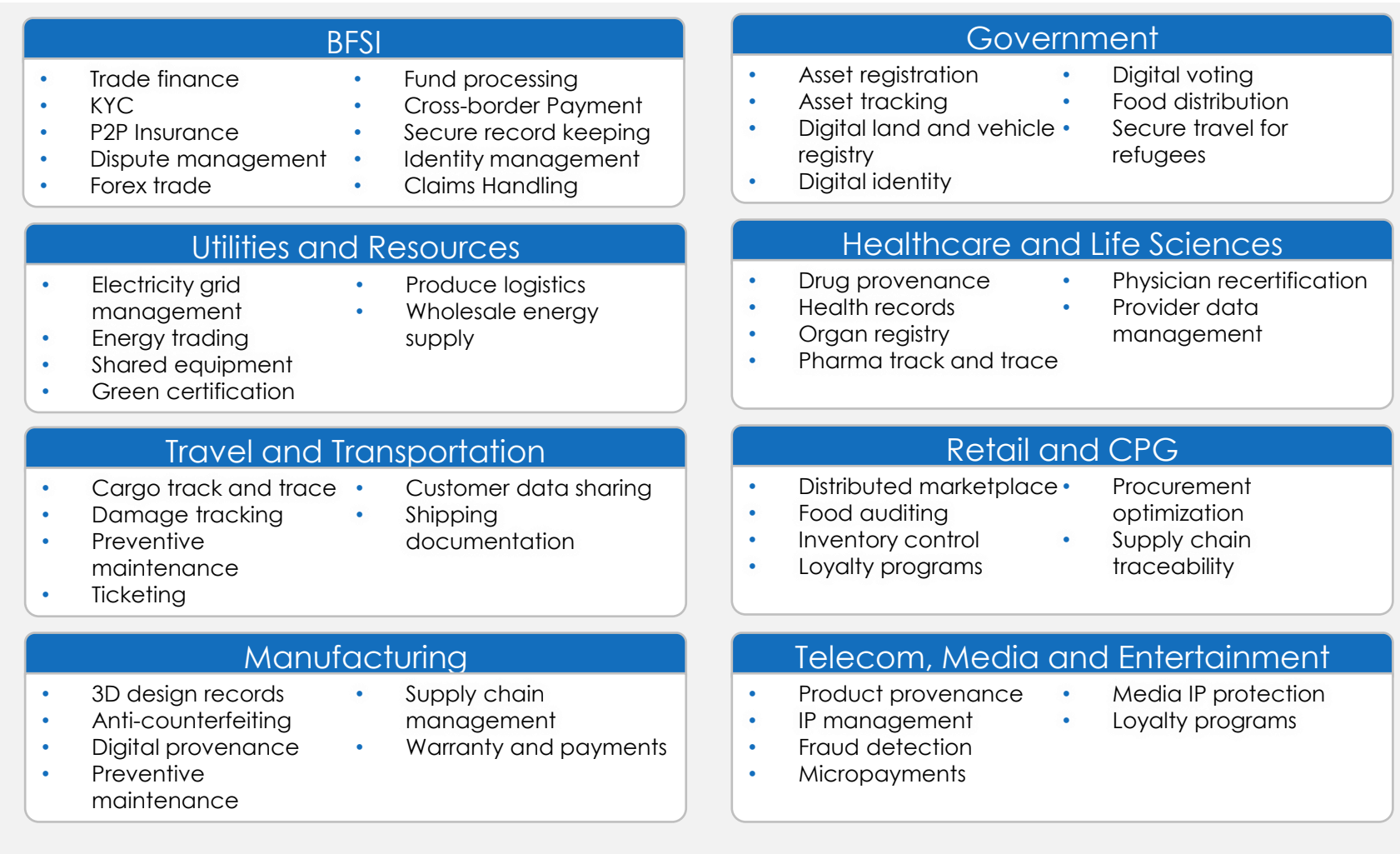
2X
production-grade implementations over the last 12 months

Six use cases across digital identity, supply chain, payments, and reconciliation emerged to be promising...

In the wake of hype, companies kicked off blockchain exploration that resulted in multiple use cases...







....out of which six have most commonly reached the production stage.



...by reducing errors, managing disputes, improving operational efficiencies, and enhancing customer experience



| Use Case | Sample Production Project | | |
|-------------------------|---|---|--|
| | Enterprise | Project Description | Business Impact |
| Supply Chain Management | TRADELENS | A live blockchain solution providing participants in the shipping industry with end-to-end supply chain information from a single source of truth | <ul style="list-style-type: none"> • Greater transparency • Tracks 140 shipping events • Foster collaboration |
| Identity Management |  | A live digital identity solution for suppliers to transact with multiple buyers and business networks | <ul style="list-style-type: none"> • 90% real-time visibility of supplier data • 70-90% reduction in supplier onboarding cycle time • 50% reduction in onboarding costs |
| Invoice Reconciliation | A multinational hi-tech equipment manufacturer | A solution implemented on production stage by leveraging smart contracts to digitize contract terms among multiple participants and facilitate automation of invoice processing | <ul style="list-style-type: none"> • Reduced reconciliation errors • Reduced the number of disputes • Automated invoice generation |
| Cross-border Payment |  | Expanded the solution into production in July 2019 to make international payments for retail customers, allowing for the remittance of pounds sterling, euros, USD and zlotys. | <ul style="list-style-type: none"> • Faster settlements of international transactions • Enhanced transparency around every payment |
| Document Digitization |  | Adopted blockchain technology to issue digital certificates to its graduates. The digital certificates are registered on the Bitcoin Blockchain. | <ul style="list-style-type: none"> • Secure verification • Permanence and digitization with trust |
| Claims Management |  | A live solution, LifeChain, automates insurance claims processes by securely encrypting and sharing verification data used for obituary placement with income. | <ul style="list-style-type: none"> • Enhanced claims operational efficiencies • Enhanced customer experience |

COVID-19 has accelerated blockchain adoption as organizations pilot solutions to address pandemic challenges

Illustrative list of organization using blockchain to combat COVID-19

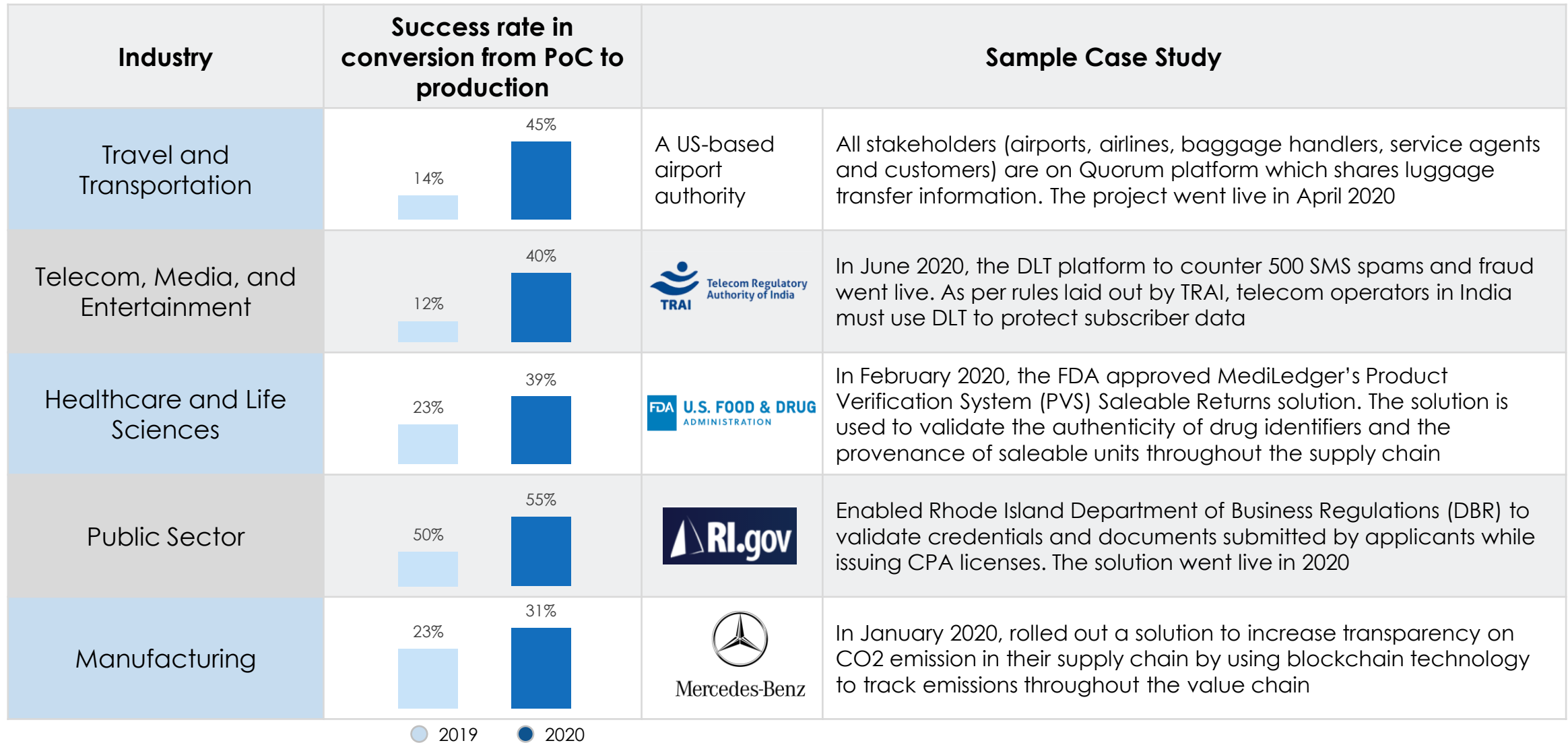


Key blockchain solutions piloted to address COVID-19 challenges

| | | |
|--|--|---|
| Immunity Certificates Documents are issued by authorities and stored using individual wallets, stating COVID-19 immunity | Donation Tracking Allows donors to monitor where their funds were used | Outbreak Tracking Allows individuals to understand the extent of infection spread and pattern over time |
| Medical Supply Chain Tracks medical supplies and vaccines in any geographical area | Healthcare Surveillance Tracks public health data surveillance, particularly for infectious disease outbreaks | Contactless Claims Handling Automates claim processing using smart contracts |
| Proof of Proximity Sends alerts if in proximity to an actual/potential infected person | Digital Identity Enables individuals to hold digital official documents and share them with any service provider | Trade Finance Brings trading parties together on a blockchain platform to ease the process of financing |

Over the last 12 months, blockchain has started generating business value for industries beyond BFSI









Each industry has seen increased success rate in production grade implementations.



● 2019 ● 2020

There are three key challenges that companies can face in ecosystem-wide blockchain deployment






The challenges are associated with business rather than technology.











| Challenges | Sample projects overcoming challenges | | |
|---|---|---|---|
| | Organization | Project Description | Deployment Challenge |
|  Lack of stakeholder buy-in |  | Use blockchain for payment reconciliation and management of its Skywards loyalty program. Needed to reduce the time and costs of onboarding loyalty partners | <ul style="list-style-type: none"> Getting acceptance from stakeholders and convincing them that blockchain will add value to the organization was a challenge. While doing so, Skywards had to maintain a risk-based approach to avoid obstacles related to technology adoption. |
| |  | Announced a new platform, UAE Trade Connect (UTC), by bringing together eight major banks to address the challenge of fraud where duplicate invoices have been financed | <ul style="list-style-type: none"> Aligning the intentions and ambitions of different parties was a challenge and time consuming, particularly when many large organizations with their own internal governance structures and decision-making processes are involved. |
|  Governance issues |  | Created a permissioned blockchain for two UAE-centric use cases: customer registration and the digitization and securing of trade documents | <ul style="list-style-type: none"> Still learning to structure project management in a federated and democratized manner to match the novel nature of blockchain architecture and governance |
| |  | Started Universal Trade Network (UTN) to create blockchain trade finance standards for the entire sector. The platform is designed for interoperability between Corda applications. | <ul style="list-style-type: none"> To help drive standards and interoperability at the non-technical level of data, processes, legal contracts, there needs to be a governance body. UTN is pulling together banks and standard bodies to create that body. |
|  Funding issues |  | Needed to bring transparency and trust to the car-related ecosystem by storing all relevant information about a car's history. The car's history is collected from organizations involved in car-related processes. | <ul style="list-style-type: none"> From an economic perspective, there was confusion whether the Cardossier system was to be funded by one company or a group of companies or by the government. |

Private blockchain emerged as promising due to governance, scalability, and performance advantages

Private blockchains are better attuned to enterprise adoption

Illustrative examples of private blockchain adoption

-  **More control for enterprises**
-  **More flexibility**
-  **Higher performance and transaction speed**
-  **Higher speed of innovation**
-  **Better scalability**

| Platforms | Organization | Project Description |
|---|---|--|
|  |  | At the end of 2019, rolled out a blockchain-powered feature that allows patients to securely access and share their medical data |
| |  | Adopted blockchain across all vegetable processing. Customers can now check where their fruit comes from by scanning a code used by farmers |
|  | DE BEERS | De Beers' new Ethereum-based software, Tracr, follows diamonds, which have undergone 3-D scans, as the gems are mined, cut, polished and sold |
| |  | Using blockchain to provide letters of credit to global exporters whose ships sometimes travel faster than the loan paperwork, resulting in long waits in port |
|  |  | Built a blockchain platform to speed up insurance operations. It is also building a shared platform, where big reinsurers can work off the same system. |
| |  | Built a decentralized trade finance platform which eliminates the delays and redundant paperwork involved with issue letters of credit |
|  | JPMORGAN CHASE & CO. | Built Interbank Information Network, a blockchain that speeds up cross-border payments between banks by using a shared ledger to resolve delays that arise |
| |  | Using blockchain to track events throughout a car's life and to connect vehicles to share information, track speed, location, and even driver behavior |



RadarView Overview

Blockchain Services RadarView assesses service providers across 3 critical dimensions:



Practice Maturity

- This dimension considers the current state of the provider's blockchain practice in terms of its strategic importance for the provider, the maturity of their offerings and capabilities, and client engagement.
- The nature and sophistication of solutions, use cases being addressed, market acceptance, quality of talent, and execution capability are all important factors that contribute to this dimension.

Investments and Innovation

- This dimension assesses the investment approach and innovation focus of the provider, and how it aligns with the future direction of the industry.
- The overall strategic investments, both organic and inorganic ones, towards capability and offering growth, technology development and human capital development, along with the innovations that the provider develops with their partners are critical aspects of this dimension.

Industry Development

- This dimension focuses on the provider's initiatives towards market creation and development, knowledge development and collaboration with industry stakeholders.
- This includes the level and nature of engagement with the stakeholder and start-up ecosystem, thought leadership initiatives such as industry-guiding white papers and points-of-view, and contributions to industry associations and events

Research methodology and coverage

Avasant based its analysis on a number of sources:

Public disclosures Publicly available information such as SEC filings, annual reports, quarterly earnings calls, executive interviews and statements.

Market interactions Discussions with enterprise executives leading digital initiatives and influencing service provider selection and engagement.

Provider inputs Inputs collected through an online questionnaire and structured briefings in August-September 2020.

Of the 30 service providers assessed, the final 22 featured in RadarView for 2020 are:



Note: Assessments for Accenture, Capgemini, CGI, DXC, EPAM, and Hexaware have been conducted based on public disclosures and market interactions only



Blockchain Services 2020 RadarView

Reading the RadarView

Avasant has recognized service providers in 4 classifications:



Leaders show consistent excellence across all the key dimensions of the RadarView assessment (practice maturity, investments and innovation, and industry development) and have had a superior impact on the market as a whole. These providers have shown true creativity and innovation and have established trends and best practices for the industry. These providers have proven their commitment to the industry and are recognized as thought leaders that set the standard for the rest of the industry to follow. Leaders display a superior quality of execution and a reliable depth and breadth across verticals.



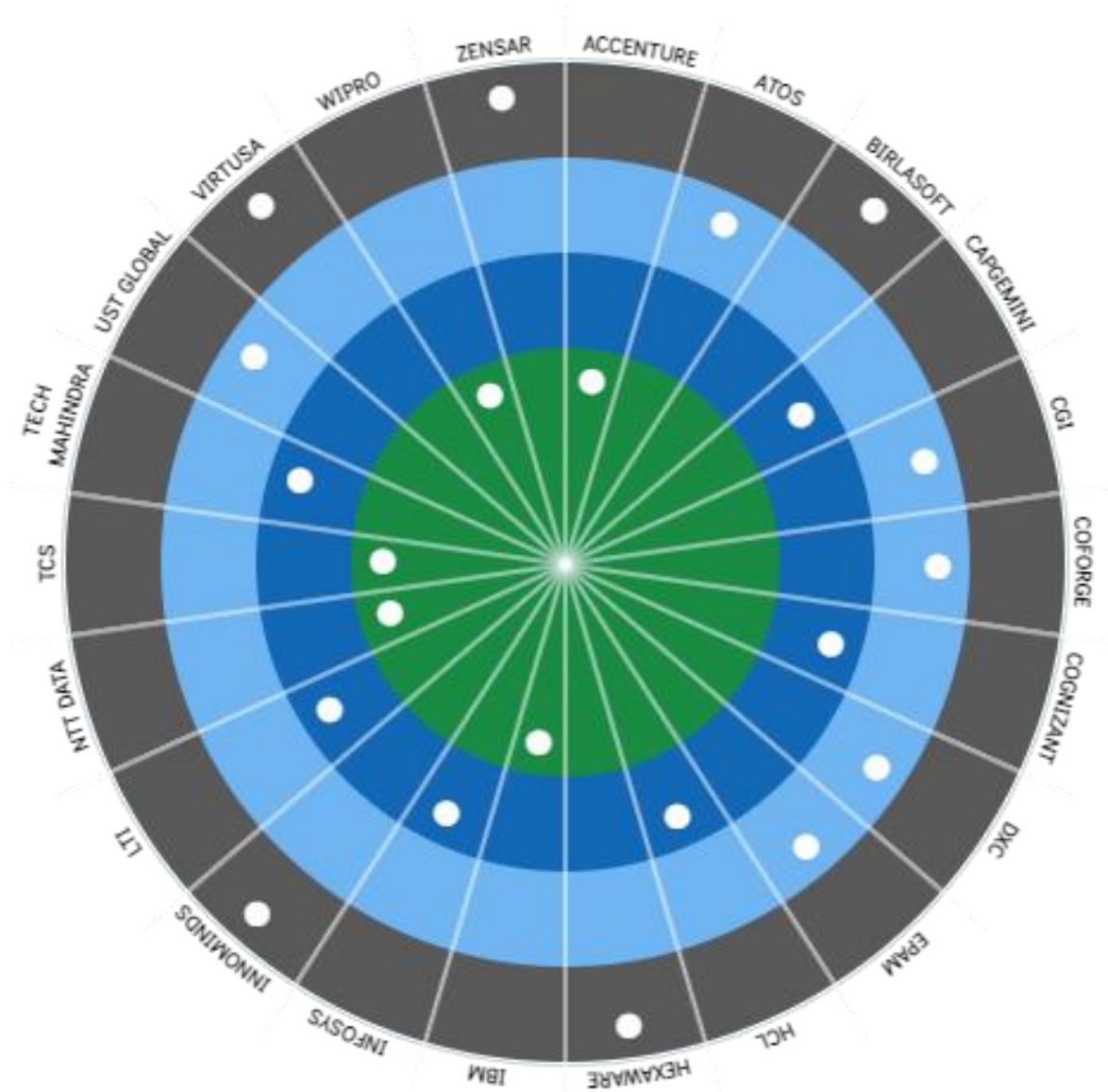
Innovators show a penchant for reinventing concepts and avenues, changing the very nature of how things are done from the ground up. Unlike the Leaders, Innovators have chosen to dominate a few select areas or industries and distinguish themselves on the basis of superior innovation. These radicals are always hungry to create pioneering advancements in the industry and are actively sought-after as trailblazers redefining the rules of the game.



Disruptors enjoy inverting established norms and developing novel approaches that invigorate the industry. These providers choose to have a razor-sharp focus on a few specific areas, and address those at a high level of granularity and commitment that results in tectonic shifts. While Disruptors might not have the consistent depth and breadth across many verticals like the Leaders or the innovation capabilities of the Innovators, they exhibit superior capabilities in their areas of focus.



Challengers strive to break the mold and develop groundbreaking techniques, technologies and methodologies on their way to establishing their unique position. While they may not have the scale of the providers in other categories, Challengers are eager and nimble, and use their high speed of execution to great effect as they scale heights in the industry. Challengers have a track record of delivering quality projects for their most demanding Global 2000 clients. In select areas and industries, Challengers might very well have capabilities that match or exceed those of the providers in other categories.



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CHALLENGERS

| | |
|-----------|----------|
| Birlasoft | Hexaware |
| Innominds | Virtusa |
| Zensar | |

AVASANT

NTT DATA Profile



- Practice Maturity ★★★★★
- Investments & Innovation ★★★★★
- Industry Development ★★★★★

Implemented nation-wide blockchain projects. Contributes to the growth in the blockchain industry across several regions by co-founding multiple consortia.

| Practice Overview | Client Case Studies | | | | | | | | | | | | | | |
|--|---|--|--|---------|--------------------|------------|------------------------------|-----------|-----------|---------------|-------------|----------------|----------------------------------|---------------------------|-------------------------|
| <ul style="list-style-type: none"> Practice Size : 500+ Active Clients : 90+ Certified/Trained Resources : 30+ Delivery Highlights : Blockchain CoE for global blockchain services delivery <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; padding: 5px; text-align: center;">25+ Blockchain Prototypes</div> <div style="border: 1px solid gray; padding: 5px; text-align: center;">45-50% Active Client Growth</div> </div> | <ul style="list-style-type: none"> Collaborated with the Italian Banking Association (ABI) to build a Corda-based blockchain solution for interbank reconciliation for the entire banking industry in Italy. The project enables full transparency of movement and communication between banks. The solution is now live with 55 banks with plans to have 150 more banks on board by 2020. Implemented a cross-border payment solution for a Chilean card management company. The solution allows international payments to be sent between the firm and banked and unbanked people in multiple countries and utilizes blockchain in place of SWIFT messaging. Helped a Spanish multinational commercial bank develop a solution enabling international payments for retail customers in real-time. The project was implemented in July 2019 across the UK, Spain, and Poland and is now moving towards on-forwarding payments. Helped a multinational reinsurance company build a blockchain application for a multi-party contract process, digitizing documents and automating the business process. | | | | | | | | | | | | | | |
| Key IP and Assets | Key Partnerships | Sample Clients | Industry Coverage | | | | | | | | | | | | |
| <ul style="list-style-type: none"> BlockTrace4Sharing - A blockchain platform for managing, tracking, and validating donations Blockchain Reconciliation Platform - A platform to help businesses with reconciliation Multi-party contracting - Telematics services solutions for multi-party contracting KayTrust - A tokenized identity management tool | <p>Platform Provider</p> <p>Startup</p> <p>Industry Consortium</p> | <ul style="list-style-type: none"> The Italian banking association A Chilean card management company A Spanish multinational commercial bank A leading port in Mediterranean A Japanese bank holding and financial services company A Spanish multinational financial services company | <table border="1"> <tr><td>Banking</td></tr> <tr><td>Financial Services</td></tr> <tr><td>Government</td></tr> <tr><td>Healthcare and Life Sciences</td></tr> <tr><td>High Tech</td></tr> <tr><td>Insurance</td></tr> <tr><td>Manufacturing</td></tr> <tr><td>Non-Profits</td></tr> <tr><td>Retail and CPG</td></tr> <tr><td>Telecom, Media and Entertainment</td></tr> <tr><td>Travel and Transportation</td></tr> <tr><td>Utilities and Resources</td></tr> </table> | Banking | Financial Services | Government | Healthcare and Life Sciences | High Tech | Insurance | Manufacturing | Non-Profits | Retail and CPG | Telecom, Media and Entertainment | Travel and Transportation | Utilities and Resources |
| Banking | | | | | | | | | | | | | | | |
| Financial Services | | | | | | | | | | | | | | | |
| Government | | | | | | | | | | | | | | | |
| Healthcare and Life Sciences | | | | | | | | | | | | | | | |
| High Tech | | | | | | | | | | | | | | | |
| Insurance | | | | | | | | | | | | | | | |
| Manufacturing | | | | | | | | | | | | | | | |
| Non-Profits | | | | | | | | | | | | | | | |
| Retail and CPG | | | | | | | | | | | | | | | |
| Telecom, Media and Entertainment | | | | | | | | | | | | | | | |
| Travel and Transportation | | | | | | | | | | | | | | | |
| Utilities and Resources | | | | | | | | | | | | | | | |

Darker color indicates higher industry coverage through digital services ●●●●

Analyst Insights

Practice Maturity



- NTT DATA set up its blockchain practice in 2015 and is equipped to provide comprehensive blockchain services globally through its blockchain centers. It drives multiple production-staged blockchain projects at the enterprise level as well as the country level. For example, the SPUNTA Project developed a Corda-based blockchain application for interbank reconciliation for the entire Italian banking system. 55 Italian banks have already moved to the production stage and 150 are expected to join by 2020.
- It demonstrates sound expertise across several blockchain technologies such as Hyperledger, Ethereum, Corda, and Ripple by contributing to key projects associated with these technologies. For instance, it delivered a solution for a leading Spanish bank by leveraging Ripple technology to facilitate real-time international transfers.
- Its blockchain offerings are strengthened by its vast repository of blockchain assets and solutions built using its partners' technologies. For instance, it partnered with a blockchain platform provider, Settlemint, to build a product for easy applications development.

Investments & Innovation



- NTT DATA has adopted an innovation-focused approach by adding more assets to its portfolio. It created several in-house proprietary platforms such as BlockTrace4Sharing which manages, tracks, and validates donations, as well as the Blockchain Reconciliation Platform which helps businesses with no standard method of reconciliation.
- Its partnership with blockchain start-up Skuchain helps combine blockchain with multiple technologies such as IoT. For instance, it integrated Skuchain's blockchain-based EC3 platform with its iQuattro platform for supply chain efficiency. It is also keen on investing in cryptocurrency start-ups for services such as exchange and custody.

Industry Development



- As the co-founder of multiple blockchain consortia such as ALASTRIA (a multi-sector consortium of 200 companies), LACChain (a network promoting blockchain in Latin America), and INATBA (the International Association of Trusted Blockchain Applications), NTT DATA has made crucial contributions to the blockchain industry globally. For instance, it accelerates the development of the blockchain ecosystem in Latin America and the Caribbean through LACChain.
- It is focused on building interoperability for blockchain technology, establishing the Hyperledger Quilt and contributing to the Hyperledger Project through its innovation labs.

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