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Blockchain: 2020 Vision

Shaping enterprise blockchain adoption

Blockchain: 2020 Vision

Top takeaways

1. **In 2020, success stories emerging from the 'trenches of deployment' show business value so those that follow can beat a clear path to production.** The hard work on delivery in 2018 and 2019 will pay off for projects that made privacy, performance and enterprise integration central to their platform choices. Projects targeting success in late 2020/2021 will learn from early adopter success to identify their best path forward. Over 30 projects have already re-evaluated earlier platform decisions. Those on the side lines will get the validation needed to make a confident first step forward.

2. **Companies will become 'smarter customers' for blockchain as they learn from past engagements and ask the 'right questions' of their technology providers.** For instance, a better understanding of public / permission-less vs private / permissioned platforms in the context of privacy, and the confirmation of transactions, will help organizations to reframe their questions as they explore the technology. Rather than the historical focus on who is validating transactions, the more pertinent question will be: 'who is confirming transactions?' Understanding who in a network decides which transactions get confirmed and stay confirmed will help to focus enterprise blockchain thinking in 2020.

3. **Public-private partnerships will accelerate digital currency initiatives.** The increasingly digital and distributed nature of business means central banks will be asked to make new settlement methods and currency more accessible. As digital cash is mobilized by private sector initiatives, central banks will seek to align new infrastructure with existing regulations and safeguards. Blockchain enabled networks and applications, for example, by financial market infrastructure providers and exchanges, will drive the issuance and movement of fiat backed tokens that are effectively sanctioned by central banks and satisfy the regulators. This will provide impetus for central bank initiatives and enterprise token adoption in 2020.

Introduction

It is primarily delivery, not disillusionment, that's the reason for the apparent slow-down in blockchain / distributed ledger technology (DLT) activity. Those companies who were selling in 2017 (and for whom early engagements proved successful) have been busy building in 2018/19... and we'll see the results in 2020, in terms of business value driven to end users. HQLA^X, Insurwave and the ABI Lab Spunta project are all examples of business networks showing success now.

In 2020 we will see investments in some of the fastest growing trade finance networks result in value at scale, for example as Marco Polo delivers on its promise of an end-to-end supply chain finance network. In addition, household names that announced major projects in 2019 (like Mastercard and Wells Fargo) will be ones to watch in 2020.

A sense of 'pragmatic realism' will prevail in production, with real-world engineering principles increasingly being applied both to blockchain technology developments, and to the governance arrangements that bind consortia and their networks together. Successful participants will have more realistic expectations about interoperability, infrastructure, network permissioning, and the actual level of decentralization required to appropriately balance responsibility and control. They will also have learned the right questions to ask of their technology partners, in order to get the job done – focusing on delivering something that works and doing so quickly enough to deliver value (and provably so) within their given timeframe.

Reducing Supply Chain Pain

Blockchain for Procure to Pay, developed by Digital Ventures, is being used by large corporations like Siam Cement Group (SCG) and Minor Foods to boost efficiency in the procurement process across their supplier networks. Buyers, suppliers and banks share purchase orders, goods receipts and invoices to automate procure-to-pay processes. Over 800 buyers and suppliers have already been onboarded. Siam Cement Group and its supplier ecosystem has seen reductions in procure-to-pay processing times by 50% and costs by 70%. It ensures authorized parties have real-time visibility at every stage and is helping partner banks like Siam Commercial Bank to acquire customers and provide invoice financing faster and at lower risk.

More Efficient Payments

ABI Lab's Spunta is a private-permissioned DLT-based project for interbank reconciliation using Corda Enterprise (coordinated by ABI Lab, the banking research and innovation centre of the Italian Banking Association, in partnership with R3, NTT Data and SIA). ABI Lab issued a new version of its interbank agreement in May 2019, moving the entire Italian banking sector from tape to distributed ledger. The Spunta already boasts participation from 18 banks (equivalent to 78% of the Italian banking sector). In March 2020 the Spunta will switch on, becoming fully implemented within six months (targeting one node each, for around 200 domestic banks). In late 2019 the network proved it could process 200 million transactions, equivalent to a year's worth of data, across more than 30 nodes.

Optimizing Financial Markets

Live with multiple custodians, member banks and performing regulated market transactions, **HQLA^x** is a DLT solution for collateral swaps (developed on R3's Corda platform in partnership with the Deutsche Börse Group). It's designed to improve intraday liquidity by providing instant settlement (in the form of Delivery vs Delivery, DvD) as banks rebalance their portfolios of High-Quality Liquid Assets.

Simplify

Complexity is the enemy of adoption in enterprise technology. For blockchain / DLT to be practical and scalable across many different organizations, each with very different goals and pre-existing technologies, underlying platforms need to strive for simplicity in terms of deployment, operational management and user experience for node and network operators.

Deployment - focus on fast time-to-value and resilience

For blockchain to be practical and scalable across many different organizations with very different goals and pre-existing technologies, the underlying platforms need to strive for simplicity and flexibility.

Organizations want to simplify how they launch or join blockchain networks. Business sponsors do not want deployment and operations to delay their time to demonstrable value and will want their blockchain nodes to 'live' where their current infrastructure lives. Connecting to peers on a network should be pain-free, regardless of whether the node is deployed on-premises, or across a single- or multi-cloud environment.

The leading blockchain platforms in 2020 will target the ability to 'deploy anywhere' with the fewest clicks, allowing customers to focus on business value, not deployment headaches.

Critical to these efforts will be ensuring the deployment of resilient node configurations that are fit for production. New tooling will emerge from vendors and blockchain service providers to support the ramp up and operational management of blockchain infrastructure.

Predictions

- **In 2020, operational management capabilities will become higher value components of enterprise blockchain platforms** as live deployments mature and scale up.

- **2020 will see steady scale-up and blockchain networks will start to make use of more traditional network technology tools to simplify deployment, manageability, and upgrades.** These will introduce network management models not yet seen in the blockchain space and the adoption of operational tooling (e.g. network monitoring and health-checking) and operational interfaces.

Simplifying privacy - most elegant solution wins

In 2019 many enterprise blockchains, or forks of public chains, continued to attempt to address privacy concerns about their platforms arising from their original designs. It was the year that this important requirement of enterprise users in production came to the fore and we saw this drive 30+ applications to make the decision to switch to Corda from other platforms.

Blockchain platforms continue to launch retroactive fixes that add significant complexity in an attempt to reverse engineer privacy controls into their transaction mechanisms, when what the market really demands is elegance and simplicity.

Public blockchains have attempted to accommodate enterprise privacy requirements, which are fundamentally at odds with their ethos of 'censorship resistance'. In addition, the evolution of Zero-Knowledge Proofs will continue, but these remain a hard engineering solution to the problem. Platforms that were designed with privacy in mind from the start and are agile enough to embrace a plurality of privacy strategies will be best placed to support businesses in 2020 and beyond.

Predictions

- **In 2020 corporate organizations will be deterred by complex attempts by public, or public-permissioned blockchains to solve privacy.** They will seek simplicity and platform resilience, avoiding complicated engineering workarounds in platforms that were originally designed for censorship resistance—not enterprise level privacy and security.

- **In 2020, developments in multi-party computing will emerge and investment in Zero-Knowledge Proofs will continue.** ZKPs may be a long-term solution if they become sufficiently general-purpose, but technology leaders will address privacy with platforms that have taken a multi-pronged approach. This means peer-to-peer transaction level privacy as a baseline, hardware privacy through Intel® SGX for general purpose cryptographic privacy next—and all whilst allowing for pure cryptographic solutions such as ZKP to be slotted in when mature enough.

Connect

As blockchain businesses reach greater maturity in 2020 organizations will be focused on network governance, network connectivity and the best path to network expansion. This will see the bootstrapping of net-new networks as well as the re-emergence of interoperability as a key theme as organizations consider how business networks and applications will work together as they scale.

Identifying the ingredients of interoperability

Interoperability will create a lot of buzz in 2020 but organizations deploying blockchain will focus on underlying platforms' ability to provide the robust management of identity, workflows and states when building distributed market level applications that work at scale. With this approach, and focus on the right business logic, organizations will have the tools to deliver meaningful interoperability in its most relevant guises.

The emergence of firms trying to monetize cross-chain connectivity (through smart contract

standardization, decoupling or portability) will continue. Production networks and organizations that are making real progress with their initiatives (and understand the underlying value of DLT), will continue to be ruthlessly pragmatic, being more focused today on resilient deployment and driving quick time to value for existing blockchain investments. As business networks go live, other aspects of interoperability will come to the fore.

Business and IT leaders have an eye on future interoperability. We see four key ingredients for interoperability (Fig.1) and leading platform providers will have considered them all as part of their strategy. Whether it's the interoperability of CorDapps on Corda Network, or with different blockchain networks and protocols, the theme can be viewed from multiple angles (smart contract execution, integration with back office systems, identity management, interoperability with payment and settlement mechanisms etc.). Each comes with different strategic considerations. A greater understanding of how platforms like Corda support interoperability will reveal the shortcomings of platforms that today do not even guarantee business network interoperability on their native protocols.

Fig 1. Four Ingredients of Blockchain Interoperability

Ingredient	Business Drivers	Current Demand	Available Solutions
Cross Chain Smart Contracts / Digital Assets	• The early phases of the hype-cycle • Desire to re-use existing smart contract investment	Low	Corda's architecture supports interoperability out-of-the box. Multiple partners have demonstrated this works in practice. We see limited production demand, with use cases driven on a case-by- case basis. Corda supports cross chain interoperability by using the most prevalent business technologies to make it easier for organizations to address these requirements as and when they arise.
Interoperability of business networks on one framework	• Deployment of multiple apps on one protocol • Avoiding 'trapped assets' across apps	Medium	Corda Network is the only independently governed, shared and open 'mainnet' for universal interoperability across enterprise blockchain apps. This eliminates the risk of volatile tokens from insiders and speculators, and ensures transparent cost-recovery pricing from an independent foundation.
Payments and settlement network integration	• Delivery Versus Payment • Bridge between DLT apps and established rails • Desire for open source solutions to drive settlement	Medium	Ability to access an open source SDK for payment and settlement integration (e.g. Corda Settler), to create payment obligations and automate Delivery v Payment.
Enterprise IT integration	• Resilience in production • Ongoing maintenance and support e.g. databases, operations	High	Leveraging the Java Virtual Machine, and with relational database support as standard, Corda is a resilient platform benefitting from the years of refinement of the JVM, and accessible to the universe of 12 million Java developers. This means lower total costs for those deploying Corda as they already have the skills on hand and licenses in place for the downstream enterprise technologies that Corda works with.

While enterprise technology teams will ask about cross-platform transactions, the underlying question should be 'which platform can best deliver on the vision of 'what you see, is what I see' across multiple back-office systems of record?

INTEROPERABILITY – CASE STUDY EXAMPLES

Token and Digital Asset Portability
In 2019, Swiss Token Security provider BlockState **announced the successful passporting** of Ethereum ERC-20 tokens to R3's Corda platform, enabling Ethereum issued tokens to be traded on the financial market infrastructures and exchanges being built on Corda.

Business Network and Application Interoperability
Michael Fulton (Nationwide), Patrick Millar (RiskStream), Richard Phipps (Swiss Re), and Alessandro Spadoni (B3i) discuss **Insurance, interoperability and collaboration on Corda** with Ryan Rugg (R3) at the CordaCon 2019 Industry Transformation in Action Panel.

Payment Network Interoperability
As applications and networks built on DLT grow, there is increasing demand to be able to settle transactions via existing and emerging payment rails—whether blockchain based or through incumbent payment networks. For example, in 2019, SWIFT connected the **SWIFT gpi link with Corda Settler.**

Predictions

- **In 2020 as the creation and movement of digital assets increases, interoperability hype focused on moving assets across applications and ledgers will increase, but advanced projects will prioritize interoperability efforts** based on integration with established business networks and systems. Platforms that have considered business logic and enterprise workflow as part of their original designs will be best placed to deliver on interoperability in the future.

- **In 2020, blockchain application interoperability with new and incumbent payment rails will drive the market closer to realizing the fundamental settlement and reconciliation value proposition of DLT** as organizations look to deliver the 'P' in DvP (Delivery versus Payment).

The emergence of "Consortium 3.0"

A third wave of consortia is emerging. New industries are learning from the successes of consortium business models which initially emerged in the development of blockchain applications, and gave rise to early industry transformation initiatives, for example in insurance and trade finance.

In the second wave, many consortia failed due to mis-aligned incentives and concerns over vendor control over network participants' technology and infrastructure choices.

In the third wave, successful consortia will operate around clearer economic incentives for all participants. Key aspects of consortium management and blockchain network governance will be standardized and make it increasingly easy to deliver on the promise of consortium led transformation, and we will see more industries move from ideation to production.

Successful consortia will come from large industries with common challenges and complex legacy processes, where everyone stands to gain from optimizing the process (for example, in telecommunications—where the Communication Blockchain Network is investigating how blockchain can be used for inter-carrier voice settlement, data roaming and data-on-demand services; and in mobility—where Vehicle Identity standards are driving through many new use cases).

SUCCESSFUL CONSORTIA – CASE STUDY EXAMPLES

Insurwave provides a Corda-based blockchain platform to support marine hull insurance. It provides a secure, private, immutable digital insurance value chain, aiming to transform how global businesses manage risk across their organization (and how they work with brokers and (re)insurers).

B3i provides a platform for frictionless risk transfer on Corda (having switched from Hyperledger Fabric in January 2018). It has evolved from its origins as a consortium of the largest global insurance / re-insurance companies (founded in October 2016) into a software company, providing DLT solutions for the Insurance industry.

RiskStream is a consortium focused on InsureTech and blockchain solutions (platform and applications) for the industry—anticipating a shift in risk management as the need for information-sharing widens and with expectation of seamless and instantaneous processing.

Predictions

- **2020's successful consortia will come from large industries with common challenges and complex legacy processes.** Commercially minded consortia will be the winners as industries see the success of the business model is dependent on getting incentives aligned and building governance and networks around real economics – as well as a strong vision for industry transformation.

- **2020 will see further demand for simplification and assistance around blockchain network management and consortium management.** Demand for 'consortium-as-a-service' consultancy will increase and organizations that have succeeded in the past will be best placed to provide guidance. This will be combined with a demand for productized offerings to support consortium management and network setup,

such as one-click deployment solutions, private network-in-a-box solutions, and blockchain-as-a-service offerings.

Transact

New drivers for digital currency, digital assets and payments

Blockchain is unique in its ability to deliver market- and industry-wide networks centered on provably scarce digital assets and value being transacted directly and with finality. 2020 will reveal the demonstrable value of blockchain networks over traditional centralized databases as we move into the 'transact' phase.

Central Bank Digital Currency (CBDC) will remain a key headline driver in 2020. In 2019, the number of central banks exploring retail digital currency jumped from 15 in 2018, to over 50. 2020 will see focused domestic pilots and more countries will enter the exploration phase. The adoption of digital cash will continue to be driven through public / private partnerships.

An important distinction to be made is the difference between central bank-enabled and central bank-issued digital currency. A notable trend will be towards demand for high quality, regulated digital assets on exchange networks and the emergence of digital asset exchanges that have worked in partnership with central banks to deliver central bank-enabled digital assets and Delivery versus Payment (DvP) transactions, on ledger.

REGULATED DIGITAL ASSETS - CASE STUDY EXAMPLES

SDX (SIX Digital Exchange), the first regulated end-to-end market infrastructure for digital assets, is an example of how public / private partnership will drive digital asset adoption into 2020 and beyond. SDX is working closely with the Swiss National Bank to ensure the prudent issuance of tokens, backed by central bank currency, using Corda. In 2019, SDX launched a prototype and expects to reach key milestones in 2020.

Riksbank, the oldest central bank in the world, recently began testing a digital version of the Swedish currency, dubbed the e-krona. A CBDC would provide a public sector alternative to a private sector dominated payments infrastructure in Sweden.

The Hong Kong Monetary Authority (HKMA) and the Bank of Thailand (BOT) announced the outcomes of joint Central Bank Digital Currency (CBDC) research project named Project Inthanon-LionRock.

Predictions

- **2020 will be a pivotal year for Central Bank Digital Currency, driven by the emergence of more public-private sector partnerships.** Central banks will align new DLT enabled infrastructure, with existing regulation and safeguards to ensure the prudent delivery of the future of settlement.

- **2020 will see access to central bank-enabled digital currency light the touch paper for early movers in the digital exchange market** who will gain competitive advantage as they build out end-to-end market infrastructures. Ledger native assets will emerge, reducing off-chain representation and driving increasing value in digital assets projects.

Ones to Watch

National Platforms for KYC and KYS

Know Your Customer (KYC) is becoming a major driver for public sector initiatives with national KYC utilities announced in numerous territories worldwide (e.g. Hong Kong, Bahrain, Singapore). Without a mutualized approach, banks and corporates have continued to battle with the challenges of onboarding their customers and de-risking the KYC process. Similarly rising on the corporate agenda is how this impacts the supply chain, as companies focus on Know Your Supplier (KYS). This is leading to a convergence between the procurement and compliance functions at most organizations, with the potential for greater optimization of their onboarding processes.

There have been many attempts to develop centralized utilities in the past, but most have ended in failure, partly due to issues around data ownership in the centralized model. In order to deliver a frictionless solution that addresses issues around data security and privacy, we're now seeing a push towards decentralization. It's happening now because governments and regulators are looking for ways to exercise greater oversight and control over the banking sector (in response to breaches of KYC controls); and banks and their corporate clients are looking to reduce cost, risks and complexity (and see an opportunity to mutualize some of these KYC costs across the industry).

Decentralized digital identity initiatives will also make headway but 2020 will see major breakthroughs in the business to business world, with meaningful collaboration and applications that will bring together leading players in KYC to deliver industry level solutions built on the fundamentals of trusted data exchange and privacy—enabled by enterprise blockchains like Corda.

KYC PLATFORM - CASE STUDY EXAMPLE

Blue Catalyst is a Corda-based trusted data exchange for corporate and supplier onboarding (i.e. B2B KYC) that supports consent-based data-sharing, full traceability and auditability, and streamlines processes to realise efficiencies (and reduce costs) in the workflow.

Prediction

- **We'll see the first mutualized blockchain-based KYC platform launch in 2020,** reducing costs and providing enhanced governance across complex counterparty relationships.

Supply Chain transformation across industries

Although blockchain solutions in the financial and logistics sectors have continued to garner the most attention to date, other industries and areas of focus along the supply chain are emerging fast. Technology Service Providers and industry bodies serving diverse industries from Healthcare and Pharmaceuticals, to Telco and Automotive are starting to examine how they can drive industry level transformation. Large Corporates are also maturing with sector-specific supply chain solutions and opportunities to optimize internal processes across global entities.

Predictions

- **In 2020, providers that have built sector specific supply chain applications, for example, asset provenance in food or IoT payments in automotive, will apply the same principles and applications to serve other industries.** For example, track and trace applications used in food, could also be applied to asset tracking in aviation supply chains. Now that proven applications exist, they will be applied across sectors, increasing the pace of innovation in other industries.

- **Healthcare is just one of the other industries that will mature in 2020.** New payment mechanisms, such as value and outcomes-based contracting, will highlight the need for more efficient patient data distribution and corresponding payment. Operational matters (such as deployment flexibility) will be key to the success of blockchain in healthcare in 2020 with cloud and managed services having a big role to play.

EMERGING USE CASES - SOME EXAMPLES

ProCredEx - Redefining Professional Identity: It's Not Just Who I Am, But What I Can Do

Ripe.io - The Wholesale Food Supply Chain is Ripe for Transformation

Vodafone - IoT Payments on Vodafone INVENT

Visit the **CordaCon Highlights page** for an overview of 2019 blockchain projects to look out for in 2020

Call to action

We've outlined the key blockchain / DLT trends to watch for in 2020... so what should you do *now?*

- Reach out to platform providers who can share their experiences from early successful deployments. This will help to validate and advance your business case and provide access to an ecosystem of business leaders and technologists who are at the front-line, deploying distributed ledger solutions.

- Prove (and keep proving) the business benefit of your DLT initiative—future investment to scale-up and scale-out (and continued senior sponsor buy-in to smooth the path to widespread adoption) depend on being able to demonstrate the value of your DLT project.

- Ask the right questions about public vs private blockchains and the underlying protocols of platforms particularly around privacy, security, legal enforceability of contracts.

- Ensure your consortium governance arrangements (especially monetization and incentivization) aren't skewed to disproportionately benefit the founders at the expense of newcomers—otherwise you'll struggle to grow your network. Speak to organizations like **R3** who have successfully delivered solutions, driven through consortia.

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Continue the conversation

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About R3

R3 is an enterprise blockchain software firm working with a broad ecosystem of more than 300 participants across multiple industries from both the private and public sectors to develop on Corda, its open-source blockchain platform, and Corda Enterprise, a commercial version of Corda for enterprise usage.

The Corda platform is already being used in industries from financial services to healthcare, shipping, insurance and more. It records, manages and executes institutions' financial agreements in perfect synchrony with their peers, creating a world of frictionless commerce. Learn more at r3.com and corda.net.