

Blockchain Services RadarView™ 2018

Preparing for the Next Big Thing

July 2018

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About the Blockchain Services RadarView™ 2018 Report

- Blockchain technology is at a fascinating stage of evolution right now – the hype is beginning to dissipate and enterprises are increasingly seeing, and experimenting with, its extraordinary potential to disrupt existing business models
- Avasant's ongoing interactions with enterprise digital leaders indicate the optimism around blockchain. However, it is also evident that this optimism is mellowed by a limited and non-actionable understanding of the blockchain service provider landscape
- The Blockchain Services RadarView 2018 Report is a tool to address this need and to equip enterprises with granular understanding of key service providers
- Avasant evaluated 28 providers through a rigorous methodology across key dimensions of practice maturity, investment and industry development, to finally recognize 16 providers that brought the most value to the market over the last 12 months
- The 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

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Executive Summary

Four key enterprise blockchain trends shaping the market

True disruption, becoming real

- Discount the hyperbolic hype, and blockchain is still a game changing technology that will progress from business simplification to radical new revenue stream creation in 3-5 years
- On average, the number of active blockchain clients nearly tripled for blockchain services providers in last twelve months

2019: the year blockchain comes alive

- As enterprise-grade distributed ledger platforms matured, nearly a quarter of active blockchain projects entered the pilot stage
- These pilot projects will be assessed for business value in the next 18 months, and a number of these will reach the next stage of enterprise production

Expanding industry base and use cases

- Banking, financial services and manufacturing, with nearly a 60% contribution to blockchain services revenue, are the adoption pioneers
- A deluge of use cases are emerging in retail and CPG, insurance, government, utilities and resources and healthcare and life sciences

Talent crunch and integration inexperience

- With less than 6% projects currently in implementation, there is limited availability of talent with real world enterprise grade integration experience
- Service providers are starting to ramp up skills in this area through creative hiring and upskilling of internal resources

Road ahead for the enterprise blockchain market

Permissioned blockchain is set to accelerate

- Permissioned blockchains will emerge as the blockchain of choice for enterprises because of their governance, performance and scalability advantages
- Over 2.5 times increase in membership in key permissioned blockchain consortiums in the last 12 months, which will continue moving forward

Convergence with other emerging technologies

- Enterprises will harness the multiplier effect of blockchain by using it in conjunction with other technologies, such as internet of things and artificial intelligence
- Enterprises and core technology providers are already filing patents for technologies at the intersection of blockchain and internet of things

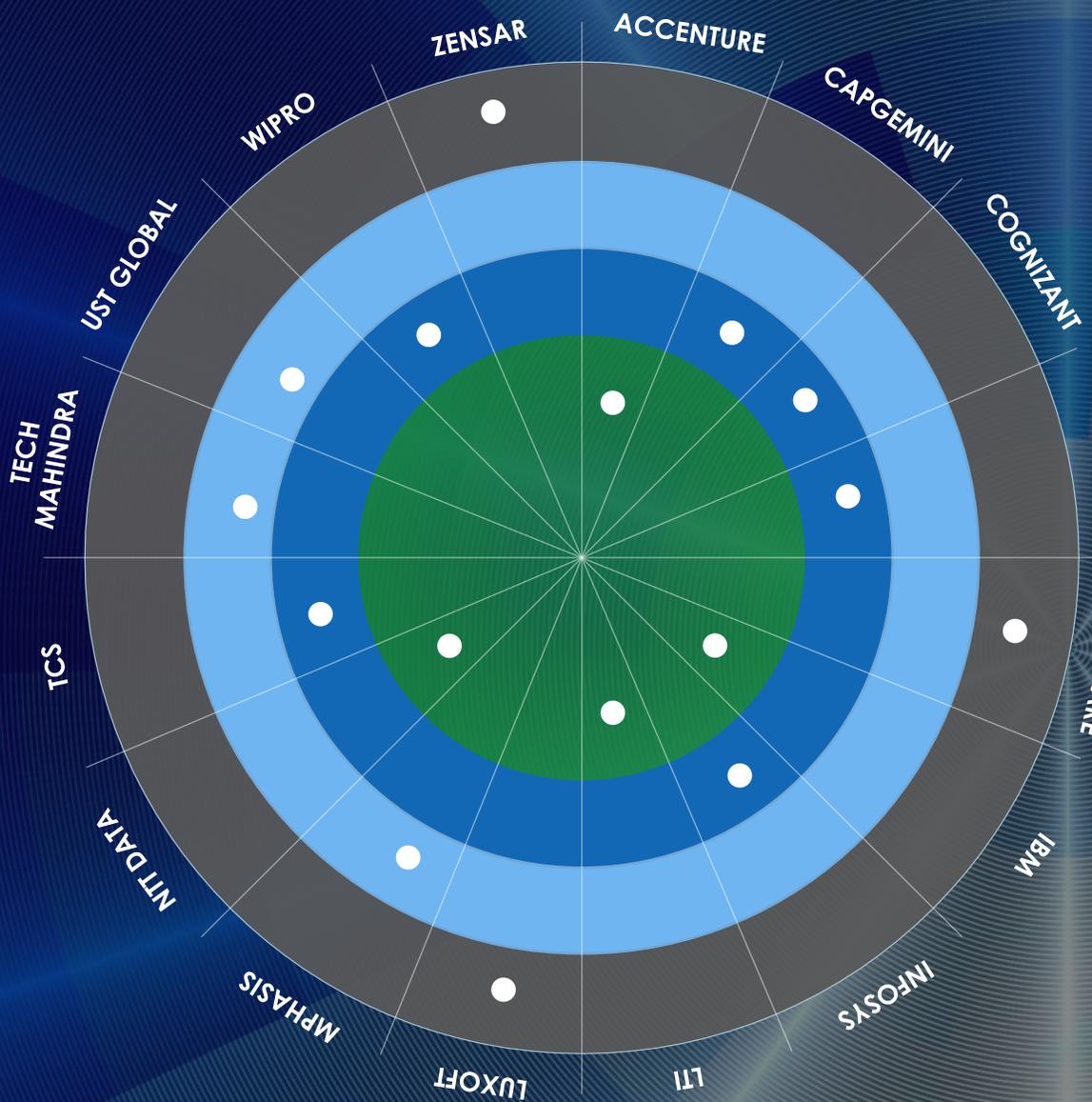
Provider landscape will align to enterprise adoption

- Enterprise-grade blockchain-as-a-service solutions will emerge as the standard for blockchain development and deployment
- Market will lean towards providers with enterprise experience as the associated change management challenges get revealed during production

New regulations and standards

- As blockchain disrupts business models, regulatory and standards bodies will play an increasingly important role in providing clear, growth-oriented frameworks
- Enterprises are already building lobbying teams for blockchain policy development to work with regulatory bodies

Avasant has recognized 16 top tier providers supporting the enterprise adoption of blockchain



LEADERS

- Accenture
- IBM
- LTI
- NTT DATA

INNOVATORS

- Capgemini
- Cognizant
- HCL
- Infosys
- TCS
- Wipro

DISRUPTORS

- Mphasis
- Tech Mahindra
- UST Global

CHALLENGERS

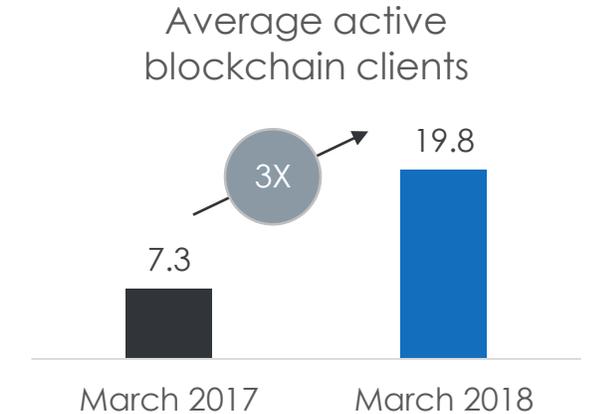
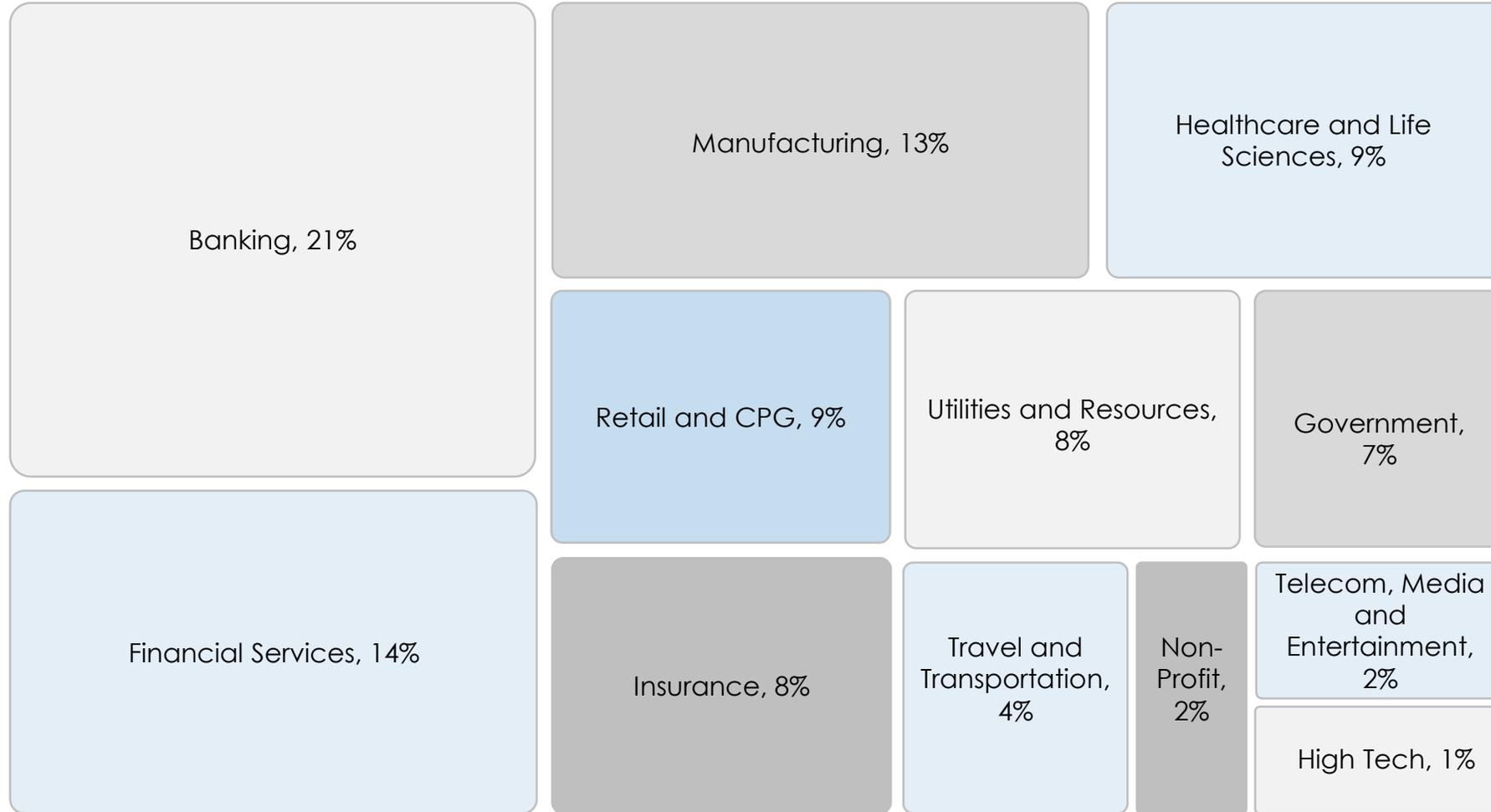
- Hexaware
- Luxoft
- Zensar



Enterprise Blockchain Market – Lay of the Land

Enterprises across industries are initiating and assessing blockchain projects for business value

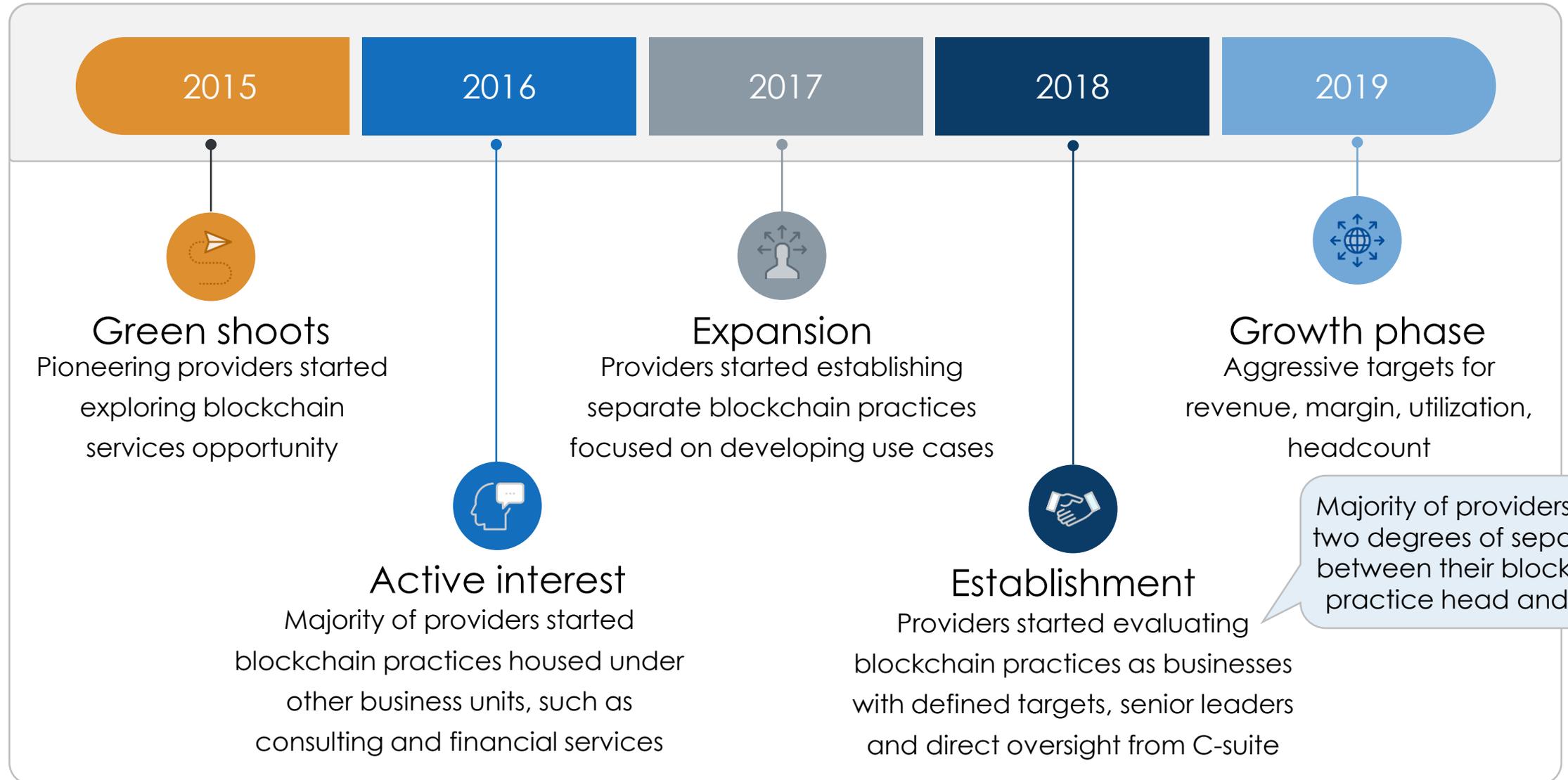
Share of blockchain client projects by industry¹



1. Analysis based on over 250 ongoing and completed blockchain client projects across proof of concept, pilot and production stages. Area of each industry signifies share of client projects in that particular industry. Does not add up to 100% due to rounding

2. Based on Avasant Blockchain Services RadarView Survey, April-May 2018

Consequently, blockchain is becoming central to providers' strategy as well



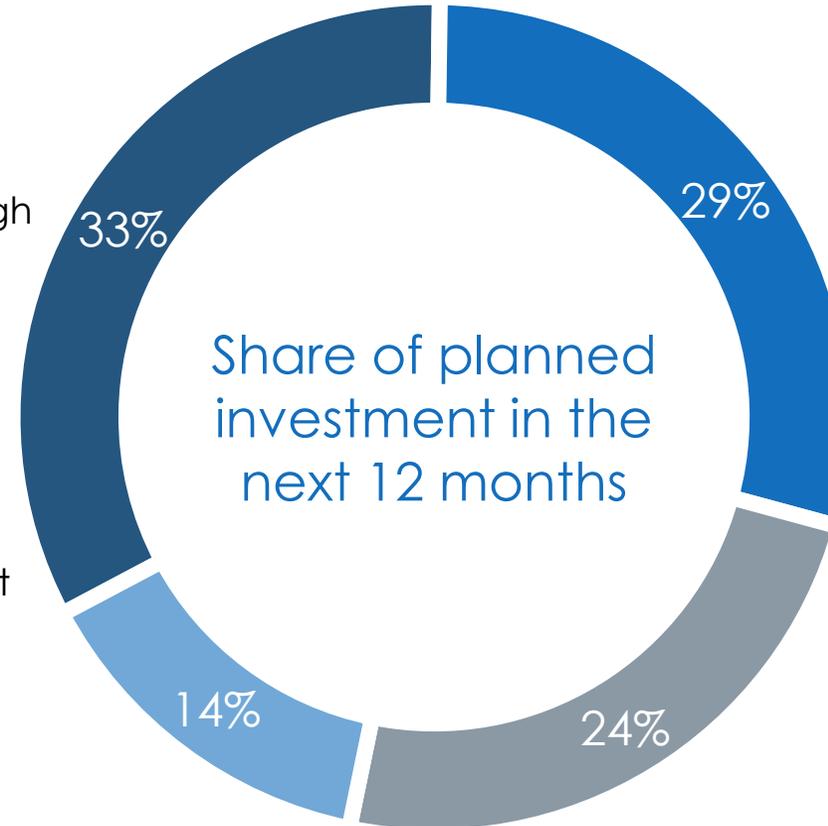
Providers plan to leverage this opportunity by making strategic investments in four areas in the next 12 months...

Practice development

- External leadership hiring
- Expansion of delivery locations to ASEAN, APAC and Eastern Europe
- Aggressive headcount goals – through hiring and repurposing
- Setting up centers of excellence and innovation labs

Partnership expansion

- Collaboration with universities on joint research and recruitment
- Investments in start-ups for co-innovation
- Continual investment in partnerships with large technology firms
- Expanding Industry consortiums memberships, including for industry specific associations



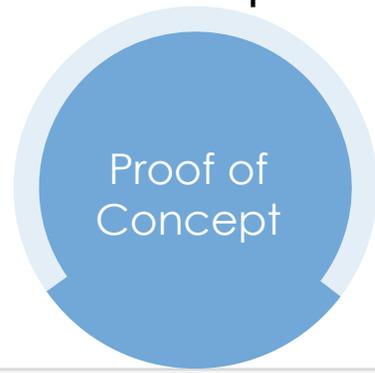
Asset development

- Co-creation of IP along with clients and partners
- Building plug and play frameworks and industry standard templates
- Expansion of use cases and solutions
- Platform developments for convergence with emerging technologies (AI, IoT)

Capability development

- Train resources on a wider set of DLT platforms
- Up-skill and cross train resources through internal training mechanism
- Focus on thought leadership development and dissemination
- Workshops and briefings on blockchain with enterprises

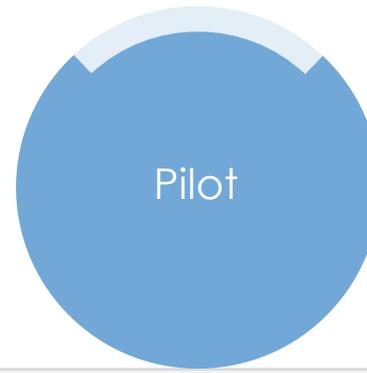
As pilot projects are assessed for business value, momentum towards enterprise adoption will build in 2019



~70%

of ongoing blockchain projects

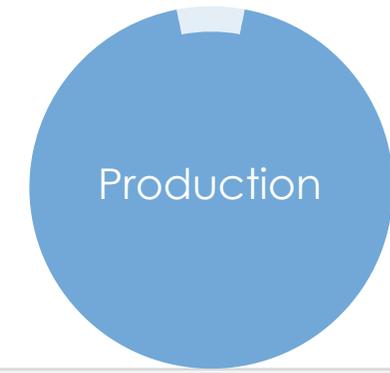
- Large scale ongoing use case experimentation
- POCs are a mix of pragmatic, competitor-matching and moonshot use cases
- Providers use POCs to develop capabilities – revenue is secondary
- Existing client-provider relationships most likely to commence POCs



~24%

of ongoing blockchain projects

- Implementations on parts of business processes or in test environments
- Projects scrutinized for efficiency, benefits and enterprise-wide scalability
- Integration with legacy and change management plans are critical
- Forms the highest opportunity space for production project conversion



~6%

of ongoing blockchain projects

- Mostly present in a consortium environment, or with one influential participant in the network
- On going integration with legacy systems
- Leadership push at enterprises drives change management

Providers are mirroring their offerings with the enterprise blockchain journey to help progress projects to production

Enterprise blockchain journey



Explore

Form a taskforce to investigate blockchain technology



Strategize

Identify business processes where blockchain could make a meaningful impact



Experiment

Identify a small part of the business process for blockchain deployment



Assess

Analyze benefits from experiment stage. Project scale-up business value



Adopt

Full scale implementation of blockchain solution



Provider offerings

Knowledge sharing

- Client briefings
- Workshops
- Seminars
- Events

Strategy development

- Opportunity identification
- Readiness and risk assessment

Proof of concept

- Rapid prototyping
- POC implementation

Proof of value

- Business case development support

Solution design, build and integrate

- Enterprise wide roadmap
- Implementation, integration and testing

But bridging the POC-production chasm takes both enterprises and providers to work together

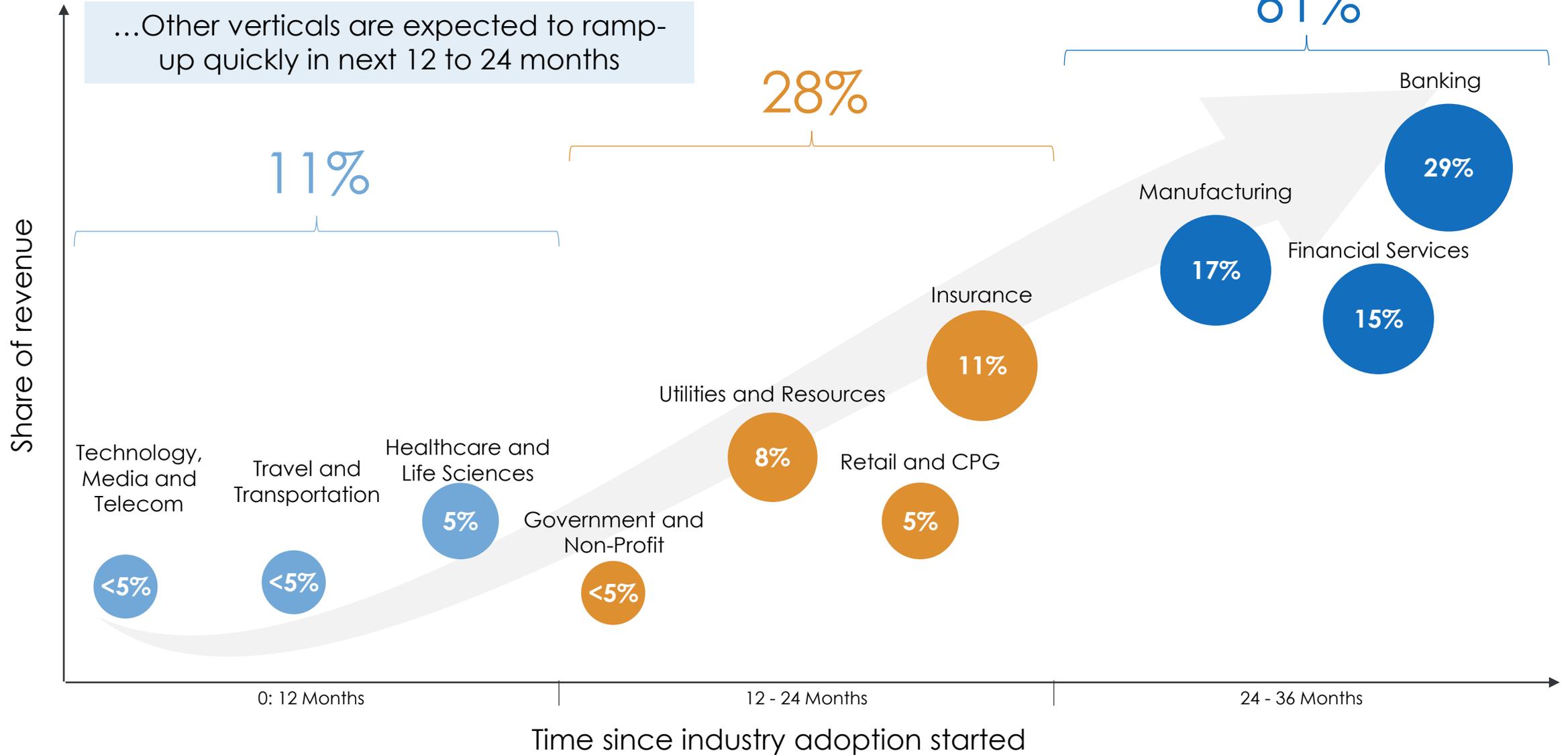
Enterprises

- Secure executive sponsorship from business
- Engage business stakeholders while selecting the use cases
- Engage early with customers, partners and competitors to set expectations from POC
- Form a steering committee to build an evaluation scorecard for production go/no go decision
- Program manage the POC with interim milestones and risk assessments
- Start working on a change management plan mid-way through the journey
- Measure objectively against the scorecard
- Assess benefits, scalability and organization impact objectively, and decide go/no go

Providers

- Develop assessment frameworks to help decide use case – advise alternate use cases
- Conduct 'visioning workshops' to help define success of POC
- Jointly develop evaluation scorecards and agree on clear, measurable objectives
- Build capability through a combination of hiring blockchain architects and developers, and strong training
- Invest in platform offerings that ease blockchain network development and deployment
- Introduce an integration plan mid-way through the POC, after understanding the legacy environment
- Include a change management plan in the business case

Blockchain revenue is currently concentrated in three key industries: banking, manufacturing and financial services...



Large number of use cases and POCs are emerging in other industries

Financial Services

- Trade finance
- Securities issuance
- Derivatives settlement
- Dispute management
- Forex trade
- Fund processing
- Risk management
- Secure record keeping
- Identity management

Government and Non-Profit

- Asset registration
- Asset tracking
- Digital land and vehicle registry
- Digital currency
- Digital identity
- Digital voting
- Food distribution
- Secure travel for refugees

Banking

- Asset certification
- Trade finance
- Cross border payment
- Client onboarding
- Audit trail
- Inter-bank payments
- KYC
- Syndicated loans
- Identity management

Utilities and Resources

- Electricity grid management
- Energy trading
- Shared equipment
- Green certification
- Produce logistics
- Wholesale energy supply

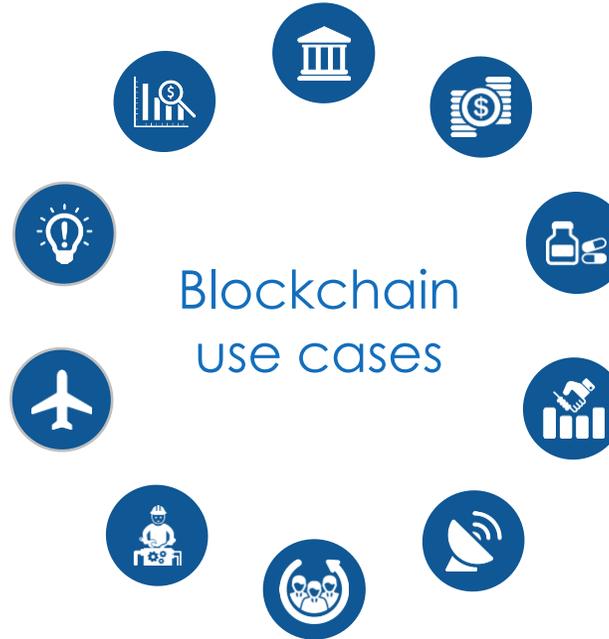
Healthcare and Life Sciences

- Cold chain tracking
- Drug provenance
- Health records
- Organ registry
- Pharma track and trace
- Physician recertification
- Provider data management

Travel and Transportation

- Cargo track and trace
- Damage tracking
- Preventive maintenance
- Ticketing
- Customer data sharing
- Shipping documentation

Blockchain use cases



Retail and CPG

- Distributed marketplace
- Food auditing
- Inventory control
- Loyalty programs
- Procurement optimization
- Supply chain traceability

Manufacturing

- 3D design records
- Anti-counterfeiting
- Digital provenance
- Preventive maintenance
- Supply chain management
- Warranty and payments

Insurance

- Claims management
- Reinsurance
- Contract authentication
- Customer data-sharing
- Insurance marketplace
- Insurance records
- KYC
- P2P Insurance

Technology, Media and Telecom

- Product provenance
- IP management
- Fraud detection
- Micropayments
- Media IP protection
- Loyalty programs

Enterprises are also developing their blockchain teams and seeking new talent

Blockchain roles already exist on the enterprise side...

...And several more are being hired for

- J.P.Morgan**
- Blockchain Program Lead
 - Head of Blockchain Engineering
 - Senior Executive, Blockchain CoE



Senior IT Auditor, Blockchain Specialty
Collegeville, United States



- VP of Product, Blockchain
- Director of Engineering
- VP, Risk and Operations, Blockchain



Software Engineer, EUTD, Blockchain
Laboratory
Belfast, United Kingdom



- Blockchain Lead
- Blockchain Business Analyst
- Technical Lead – Blockchain



Dev Engineer Blockchain
Amsterdam, Netherlands



- Blockchain Engineer
- Chief Blockchain Architect
- Sr. Blockchain Architect/Developer



Bristol-Myers Squibb

Research Scientist, Engineering Technology
Group
New Brunswick, United States



Vice President, Blockchain Product
Development and Innovation
Tokyo, Japan



SVP – Digital Labs
Phoenix, United States

Providers are changing tactics to win the war for experienced blockchain talent

Demand for blockchain talent far outstrips supply¹

8,700+ blockchain job openings globally, with nearly 40% in United States

6,000 openings posted in last month (June 2018) alone

Key roles being hired by top tier providers

- Blockchain architects
- Blockchain developers
- Blockchain consultants
- Blockchain attorneys
- Blockchain designers

Acquisitions for talent

- ~35% of providers are considering inorganic means for blockchain practice expansion²
- Small, niche firms will become targets for both talent acquisition, and technology access
- Focus on blockchain node network management platform technologies to reduce dependence on resources

Tremendous focus on training and development

- 200+ % increase planned for certified resources among key providers²
- Large investments in re-purposing resources from other programming fields through in-house academies and extensive DLT platform training

Alternate hiring approaches

- Talent war has led to 33-55% higher salaries for blockchain developers, especially those with implementation experience
- Enterprises and providers using hackathons and university outreaches as recruitment tools
- Joint research and development with academia

1. Based on Avasant's analysis of LinkedIn blockchain job postings
2. Based on Avasant Blockchain Services RadarView Survey, April-May 2018

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The Road Ahead

Enterprise adoption of permissioned blockchain will accelerate

Explosive growth in the number of members of permissioned consortia

Consortium

Number of members

Key members

Permissioned blockchains are better attuned to enterprise adoption

- More control to enterprises setting up multi-organization networks with their providers and partners
- Flexibility in defining the governance structure based on nature of transactions and business relationships between members
- Higher performance and transaction speed due to computationally inexpensive consensus mechanisms
- Higher speed of innovation as changes can be implemented faster based on a vote of owners of the permissioned blockchain

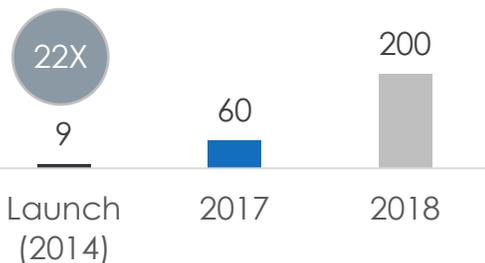
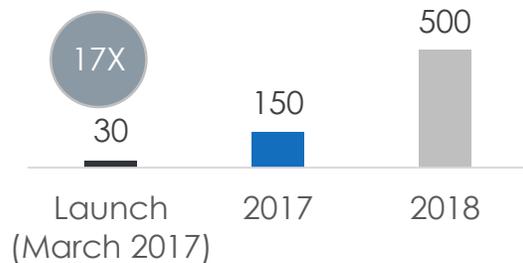


HYPERLEDGER

Fastest growing opensource organization out of 70+ in the Linux Foundation



**ENTERPRISE
ETHEREUM
ALLIANCE**



Synergies between emerging technologies and blockchain will create a plethora of converged applications

Activity around converged solutions is increasing steadily



US Patent filed for “Blockchain based IoT device identity verification and anomaly detection” in October 2017



US Patent filed for method for using a blockchain on a network of IoT devices to execute smart contracts in May 2018



Started a special interest group on artificial intelligence and blockchain which also covers paradigms for internet of things

Emerging blockchain and internet of things use cases

- Control of counterfeit drugs
- Secure supply chain track and trace
- Home security
- Enhanced shared economy
- Humanitarian relief for refugees

Emerging blockchain and artificial intelligence use cases

- Intellectual property rights management
- Secure personalized medical predictions
- Provenance in heavily regulated industries
- Microgrid energy transactions including price discovery

Industry participants will align towards enterprise blockchain adoption

Core technology firms will focus on enterprise grade solutions

- IBM, Microsoft and Amazon have launched blockchain-as-a-service offerings to provide enterprises with cloud-centric rails to develop and deploy blockchain networks rapidly
- Apart from security, confidentiality, scalability, these also provide integration support across identity and key management, middleware support and off-chain integration
- Other core technology providers, such as Oracle and Google are also developing similar offerings
- We expect these offerings to grow and extend support across all key distributed ledger technologies

Providers with enterprise experience will have an advantage

- Unlike other emerging technologies, blockchain requires fundamental changes to the business models and processes which will require providers to have breadth and depth of enterprise experience
- Niche players will continue to emerge, but we expect enterprises to work with bigger service providers with proven capabilities in organizational change management, along with the technical skills
- Consequently, we expect large providers, such as DXC.Technology, HP Enterprises and Atos among others, to go mainstream with their blockchain efforts and target their existing clients

Consortiums and industry association activity will pick up

- Consortiums have seen explosive growth in terms of membership over the last 18 months, and this will continue as more industry participants come on board
- We expect the number and membership of industry and domain specific consortiums and associations to grow, as members seek to build expertise and influence the industry direction



Regulators and standards bodies have started work on formalizing key standards in the next 18 - 24 months

Standards organizations are laying the groundwork



- ISO/TC 307 committee set up in 2016
- It is tasked with developing standards for blockchain and distributed ledger technologies
- 35 participating member countries, 13 observing countries
- Mirror committees formed in different countries to provide point of views



- National Institute of Standards and Technology published the 'Blockchain Technology Overview' draft report in January 2018
- It introduces and defines blockchain technology and components of a blockchain system architecture

ISO standards for blockchain are at different stages of a 7 step approval process

| | |
|--|----------------------|
| Terminology | 3 rd step |
| Overview of privacy and personally identifiable information (PII) protection | 2 nd step |
| Security risks and vulnerabilities | 2 nd step |
| Overview of identity management using blockchain and distributed ledger technologies | 2 nd step |
| Reference architecture | 3 rd step |
| Taxonomy and ontology | 3 rd step |
| Legally binding smart contracts | 3 rd step |
| Overview of and interactions between smart contracts in blockchain and distributed ledger technology systems | 2 nd step |
| Security of digital asset custodians | 2 nd step |
| Discovery issues related to interoperability | 2 nd step |

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RadarView Overview

Avasant has introduced RadarView to assess nascent digital domains across three relevant and critical dimensions



Practice Maturity

- This dimension considers the current state of the provider's practice in terms of its strategic importance for the provider, 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

Investment

- This dimension assesses the investment approach of the provider, with an eye on its alignment with the future direction of the industry
- The overall investment strategy, and how it balances the practice objectives of capability and offering growth, technology development, human capital development and partnership ecosystem development, is a critical aspect of this dimension

Industry Development

- This dimension focuses on providers' initiatives towards market creation, knowledge development and collaboration with industry stakeholders
- In nascent technologies, providers that contribute to setting up initial standards, educating enterprises, disseminating thought leadership, collaborating with other industry participants in developing business models and use cases will be well positioned once the technology becomes mainstream

Research methodology and coverage

Avasant has 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 provider selection and engagement

Provider inputs

Inputs collected through an online questionnaire and structured briefings in April - May 2018

Provider coverage

accenture Capgemini Cognizant HCL

HEXAWARE

IBM

Infosys

LTI
Let's Solve

LUXOFT

Mphasis
The Next Applied

NTT DATA TATA CONSULTANCY SERVICES

Tech Mahindra

USTGlobal

wipro

ZenSar



Blockchain Services RadarView 2018

Reading the RadarView

Avasant has recognized the providers in four classifications



Leaders show consistent excellence across all the key dimensions of the RadarView assessment – practice maturity, investment 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 in the space 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 in 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

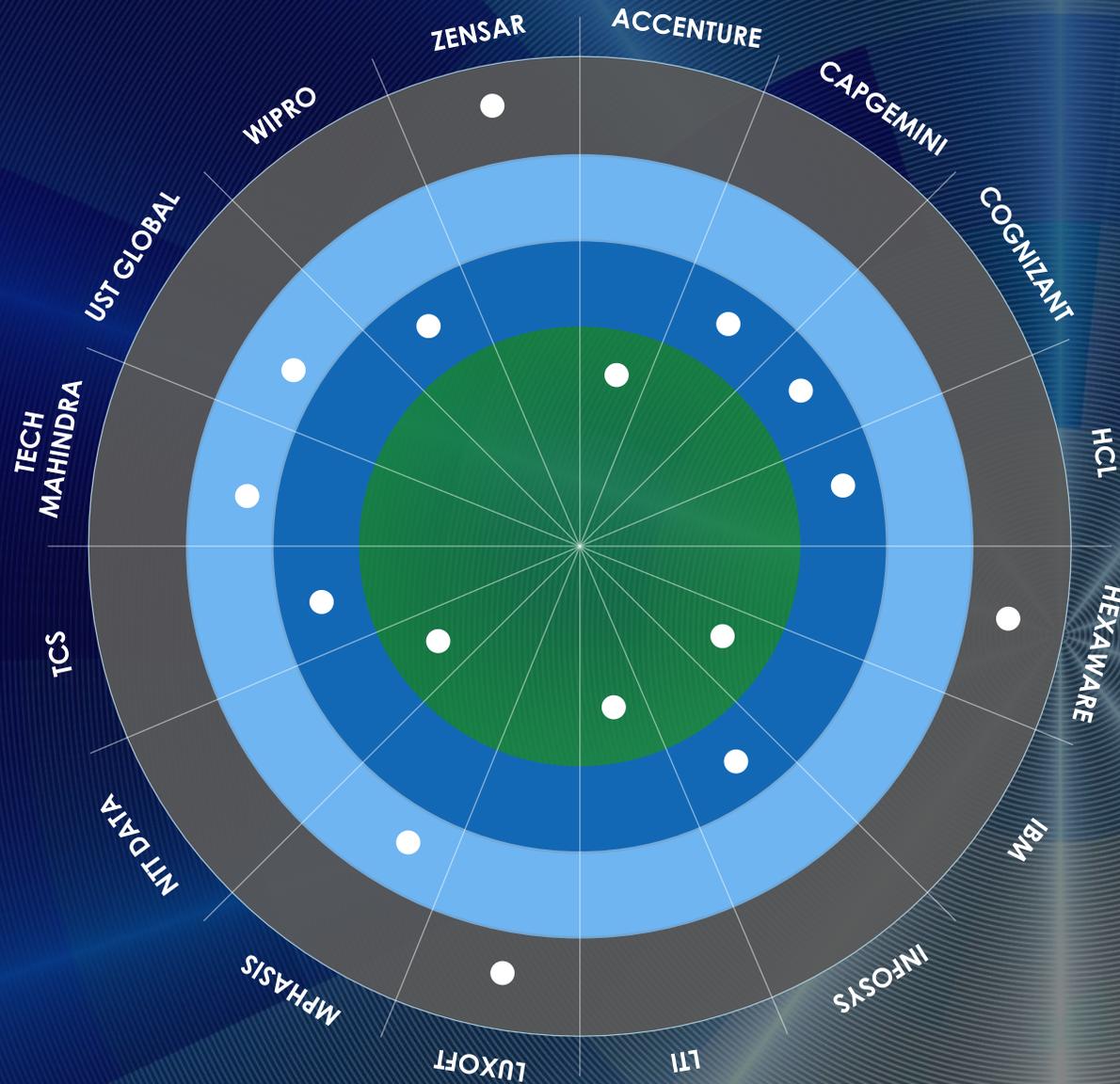


Disruptors enjoy inverting established norms and developing novel approaches that invigorate the industry. These providers choose to have a razor-sharp focus on few specific areas, and address those at a high level of granularity and commitment that results in tectonic shifts. While Disruptors might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



Challengers strive to break the mold and develop ground breaking techniques, technologies and methodologies on their way to establishing their unique position. While they may not have the scale as 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 are investing credibly in their capabilities and have a track record of delivering quality projects against the complex requirements of 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

Blockchain Services RadarView™ 2018



LEADERS

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LTI NTT DATA

INNOVATORS

Capgemini Cognizant
HCL Infosys
TCS Wipro

DISRUPTORS

Mphasis Tech Mahindra
UST Global

CHALLENGERS

Hexaware Luxoft
Zensar



Service Provider Profiles

Accenture: Blockchain Services RadarView profile



- Practice Maturity ★★★★★
- Investment ★★★★★
- Industry Development ★★★★★

Platform agnostic approach with strong cross-industry service offerings and client base. Strong partnership ecosystem and established thought leader

| | | |
|--|---|--|
| <h3>Select Use Cases</h3> <p>Supply Chain</p> <ul style="list-style-type: none"> Development of immutable audit trail proving hardware, software and documentation authenticity and compliance across supply chain in defense industry in partnership with Thales POC of digitizing the process of purchase, maintenance, services and materials in oil and gas industry—using mobile app, web portal for back-office, and blockchain enabled shared data <p>Financial Services</p> <ul style="list-style-type: none"> Distributed ledger technology (DLT) developed for financial institutions to rely on the same source of truth and agree all updates in a secure and independently verifiable way in partnership with Digital Asset <p>Non-Profit</p> <ul style="list-style-type: none"> Building a digital ID network in partnership with Microsoft using blockchain technology, to provide legal identification to 1.1 billion people worldwide with no official documents | <h3>Overview</h3> <ul style="list-style-type: none"> Blockchain practice active since: 2015 Blockchain clients: 50+ | |
| <h3>Sample Clients/ Partners</h3> <ul style="list-style-type: none"> Bank of Canada DHL Monetary Authority of Singapore Tel Aviv Stock Exchange United Nations (UN) World Economic Forum (WEF) APL Stock exchange in Australia Singapore based consortiums of banks | <h3>Consortium / Alliances / Partnerships</h3>  | <h3>Key Industries</h3> <ul style="list-style-type: none"> Banking Financial Services Manufacturing Travel and Transportation Government |
| | | <h3>Key IP and Assets</h3> <ul style="list-style-type: none"> Multiple cross-platform and industry solution accelerators Hardware Security interface Use case evaluation framework Patents for editable blockchain |

Accenture: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- Accenture has taken a broad-based approach to blockchain and has built solutions, offerings and skills across most DLT platforms and technologies. They actively leverage their consulting and domain experience to help clients across the strategy development, use case identification and implementation continuum
- As platform agnostics, they are active members of all key consortiums, have founded alliances (Smart Contracts Alliance, the Blockchain Alliance, the Global Blockchain Forum etc.) and have built a robust partnership ecosystem that spans leading technology enterprises (IBM, AWS, Microsoft etc.), industry associations (Blockchain Research Institute, Hashed Health Consortium etc.), start up communities and academia
- Accenture's sizeable in-house blockchain team works collaboratively with innovation hubs (Dock), Centers of Excellence (Technology Lab in France), consulting, domain and tech teams to develop and deliver multiple industry leading solutions. They continue to expand the practice through aggressive hiring plans

Investment



- Focus is on building both technical and business centric assets in the future with an emphasis on security and identity
- Accenture has taken some industry leading initiatives on the security side with a patentable hardware-based security solution (in partnership with Thales), and a patent for a hybrid blockchain that enables tamper-resistance block rewrites by trusted parties (editable blockchain)
- Another associated area where Accenture is focusing is identity - one of the showcases for their capabilities here is the ID2020 alliance which aims to improve lives of forced immigrants through identity provision

Industry Development



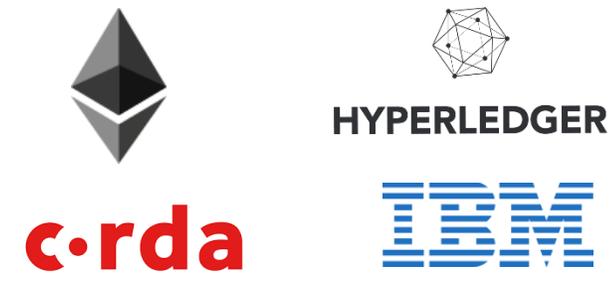
- Accenture leads and contributes to various initiatives for the technical and use case development of the blockchain. They have founded a number of alliances and joint-development programs that are providing direction to the industry in terms of business, humanitarian and fundamental usage of blockchain
- Not being wedded to a platform has helped Accenture in using a best of breed solution approach, and has enabled them to emerge as an industry thought leader disseminating their point of view and approach through all key industry forums and engagement platforms

Capgemini: Blockchain Services RadarView profile



- Practice Maturity ★★★★★
- Investment ★★★★★
- Industry Development ★★★★★

Integrated provider that brings significant consulting skills to help clients on their blockchain journey. Strong credentials in the banking and insurance industries

| Select Use Cases | Overview |
|--|--|
| <p>Banking, Financial Services and Insurance</p> <ul style="list-style-type: none"> • Interbank KYC solution for on-boarding new corporate clients • Cross-border payments through intra-bank cash management system for corporate clients • Digitizing trade finance platform with embedded smart contracts • Prototype platform for insurance of commercial property and casualty to handle negotiations <p>Utilities and Resources</p> <ul style="list-style-type: none"> • Smart metering focused blockchain solutions for a large utility in Europe, to allow prosumers of electricity to trade locally produced electricity. • Blockchain based upstream royalty payment solution for oil and gas companies, to provide royalty to owners of land where they extract oil and gas. <p>Government</p> <ul style="list-style-type: none"> • Developed conflict-zone communication system based on blockchain for an European defense department | <ul style="list-style-type: none"> • Blockchain practice active since: 2016 • Blockchain clients: 20+ |
| Sample Clients/ Partners | Key Industries |
| <ul style="list-style-type: none"> • North American hi-tech equipment manufacturer • Large defense agency in EMEA • Energy utility in Europe • AIG • Generali Insurance | <ul style="list-style-type: none"> • Banking • Insurance • Retail and CPG • Utilities and Resources • Government • Manufacturing |
| Consortium / Alliances / Partnerships | |
|  | |
| Key IP and Assets | |
| <ul style="list-style-type: none"> • Inter-DLT platform communication tool • Blockchain deployment accelerators • Feasibility assessment framework • Delivery accelerator for Hyperledger and Corda | |

Capgemini: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- Capgemini considers blockchain as a part of their distributed ledger technology practice, which is part of their consulting practice. The practice is global in nature and has a mix of dedicated technical and business/consulting practitioners. The ability to bring in these domain consultants on engagements has helped them establish some good engagements
- Capgemini has significant emphasis on the banking, financial services and insurance industries where they have co-developed various use cases and solutions resulting in some key client engagements. It has also developed use cases in the manufacturing industry using co-innovation and co-development models
- Capgemini has seen a fair amount of growth in terms of clients and practice size, and are accelerating further by farming their strong consulting relationships with global clients and initiating and transitioning more projects from POC to production stage.

Investment



- Capgemini is continuing work on developing reusable assets such as industry specific prototypes, solution accelerators and tools for blockchain development, deployment and integration. They are also expanding beyond banking and insurance by developing more use cases and industry specific solutions in other industries such as manufacturing, retail and CPG
- Capgemini is developing a robust partnership network with enterprises, technology companies and start ups. It is working with these companies in different engagement models such as co-investment led co-innovation

Industry Development



- While Capgemini has platform partnerships with key distributed ledger platforms (Hyperledger, Ethereum, Corda etc.), and is currently a member of the Hyperledger consortium
- Capgemini does a fair amount of thought leadership activities for clients and prospects and continues to increase its awareness in the market by seeking more forums of industry interaction

Cognizant: Blockchain Services RadarView profile



Practice Maturity ★★★★★

Investment ★★★★★

Industry Development ★★★★★

Rapidly accelerating though a business-centric and reusable-asset led approach. Established thought leader innovating with engagement models

Select Use Cases

Banking, Financial Services and Insurance

- Secure record-keeping of documents among group companies for a global conglomerate
- Cross-border payments solution across multiple financial institutions
- Cross-company data-sharing solution to reduce risk of data breaches, fraud and money-laundering in the insurance space

Healthcare and Life Sciences

- Smart contract enabled solution to track temperature norms in an IoT enabled pharmaceutical supply chain
- Provenance solution for pharmaceutical manufacturers to record drug batches as blockchain transactions immutably

Overview

- Blockchain practice active since: 2014

Key Industries

- Banking
- Financial Services
- Insurance
- Healthcare and Life Sciences

Sample Clients/ Partners

- Mizuho Financial Group
- Consortium of leading Indian life insurers
- Leading North American commercial bank
- Global pharmaceuticals company

Consortium / Alliances / Partnerships



Key IP and Assets

- Multiple blockchain solution accelerators focusing on digital identity, provenance which work in a modular manner to accelerate solution development
- Integration tools with major platforms

Cognizant: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- Cognizant has taken a comprehensive approach to blockchain. It has focused on in-house innovation labs to develop a number of technical accelerators to enable rapid development of solutions in a modularized manner. In addition, it is also building a large number of POCs for use cases across multiple industries. This approach is helping it accelerate the adoption of its solutions, not only in its current client base but also in new client organizations
- It is pioneering new engagement models and has recently worked with a consortium of insurance providers on a inter-company data sharing use case. Such engagements are market leading and position Cognizant as an innovative provider
- Complementing its platform agnostic approach, is a comprehensive platform partnership network which ensures that Cognizant has a strong technical skill base across both major and niche (industry specific) platforms
- Apart from its traditionally strong areas (banking, financial services, insurance and healthcare and life sciences), it is also developing use cases and POCs in multiple other industries

Investment



- Cognizant continues to invest in its innovation labs to expand its base of solution accelerators. It is also engaging with its domain experts to create a full service offering that helps its clients from the strategy development to actual implementation phase (Learn-Plan-Build-Grow model)
- Cognizant has a robust partnership ecosystem, including official partnerships with R3, Microsoft Azure, Multichain, Chain and BigchainDB. They are also developing solutions on most leading and niche platforms

Industry Development



- Cognizant has been fairly active in the development and dissemination of thought leadership around blockchain. They are fairly well represented in key industry events and also have key points of view on various aspects of blockchain and its industry applications
- Active member of key financial services focused consortiums with instances of co-development. They have also developed various industry collaborations such as HiMMS, Chamber of Digital Commerce, Blockchain Intellectual Property council etc.

HCL: Blockchain Services RadarView profile




Practice Maturity ★★★★★

Investment ★★★★★

Industry Development ★★★

Engineering-focused approach to build platforms for rapid cross industry blockchain development

| Select Use Cases | Overview |
|---|---|
| <p>Banking and Financial Services</p> <ul style="list-style-type: none"> Enabling trade finance management and cross border payment and reconciliations Blockchain based clearing and settlements, and mobile based digital wallet and payments KYC and invoice chain discounting based on blockchain <p>Manufacturing</p> <ul style="list-style-type: none"> Blockchain based supply chain management, supply chain logistics, maintenance log for electrical equipment or automotive industry <p>Healthcare and Life Sciences</p> <ul style="list-style-type: none"> Patient healthcare data management and research solution based on blockchain Blockchain-based pharma drug track and trace and serialization solution <p>Travel and Transportation</p> <ul style="list-style-type: none"> Customer data sharing and ticketing and claims management solution for aviation industry | <ul style="list-style-type: none"> Blockchain practice active since: 2016 Blockchain clients: 10+ |
| Sample Clients/ Partners | Key Industries |
| <ul style="list-style-type: none"> Global money transfer organization Europe headquartered global banking major Large Europe based insurance provider | <ul style="list-style-type: none"> Banking Financial Services Healthcare and Life Sciences Travel and Transportation Manufacturing |
| Consortium / Alliances / Partnerships | Key IP and Assets |
|  | <ul style="list-style-type: none"> Co-Trust blockchain application platform HCL Blockchain Console |

HCL: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- HCL has taken an engineering focused approach to the blockchain space and has made strategic investments in reusable assets, platforms and accelerators to help enterprises in their blockchain journey. Two of the main assets (Co-Trust platform, which enables accelerated enterprise adoption of blockchain technologies, and Blockchain Console, which is a framework for managing end to end operations of blockchain business network) are being leveraged to develop POCs in a wide spectrum of industries
- HCL focused on the BFSI sector initially but is also developing distinctive use cases in the manufacturing (track and trace, supply chain etc.), healthcare and pharmaceuticals (provenance, serialization) and telecom (fraud detection) industries
- With the assets in place, HCL is now turning its focus on helping clients move from POC to production projects by supporting the proof of value phase

Investment



- In order to continue to develop IP and reusable assets, HCL is investing in hiring and onboarding blockchain architects, developers and specialists to build its core technical team
- HCL has invested time and built up a strong partnership network in the blockchain space. They have good engagement with all the leading DLT platforms, as well as some niche platforms, and have also developed multiple use cases on different platforms. Additionally, HCL is also increasing their academia engagement

Industry Development



- HCL is a fairly active member of the platform consortiums and has contributed to many co-development initiatives with other members
- HCL showcases its thought leadership in key blockchain industry events and emphasizes its reusable assets, especially the Co-Trust platform. HCL has also organized and participated in hackathons to showcase its capability for development of industry specific solutions

Hexaware: Blockchain Services RadarView profile



- Practice Maturity** ★★
- Investment** ★★★
- Industry Development** ★★★

Recent yet rapidly evolving provider with a well thought through go to market strategy

| Select Use Cases | Overview |
|---|---|
| <p>Manufacturing</p> <ul style="list-style-type: none"> Blockchain technology to manage counterparty risk reduction in the high-value product supply chain digital provenance <p>Financial Services</p> <ul style="list-style-type: none"> Creation of solutions for shared eKYC mutual fund transfer agency work Blockchain distributed application prototype to track over-the-counter derivative transaction for a Japanese investment bank. Purpose is to streamline exhaustive email exchange process during a typical negotiation seen during an over-the-counter (OTC) derivative transaction Solutions for trade finance, loan life cycle and securitization based on blockchain <p>Others</p> <ul style="list-style-type: none"> Blockchain based device life cycle tracking and supply replenishment solution for a large OEM in managed printing space, leveraging smart contracts and IoT data Developed air cargo track and trace next generation supply chain based on distributed ledger technology | <ul style="list-style-type: none"> Blockchain practice active since: 2017 Blockchain clients: 10+ |
| Sample Clients/ Partners | Key Industries |
| <ul style="list-style-type: none"> Large managed printing service provider APAC based investment bank | <ul style="list-style-type: none"> Manufacturing Travel and Transportation Financial Services Government High Tech |
| Consortium / Alliances / Partnerships | Key IP and Assets |
|  | <ul style="list-style-type: none"> Multi-cloud blockchain incubation sandbox Plug and play framework Smart contract meta model Blockchain DevOps and network monitoring toolkit |

Hexaware: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- Hexaware has created three units within their blockchain practice - a product and platform unit for developing assets (industry use cases, frameworks etc.) and releasing them on cloud market places, a delivery unit for helping clients with their POCs or prototype development, and the center of competency which focuses on thought leadership
- Having started the practice in 2017, Hexaware is in the investment phase where they are building use cases and offerings across industries. It is seeing traction in terms of POCs in the manufacturing and financial services segment
- Hexaware is developing an engineering team with expertise across the major platforms (Hyperledger, Ethereum, Corda and Ripple), with higher focus on Hyperledger. Interestingly, they have intertwined the engineering team with developer advocates that help bring domain knowledge and run innovation programs (such as hackathons) to develop industry-specific solutions

Investment



- Hexaware is focusing on the fintech space and has built Innovation Labs in New Jersey, London and India. These labs are helping build out industry specific solutions, frameworks and tools
- Hexaware is expanding its start up ecosystem presence and is engaging with niche start ups focused on fintech

Industry Development



- Hexaware has developed some good partnerships with platforms providers and enterprises in a relatively short period of time. They have also become members of key consortiums, including those focused on financial services
- Hexaware has also been showcasing its thought leadership in this space through an extensive set of industry event participation

IBM: Blockchain Services RadarView profile



Select Use Cases

- Supply Chain**
- Transforming food supply with end-to-end traceability using blockchain for WalMart
 - Blockchain to manage tracking of paper trail of shipping containers across the world. Set up a joint venture with Maersk
- Financial Services**
- Digital business network using IBM blockchain for global certification system to track valuable items through the supply chain, safeguarding suppliers and buyers
 - Blockchain solution to accelerate cross-border payments and financial exchange
 - Bilateral payment netting of foreign exchange trades using blockchain in more than 140 currencies for buy-side and sell-side institutions
- Others**
- Digital identity and attribute sharing network in Canada using blockchain
 - Blockchain technology to quickly resolve financial disputes, decreasing reconciliation duration

Overview

- Blockchain practice active since: 2014
- Blockchain clients: 400+

Key Industries

- Retail and CPG
- Banking
- Financial Services
- Manufacturing
- Travel and Transportation
- Government

Sample Clients/ Partners

- Unilever
- Bank of Montreal (BMO)
- Walmart
- Canadian Imperial Bank of Commerce (CIBC)
- CLS Group
- U.S. Food and Drug Administration (FDA)
- Everledger
- Maersk

Consortium / Alliances / Partnerships



Key IP and Assets

- Incubated the Hyperledger code base
- Hyperledger Fabric
- Hyperledger Composer
- Hyperledger Caliper
- Hyperledger Cello
- Hyperledger Explorer
- Several other industry pioneering assets

- Practice Maturity ★★★★★
- Investment ★★★★★
- Industry Development ★★★★★

Industry pioneer. Strong ongoing blockchain commitment. Driving industry adoption with innovative, show case deployments and thought leadership

IBM: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- IBM has been a pioneer of the blockchain industry and has made, and continues to make, significant technical contributions to Hyperledger development, both in terms of core technology and in developing accelerators to enable widespread blockchain development and implementation
- One of the largest blockchain practices with significant technical and business acumen, and strong joint ventures spread across the globe. They have several marquee client engagements within their 400+ live engagements which span all the key industries and quite a few niche use cases
- IBM leverages a wide variety of commercial engagement models including fixed fees to joint ventures for co-innovation and development
- With a wide client base, IBM is well positioned to support production grade enterprise adoption of blockchain and drive identification of newer use cases

Investment



- IBM continues to make significant investment in the development of the Hyperledger technology as part of the Linux Foundation Hyperledger project and is partnering with a number of enterprises and technology companies to develop the technology further
- IBM has a robust and comprehensive partner ecosystem which spans clients, consortia, enterprises, industry specific associations, academia and the start up ecosystem

Industry Development



- IBM is a founding member of the Linux Foundation Hyperledger project and has donated most of the initial code. It continues to work with different members for developments such as Fabric and Composer. In addition, it also leads a number of industry specific consortiums focusing on solving industry-specific problems through blockchain
- IBM is an established thought leader in this space and contributes and provides forums for industry discussion and interaction through several events and forums
- The decision to be Hyperledger centric is thought through. Fortunately, the platform debate is not a winner-take-all like the Betamax vs. VHS videotape format battle of the 1980s. Rather there is space for multiple platforms to flourish

Infosys: Blockchain Services RadarView profile




- Practice Maturity** ★★★★★
- Investment** ★★★★★
- Industry Development** ★★★★★

Early mover with a strong go to market approach built on strong partnerships and blockchain assets

| Select Use Cases | Overview |
|--|---|
| <p>Banking and Financial Services</p> <ul style="list-style-type: none"> Cross border remittance solution across two banks Prototype to enhance engagement and loyalty of customers through blockchain Document Tracking solution for a consortium of seven private banks based out of India Tax process optimization based on blockchain, to streamline current process, expedite reconciliation, and lower financial risk Smart contracts based solutions to helps banks enable better traceability of transactions across different business units <p>Utilities and Resources</p> <ul style="list-style-type: none"> Blockchain based solution to help companies achieve an integrated carbon emission calculation process <p>Manufacturing</p> <ul style="list-style-type: none"> Blockchain based solutions for customers to enhance Inventory visibility and part provenance Blockchain enabled applications for IP management for component design Air plane damage tracking solutions based on blockchain technology <p>Supply Chain</p> <ul style="list-style-type: none"> Blockchain-enabled supply chain provenance in the perishable commodities space | <p>Blockchain practice active since: 2015</p> <p>Blockchain clients: 20+</p> <p>Key Industries</p> <ul style="list-style-type: none"> Banking Financial Services Insurance Manufacturing Retail and CPG Healthcare and Life Sciences |
| Sample Clients/ Partners | Consortium / Alliances / Partnerships |
| <ul style="list-style-type: none"> Consortium of seven leading Indian banks Middle Eastern commercial bank Global commodities major 3 live networks in the banking space |  |
| Tools/Accelerators/IP | |
| <ul style="list-style-type: none"> EdgeVerve Blockchain Framework iCETS Framework Blockchain Labs Assessment Framework Blockchain Testing Suite | |

Infosys: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- Infosys is one of the early movers and has been developing the practice for over three years. It has developed DLT-agnostic frameworks (from their iCETs and Edgeverve units), a separate blockchain practice and blockchain working groups in their key verticals and horizontals
- On the people front, they have created a consulting group within the blockchain practice which comprises of techno-functional resources augmented with power programmers who focus only on emerging technologies, especially from an integration perspective
- They have three live network clients in the banking and financial services space, in addition to several client engagements at various stages of development
- Infosys is also developing cross-digital solutions, especially at the intersection of IoT and blockchain

Investment



- Infosys has invested in developing in-house frameworks and solution accelerators to help develop POCs and use cases rapidly, especially in the Banking and financial services, supply chain and trade finance sectors. They are also developing reusable assets in multiple industry verticals
- The Infosys Innovation Fund is being leveraged to identify, incubate and develop joint ventures with promising start ups in the blockchain space
- Infosys has strong partnerships with all technology leaders and engages with them for joint sales pitches, go to market, capability showcase and solution development

Industry Development



- Infosys is an active member of the Enterprise Ethereum Alliance and is a part of working groups enhancing the platform. They are also a member of Microsoft's Blockchain Partner Council which enables them to work on joint projects with Microsoft blockchain and Azure. They are also developing partnerships across other consortiums, academia and enterprises, and are also evaluating niche start ups for partnerships
- Infosys invests significantly in market creation by hosting a number of multi-party interactions and design thinking workshops to jointly ideate about the future applications of blockchain. This contributes to internal development as well as potentially creating new consortiums
- Infosys has been active in developing and disseminating their blockchain specific points of view and engages with the industry through events, thought leadership initiatives, and a vibrant digital media presence

Larsen & Toubro Infotech (LTI): Blockchain Services RadarView profile



Let's Solve



Practice Maturity ★★★★★

Investment ★★★★★

Industry Development ★★★★★

Strategic intent towards blockchain with a fast growing practice and diverse client base. Investing in developing pioneering use cases and converged digital solutions

Select Use Cases

Supply Chain

- Trade finance pilot focused on inventory financing for global electronic contract manufacturer. This helps put the buyer, bank and supplier on the same blockchain to improve tracking and tracing to optimize inventory holding
- Multi-country tracking of procurement, testing and shipping and digitization of manual processes for a major retail and CPG company
- Optimization of steel supply chain for a construction major. The use case entails end to end visibility from purchase order to goods receipt and increases stakeholder accountability with immutable time stamps

Financial Services

- Blockchain based micropayments platform for a publishing house. A permissioned blockchain network for enabling very small payments through token based currency with a secure and protected wallet
- Identity management for a payments provider for multiple government and banking services

Overview

- Blockchain practice active since: 2015
- Blockchain clients: 25+

Key Industries

- Banking
- Financial Services
- Manufacturing
- Retail and CPG
- Government

Sample Clients/ Partners

- Government of a Nordic country
- Global CPG major
- North America based bank
- Leading Nordic bank
- Leading Australian bank
- Leading Indian bank
- Global bank
- Leading steel parts manufacturer
- Reinsurance major

Consortium / Alliances / Partnerships



Key IP and Assets

- Mosaic platform for integrating digital technologies
- Blockchain Readiness Framework
- Blockchain Accelerator Program
- IoT enabled track and trace Solution

Larsen & Toubro Infotech (LTI): Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- LTI has focused on blockchain as a critical part of their growth strategy over the last 24 months, and have moved blockchain from under consulting to an independent practice. They have seen good traction from existing as well as new clients, and have also been able to support clients from POC to Pilot to Production stages through a judicious combination of choosing the right clients (the ones that can drive blockchain acceptance throughout multi-party value chain) and a robust mechanism for showing immediate value from POCs
- LTI has taken a holistic approach to digital and leverage their MOSAIC platform for developing converged digital solutions, including some IoT + blockchain solutions. In addition, they have developed a number of blockchain-specific accelerators and frameworks to help transition and integrate blockchain solutions
- LTI also has multiple use cases across both key platforms with identity management and track and trace on Ethereum and KYC, and journal entries on Hyperledger

Investment



- LTI has identified supply chain and micro-payments as two of the areas of IP Development in the near term and are developing offerings and platforms associated with these
- LTI is aiming to scale up and expand, in terms of practice size as well as geographic presence, and has plans for Asia, Middle East and Africa expansion. Over the last year or so, LTI has built robust and engaged partnerships with key technology enterprises for joint solution development and go to market. LTI has also developed academic interaction to access innovation and create a talent acquisition engine which would be critical as blockchain skills continue to be at a premium

Industry Development



- LTI has been a recent, yet active member of the Enterprise Ethereum alliance and the Microsoft Blockchain Member council. They are a part of working groups focused on developing the platform itself, and in developing industry specific solutions through collaboration with other members. In addition, they are also considering joining the Hyperledger Project
- While awareness about LTI as a blockchain services provider and thought leader is growing, there is more to be done to take the message to the market

Luxoft: Blockchain Services RadarView profile



- Practice Maturity ★★★★★
- Investment ★★★
- Industry Development ★★

Consulting-led provider, helping clients develop blockchain strategy. Developing industry POCs rapidly

| | | |
|---|---|---|
| <h3>Select Use Cases</h3> <p>Healthcare and Life Sciences</p> <ul style="list-style-type: none"> Blockchain solution for tracking and tracing pharmaceutical ingredients across the supply chain Developed and deployed PII HIPAA-compliant solution for a leader in healthcare, to isolate member data to participating insurers <p>Government</p> <ul style="list-style-type: none"> Network deployment and smart contracts to upload digital identity documents, recording their hash to the blockchain and storing documents in an off-chain key-value store <p>Financial Services</p> <ul style="list-style-type: none"> Blockchain based KYC and smart contracts for a major financial institution, to detect and prevent money laundering, theft and terrorist financing. <p>Travel and Transportation</p> <ul style="list-style-type: none"> Implemented a P2P solution for a leading hospitality business, to streamline payment processes and isolate data sharing between communicating parties | <h3>Overview</h3> <ul style="list-style-type: none"> Blockchain practice active since: 2016 Blockchain clients: 10+ | |
| <h3>Sample Clients/ Partners</h3> <ul style="list-style-type: none"> Large US healthcare services company Large European bank An international non-bank financial institution A major pharmaceutical company | <h3>Consortium / Alliances / Partnerships</h3>  | <h3>Key Industries</h3> <ul style="list-style-type: none"> Healthcare and Life Sciences Financial Services Travel and Transportation Retail and CPG |
| | | <h3>Key IP and Assets</h3> <ul style="list-style-type: none"> Appian Connector Pega platform to achieve high customer growth and operational excellence |

Luxoff: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity

★★★

- Blockchain currently lies under Luxoff's Digital Enterprise business unit. Luxoff is positioning themselves as a consulting-led provider that can help clients understand blockchain better, identify appropriate use cases (through the litmus test methodology) and then move to POC and production
- Luxoff is platform agnostic and has technical and business capabilities of developing POCs across major DLT platforms and in a variety of industries such as healthcare, energy, banking and financial services

Investment

★★

- Luxoff has a separate technical team based out of Eastern Europe that works on developing new POCs, frameworks and solution accelerators (especially for integrating with existing IT systems)
- Luxoff is in the process of converting their individual led start up engagement to a more structured program
- Luxoff is also embarking on developing an overall ecosystem in terms of partnerships with enterprises, academia, and platform providers

Industry Development

★★

- Luxoff is an active member of the Crypto Valley Association, a Swiss-based, government backed independent association aiming at developing the world's leading blockchain and cryptographic technologies ecosystem
- With a good amount of expertise gained through POC development, Luxoff is now increasingly going to market with their point of view through industry events

Mphasis: Blockchain Services RadarView profile



Practice Maturity ★★★★★

Investment ★★★★★

Industry Development ★★★★★

Unique approach to helping clients through the blockchain business case development phase. Point solutions and IP driven practice expansion

| Select Use Cases | Overview |
|---|--|
| <p>Banking</p> <ul style="list-style-type: none"> Partnered with a fintech to build a collateral and settlement solution on a blockchain platform, to help tier 1 banks across US and Europe Trade finance solution for document viewing and approvals for a large India-based bank Contract management solution based on blockchain for a bank in APAC <p>Financial Services</p> <ul style="list-style-type: none"> KYC registry module using blockchain for a global financial institution Blockchain application involving mortgage transfers for an underwriting firm <p>Healthcare and Life Sciences</p> <ul style="list-style-type: none"> POC for patients health record system for a global pharma company <p>Others</p> <ul style="list-style-type: none"> Blockchain technology for an innovative loyalty points system to provide greater flexibility and rewards mechanism for consumers | <ul style="list-style-type: none"> Blockchain practice active since: 2016 Blockchain clients: 10+ |
| Sample Clients/ Partners | Key Industries |
| <ul style="list-style-type: none"> Global payments provider Tier 1 banks across US and Europe Largest bank in India Leading pharmaceutical Major global aviation firm OTC Exchange in US Specialized underwriting firm in US | <ul style="list-style-type: none"> Banking Financial Services Insurance Healthcare and Life Sciences |
| Consortium / Alliances / Partnerships | Key IP and Assets |
|  | <ul style="list-style-type: none"> DeployContracts - tool to deploy smart contract on Ethereum or Quorum blockchain DashBoardGeneric – Tool for real time analytics of blockchain data and block level debugging |

Mphasis: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- Mphasis is trying to solve the client challenge of proving business value of POCs. As part of the output for their POC/prototype projects, a business case is also presented. This is an interesting approach and can potentially help quickly move their projects towards enterprise production models
- Mphasis augments their lean blockchain CoE with the Industry Solution Group (domain expertise) and co-development with enterprise platform developers to develop POCs and offerings
- They are also working in partnership with Loyakk to build platform-based point solutions in the insurance and wealth management spaces

Investment



- Mphasis is focusing on capability building to expand the knowledge of their blockchain center of excellence. They are also in the process of developing accelerators, reusable components and self-driven POCs in their incubation lab to build both technical and business capabilities
- Mphasis has taken a unique approach to help shepherd clients through the business case phase of the blockchain adoption cycle and are building the skills required for more strategy workshops and business case development

Industry Development



- Mphasis has a strong partnership with Multichain as a founding partner. This helps them contribute to Multichain development, and also receive the latest developments early. They are also evaluating more alliances and partnerships, especially with BFSI Industry consortiums and platform consortiums such as Enterprise Ethereum Alliance and Hyperledger Foundation
- Mphasis is also embarking on a program to take their thought leadership to market through industry events, speaking engagements, etc.

NTT DATA: Blockchain Services RadarView profile

NTT DATA



- Practice Maturity** ★★★★★
- Investment** ★★★★★
- Industry Development** ★★★★★

Technical powerhouse with high commitment to blockchain development and expansion, and a focus on industry specific solution development

| Select Use Cases | Overview |
|--|---|
| <p>Manufacturing</p> <ul style="list-style-type: none"> • POC to make cross-border supply chain integration across the APAC region more secure, efficient and transparent • Blockchain solution to optimize supply chain, specifically solving for data unavailability, issues in manual processes, increased costs due to lack of coordination and market failure <p>Banking, Financial Services and Insurance</p> <ul style="list-style-type: none"> • Blockchain application for trade finance involving banks and telecom service providers • Inter- bank reconciliation solutions for a consortium of 13 Italian banks • Solutions for letter of credit, insurance management, equity and fund trading and digital assets • Developed blockchain application for smart insurance policies <p>Healthcare and Life Sciences</p> <ul style="list-style-type: none"> • Blockchain based electronic medical records management, IoT converged applications, drug track and trace and DNA wallets | <ul style="list-style-type: none"> • Blockchain practice active since: 2015 • Blockchain clients: 50+ |
| Sample Clients/ Partners | Key Industries |
| <ul style="list-style-type: none"> • Mitsubishi UFJ Financial Group (MUFG) • Tokio Marine and Nichido Fire Insurance • Orix Bank • Shizuoka Bank • NTT DoCoMo • ABI (Italian Banking Association) | <ul style="list-style-type: none"> • Manufacturing • Banking • Utilities and Resources • Financial Services • Insurance • Healthcare and Life Sciences |
| Consortium / Alliances / Partnerships | Key IP and Assets |
|  | <ul style="list-style-type: none"> • Hyperledger Quilt • Hyperledger Iroha • Altemista cloud for testing and building blockchain applications • Blockchain as a service • Supply chain platform • Workchain technology accelerator to deploy and benchmark blockchain platforms |

NTT DATA: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity

★★★★

- NTT DATA focused on blockchain quite early and was a founding member of the Hyperledger Foundation, contributing projects such as Hyperledger Quilt (Interledger Protocol) and Iroha framework for reusable assets to the development. They have a sizeable practice and a set of partnerships and are known as a technical powerhouse in this space
- They have developed some deep POCs and pilots across key industries leveraging collaboration centers in US, Italy, Spain and Germany, plus industry specific centers in Japan
- NTT DATA's clients are well distributed across industries and use cases. They are also focusing on increasing the number of projects that move from POC to production stage for their expanding client base
- They have a robust training program with a good mix of internal and external (Hyperledger, Corda etc.) training for their staff

Investment

★★★★★

- NTT DATA is focusing on expanding its practice by developing industry specific solutions internally and with an extended partner network. In addition, they continue to develop tools and solution accelerators to help clients integrate blockchains with their IT systems, and to speed up blockchain applications development
- They have increased strategic focus on rapidly taking some of their collaboration platforms to market to derive commercial benefits
- NTT DATA continues to expand partnerships with all key DLT platforms and most industry specialist platforms, and is also expanding their start up ecosystem engagement

Industry Development

★★★★★

- NTT DATA is a very active member of various consortia. It is a founding member of both Hyperledger and Alastria consortiums, apart from being a member of the Enterprise Ethereum Alliance, R3 Corda and Ripple
- NTT DATA has founded a consortium with 13 leading Japanese companies including banks, shippers, insurance companies, shipping companies and freight forwarders
- They have started expanding their business centric thought leadership activities to focus on industry specific solutions. One of the forthcoming activities is the publication of a book on blockchain

TCS: Blockchain Services RadarView profile

**TATA
CONSULTANCY
SERVICES**



Practice Maturity ★★★★★

Investment ★★★★★

Industry Development ★★★★★

Strong commitment to blockchain, focused on developing integrated offerings across key industries

Select Use Cases

Supply Chain

- Source to customer authentication and tracking, supply chain collaboration and autonomous execution of transparent transactions providing visibility to end customer through blockchain enabled platform

Financial Services

- Delivering corporate event connect, a blockchain-based platform to provide corporate event announcements to global clients
- Blockchain enabled TCS BaNCS solutions to embed 'blockchain awareness' into these solutions. Existing customers of TCS BaNCS can integrate with blockchain platforms, to publish and consume information

Banking

- Blockchain solution for clearing and settlement segment, exploring how tokenized cash balances and equities are allotted and transferred between issuers, clearing banks, and investors

Overview

- Blockchain practice active since: 2014
- Blockchain clients: 50+

Key Industries

- Banking
- Financial Services
- Supply Chain

Sample Clients/ Partners

- ABN AMRO
- BNP Paribas
- Axis Bank

Consortium / Alliances / Partnerships



Key IP and Assets

- Quartz Smart Solutions - smart contracts embedded solutions
- Quartz Gateway to integrate BaNCs with distributed ledger platforms
- Quartz Development Framework for blockchain development

TCS: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- TCS was an early mover in the blockchain space, with the establishment of the banking blockchain center of excellence consisting of a 100+ member team as early as 2016. This CoE spearheaded the integration of blockchain with TCS' BaNCs suite of offerings and developed a number of POCs with clients. As the market matures, these seeds are beginning to pay dividends for TCS, with some of these POCs nearing the transition to production
- Additionally, TCS has expanded the scope of POCs to industries beyond banking and financial services, especially in the supply chain and manufacturing space
- TCS has built a robust network of enterprise partners to develop and deliver blockchain services

Investment



- TCS continues to invest in solution accelerators for their blockchain practice, including further development of the Quartz solutions
- TCS is also expanding and leveraging its co-innovation partnership network (COIN network) and academic alliances to co-innovate with a number of start ups and other innovative companies
- TCS is also focusing on increasing its skill base across leading platforms as it has taken a platform agnostic approach to its services

Industry Development



- TCS has a strong partnership with financial services specific consortiums such as R3. It is also expanding its engagement with other key consortiums, especially the Hyperledger Foundation
- TCS also engages with the industry at various forums where they have been putting forth their points of view and learnings from POC engagements

Tech Mahindra: Blockchain Services RadarView profile



- Practice Maturity** ★★☆☆
- Investment** ★★★★★
- Industry Development** ★★☆☆

Fast accelerating practice placing disruptive blockchain bets on platform and horizontal solutions

| Select Use Cases | Overview |
|--|---|
| <p>Banking</p> <ul style="list-style-type: none"> Blockchain solution for establishing a cross border payments audit trail, initially over one corridor with expansion over multiple corridors underway Converged procure to pay solution that integrates blockchain, IoT, AI and analytics <p>Telecom, Media and Entertainment</p> <ul style="list-style-type: none"> Blockchain solutions for enabling regulatory bodies in monitoring and preventing unsolicited commercial calls Rights and royalty management solution for multimedia entertainment house <p>Government</p> <ul style="list-style-type: none"> Partnered with a fintech to develop vehicle and land registry use cases. This solution provides complete audit trail of transactions to digital assets <p>Healthcare and Life Sciences</p> <ul style="list-style-type: none"> Health data sharing consent management solution that includes blockchain locker for data with access and revoke rights with data owner | <ul style="list-style-type: none"> Blockchain practice active since: 2016 Blockchain clients: 20+ |
| Sample Clients/ Partners | Key Industries |
| <ul style="list-style-type: none"> Largest public sector bank in India Large private sector bank in India Global bank with presence in Asia Pacific and North America Automotive major present across North America, Europe, Middle East and Africa | <ul style="list-style-type: none"> Banking Telecom, Media and Entertainment Government Financial Services Manufacturing |
| Consortium / Alliances / Partnerships | Key IP and Assets |
|  | <ul style="list-style-type: none"> Sand box and design studios Rapid prototyping framework Current state assessment framework and template |

Tech Mahindra: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- Tech Mahindra has shifted focus to digital areas, especially since the unveiling of the DAVID (digital, automation, verticalization, innovation and disruption) strategy in 2016. Consequently, their blockchain practice has also received a shot in the arm and is making disruptive bets to show their strategic commitment to this space
- Tech Mahindra is developing multiple use cases across key industries and is also developing platform-based and horizontal solutions for blockchain. They have also developed design labs to showcase these use cases in a sandbox environment for their clients
- Tech Mahindra is creating a practice team that is a healthy mix of domain side experts and technical experts through a combination of internal resource movement and upskilling, and targeted external hiring
- Tech Mahindra is leveraging its strong presence in the Indian market and has been able to develop POCs with many leading enterprises and state governments. In addition, they are exploring newer geographies in the ASEAN region for their blockchain expansion

Investment



- One of the biggest planned investments in this space is the \$80 million CoE development that Tech Mahindra has embarked on in Canada. This CoE will focus on developing platform solutions across blockchain and artificial intelligence
- Overall, the focus this year is on developing tools, frameworks and templates, in addition to building certain industry pertinent platforms, horizontal solutions and rapid prototyping tools. One of these is a securitization platform for the banking industry. Investment in horizontals includes provenance tracking and identity management, among others

Industry Development



- Tech Mahindra has engaged with some key consortiums and is evaluating some others both from a partnership and active participation perspective
- Tech Mahindra is also expanding its current partnership ecosystem to accelerate their IP and offering development by engaging with academic institutions, fintech start ups and technology enterprises. This will also increase their market presence through expanded thought leadership

UST Global: Blockchain Services RadarView profile



Practice Maturity ★★★★★

Investment ★★★★

Industry Development ★★★

Hispanic focused provider with a tailor-made approach to blockchain development. Enviably POC to production conversion

Select Use Cases

Utilities and Resources

- Issuance of certification of provenance of clean energy to generate green certificates to one of the biggest energy company in Europe
- Issuance of carbon footprint certifications to corporations for reducing emissions and positioning themselves as carbon-neutral

Banking

- Developed a system for automated business to customer car loans
- Provision of tokenized money and digital checks
- Solution for an end-to-end ripple-based international payments solution

Others

- Developed a platform for digital identity and land registry based on blockchain for a Latin American government
- Digital data room including digital document certification for use in the legal industry

Overview

- Blockchain practice active since: 2016
- Blockchain clients: 15+

Key Industries

- Utilities and Resources
- Banking
- Insurance
- Government
- Manufacturing

Sample Clients/ Partners

- Santander Bank
- Government of Colombia
- Globatalent
- Leading European energy company
- One of the largest banks in Mexico
- Global law firm
- Top 5 Mexican bank

Consortium / Alliances / Partnerships








Key IP and Assets

- EasyBC - Platform to develop private blockchain using GUI for non-blockchain developers
- SelfID -Digital Identity platform
- SmartTracker - Provenance for physical goods and energy (digital identity + IoT + blockchain)

UST Global: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity

★★★★

- UST Global has taken an agile approach to their digital practice, including blockchain, and built tailor made solutions for a small set of established clients rather than developing broad-based industry specific offerings. This has helped them develop a number of use cases in their focus markets of Spain and Latin America
- Even with a lean practice, UST Global has been able to leverage its tailor made approach to drive projects to the production stage. They've achieved traction in the energy sector, with multiple projects with a leading European energy company, and in the banking industry with some Latin America-focused banks
- Provenance, payments and digital identity are some of the areas where UST Global has distinctive use cases

Investment

★★★

- UST Global is taking a well balanced approach to its investments and is rapidly building scale through hiring expansion, but is also developing new assets in the form of new offerings, solution accelerators, tools and prototypes over the next year
- UST Global continues to develop high added-value products for their clients and are also working on launching five new products this year. They have also established partnerships to access tools for self-sovereign identity in the financial services space to aid this
- They are also developing a more well-rounded ecosystem by exploring enterprise and academic partnerships

Industry Development

★★★

- UST Global is one of the co-founders of the Alastria Network, a Spain-specific multi-sectorial consortium for the establishment of a semi-public blockchain/DLT infrastructure which is legally effective in Spain. With this initiative, UST Global is emerging as a thought leader in the blockchain space
- UST Global undertakes regular market creation activities and engages with industry stakeholders in various industry events, forums and associations, that it either leads or participates in, especially in the regions in which it focuses

Wipro: Blockchain Services RadarView profile



- Practice Maturity** ★★★★★
- Investment** ★★★
- Industry Development** ★★★★★

Strong blockchain commitment with focus on building technology and talent capabilities and offerings across industries

| Select Use Cases | Overview |
|--|---|
| <p>Supply Chain</p> <ul style="list-style-type: none"> Track and trace solution in retail and pharmaceutical industries for enabling retailers and suppliers to monitor items throughout the supply chain Anti-counterfeiting offering to ensure authenticity of products in a supply chain by uniquely registering products on a blockchain <p>Financial Services</p> <ul style="list-style-type: none"> Solutions on cross border payments between banks using blockchain Solutions on post trade settlement process using blockchain <p>Banking</p> <ul style="list-style-type: none"> Digital identity management to perform skip trace function in the context of loan defaulters Delivery-versus-payments (DVP) reconciliation using blockchain-enabled solution <p>Manufacturing</p> <ul style="list-style-type: none"> Using blockchain system for additive manufacturing, where the 3D model file is securely shared and 3D printing vendor and 3D printing machines are identified and verified | <ul style="list-style-type: none"> Blockchain practice active since: 2015 Blockchain clients: 50+ |
| | Key Industries |
| | <ul style="list-style-type: none"> Banking Financial Services Manufacturing |
| Sample Clients/ Partners | Key IP and Assets |
| <ul style="list-style-type: none"> Europe-based renewable energy provider Leading global bank US based international financial services company British multinational bank and financial services company Trade associations of the world's airlines Multinational energy company | <ul style="list-style-type: none"> Industry specific blockchain frameworks and technology assets |
| Consortium / Alliances / Partnerships | |
|  | |

Wipro: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- Blockchain has been a focus area for Wipro since fairly early. Consequently, they have developed mature offerings related to advisory, co-innovation and experimentation, blockchain applications and network services that they take to market
- Wipro also built a blockchain center of excellence to develop industry specific use cases and solutions. This center also houses the blockchain innovation labs, which provision blockchain environments to help clients experiment with prototypes to test scalability, performance and security of blockchain platforms
- Wipro has a blockchain academy to train its teams on five key platforms and build in-house blockchain capability. With this, they have been able to build a substantial number of blockchain trained resources

Investment



- Wipro is leveraging its \$100 M strategic investment fund to identify and invest in the start up ecosystem around blockchain and other digital areas
- Wipro has also created a robust partner ecosystem by engaging with industry consortia like Hyperledger and Enterprise Ethereum Alliance, strategic partnerships with Microsoft, IBM, Oracle, SAP and a specialist blockchain partner ecosystem with R3, MultiChain, GEM, and others
- Wipro's people investment has also ensured that they have a sizeable pool of blockchain trained resources across the organization

Industry Development



- Wipro is very active in the thought leadership space and has used various channels to disseminate its point of views, industry use cases and industry news. They have also been active in key industry events
- They have also joined both the Hyperledger Foundation and the Enterprise Ethereum Alliance consortiums with the express aim of building enterprise grade blockchain solutions

Zensar: Blockchain Services RadarView profile



Practice Maturity ★★★★★

Investment ★★★★★

Industry Development ★★

Emerging provider developing modularized enterprise grade blockchain solutions

Select Use Cases

High Tech

- Blockchain solution for return and exchange process for a large North America based hi-tech equipment maker

Non-Profit

- Financial and governance use cases on blockchain, based on work with international agencies
- Blockchain-based solution for organ registration where records are kept across different hospitals on a shared distributed registry

Supply Chain

- Blockchain solutions implemented for a third party logistics service provider to simplify change management process, inventory reduction, and reduce onboarding time

Overview

- Blockchain practice active since: 2017
- Blockchain clients: 10+

Key Industries

- Insurance
- Manufacturing
- Banking
- Non-Profit
- High Tech

Sample Clients/ Partners

- Global development agency
- North American hi tech equipment manufacturer
- Regional logistics provider

Consortium / Alliances / Partnerships



Key IP and Assets

- ZenSmartBlox framework and visualizer
- Blockchain Spawning accelerator
- Blockchain Administrative Controller
- Smart Contract Utility
- Feasibility evaluation engine

Zensar: Blockchain Services RadarView profile

Analyst Insights

Practice Maturity



- Zensar recently set up their separate blockchain practice under the digital focused Zen Labs. In their initial phase of practice development, they have focused on developing modularized enterprise grade solutions and the ZenSmartBlox framework (which helps POCs in the Zen Labs private cloud to validate technical feasibility)
- Zensar has been running a number of POCs in different industries such as financial services, supply chain, travel and transportation and governance and are in the proof of value stage in most of these engagements. They have been able to develop these POCs with existing clients where they have strong relationships
- Zensar identifies high performers from within their company with great algorithmic and development skills, and provides extensive training to develop blockchain skills. This approach has helped bridge the existing dearth of blockchain talent

Investment



- Zensar is focusing on developing frameworks and tools to accelerate blockchain analytics, interoperability and integration. They are also further expanding the functionalities of their reusable assets such as Blockchain Administrative Controller, ZenSmartBlox Visualizer, and Smart Contract Utility.
- Zensar is taking a circumspect approach to building their partnership ecosystem, and while they are developing cross-platform development partnerships, they are still evaluating joining key consortia
- However, Zensar is already developing innovation-driving partnerships with key academic institutions

Industry Development



- Zensar is in the process of joining the Hyperledger consortium and is initiating various other thought leadership activities through developing point of views, industry association event participation

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