



# QUARTZ TAKES OFF

# FROM THE EDITOR



## It's been a busy year for Quartz and TCS.

As Vivek mentions in this issue's special report, "Quartz Takes Off" (page 4), Quartz already has 10+ clients going into production with blockchain, across a wide range of use cases. We're enabling people to make payments with their mobile phones. We're making it easier for banks to issue digital bank guarantees to companies. We're simplifying contracts for a major pharmaceutical company. We've had a recent go-live using blockchain to track energy for solar projects, and another for interbank borrowing at a major private-sector bank in India.

Those are just a few highlights of what we're currently doing, and a small fraction of what we have planned for the near-term future.

We are particularly excited about Quartz for Markets (page 14), which can be deployed by any Market Infrastructure Institution (MII), including banks of all kinds, broker-dealers, custodians, CSDs, exchanges, central banks, and registrars. With Quartz for Markets, MIs will be able to conduct a wide range of marketplace activities across the lifecycle of crypto-assets, with interoperability to traditional market infrastructure.

Given the immense changes underway as we move toward the Blockchain Economy, we're going to need plenty of help. That's why we've invested in the Quartz Partner Program (page 24), which enables technology providers such as Roxe (page 28) and Thales (page 30) and other entities to work directly with us and with Quartz customers through the Quartz Hub, a convenient resource for enterprises investing in blockchain.

Finally, at TCS we have evolved our positioning statement to reflect our shared purpose with customers: **Building on Belief**. We know that our customers believe that the work they do is making the world a better place, and as an organization, we are dedicated to sharing that sense of strong purpose.

**Building on Belief** is a natural fit for Quartz and for our customers. We all believe in the power of blockchain and its potential for positive benefits to the world. It is with humility and a strong sense of purpose that we partner with each of our customers to help them realize their expansive visions for the future, built on belief.

Happy Reading,

**Anjana Chandrika**

**Editor, Quartz magazine**

**[anjana.srikanth@tcs.com](mailto:anjana.srikanth@tcs.com)**

**Watch a video on how Quartz Solutions can help industries decentralize ecosystems, foster trust, transparency and allow timely access of data to all stakeholders.**

**<https://bit.ly/quartz-blockchain-video>**

**Questions? Contact the Quartz team: [tcs.quartz@tcs.com](mailto:tcs.quartz@tcs.com)**

**Visit our new website:**

**<https://www.tcs.com/quartz>**

# QUARTZ TAKES OFF

**At Quartz, we already have many clients going into production with blockchain initiatives. These are not pilot projects or experiments, but rather point solutions that are filling white spaces in the business, changing the way business is done today.**

**In our own experience working with customers, we are enabling enterprises to connect blockchain solutions into existing business processes alongside new cross-industry value chains, and even in the intersection between industries. The compelling business benefits will become more and more visible in the next three years, as blockchain or DLT takes its place as a foundational technology.**



**R Vivekanand,**  
**Head – TCS Financial Solutions,**  
**Global Head – Quartz**



## Recent go-lives

**We went live on Azure cloud with a renewable energy certificate (REC) platform deployed on blockchain and integrated with IoT for tracking energy generated on solar panels. Customers can buy and sell RECs from multiple sources to help them meet their green energy commitments.**

**The solution includes real-time updates, tamper-proof records with “secure by design” data encryption, and complete lifecycle traceability of RECs.**

**In July 2021, we went live with the Interbank Ledger solution from Quartz, enabling several branches of a leading private bank in India to perform interbank**

The background of the page is a composite image. The upper portion shows the curved horizon of the Earth from space, with a dark, star-filled sky. The lower portion shows the heavily cratered surface of the Moon. On the left side, a portion of a white rocket is visible, with a bright flame and smoke plume from its engines. The text is overlaid on the right side of the image.

**borrowing transactions with 25-30 counterparty banks across the globe. With its unique combination of off-chain and on-chain services, Quartz provides seamless integration with the existing systems of the bank, with DLT simplifying operational aspects of asset sharing, compliance approvals, and lender query resolutions. The solution will lead to faster deal finalization, greater transparency, complete traceability of transactions throughout the borrowing lifecycle, instant updates on the blockchain ledger, and ensure a tamperproof record of communication with all stakeholders.**

### **Payment by Proxy**

BankservAfrica, a South African payment infrastructure provider, is deploying the Proxy Resolution solution from Quartz along with the introduction of a next-generation, easy-to-use, real-time payment system.

The Pay-by-Proxy functionality will enable end customers to make payments using a proxy alias such as a mobile number. Behind the scenes, proxy resolution services will obtain bank account details and initiate payments using a request-to-pay mechanism. The decentralized, distributed architecture of Quartz supports these capabilities with a secure, real-time, and scalable solution for retail payments that ensures data privacy and confidentiality of critical personal financial information.

### **Digital Guarantees**

This Quartz solution is deployed on an on-demand platform model and will connect individuals, corporates, and government entities to support a fully digitized lifecycle for bank guarantees. Moving away from paper-based processes, hyper-automation will eliminate operational inefficiencies by enabling instant updates on the status of each digital guarantee and ensure non-repudiation through an immutable audit trail of transactions on blockchain.

### **Contract performance monitoring**

Quartz will enable the monitoring of contract performance between a major European pharmaceutical company and its vendors. The blockchain-based solution will enable automation of invoice processing and payment instructions and will generate real-time notifications to stakeholders. Immutable information on the ledgers eliminates the need for reconciliation between the contracting parties, thus delivering significant operational savings.





### **Crypto-custody services**

An end-to-end, integrated, and secure crypto-custody and transaction processing solution for banks and financial institutions will enable banks and financial institutions to offer portfolio diversification to investors. The solution enables the purchase, sale, and secure custody of popular cryptocurrencies and digital assets, with ready integration with multiple public blockchains including Bitcoin, Ethereum, Ripple, Bitcoin Cash, and many others.

### **Issuance**

Bond issuance on blockchain will ensure a single source of truth for various stakeholders including debenture trustees, valuation firms, and exchanges. The solution, based on Quartz for Markets, reduces duplication of information across different systems, eliminating double counting of underlying collateral along with the need to reconcile information across participants. This significantly reduces risk, promotes higher transparency, and automates current business processes throughout the issuance process.

## **Future projects**

That's just the start of what we are planning. Other solutions that we are creating include Tokenization (including NFTs), Central Bank Digital Currencies (CBDCs), Digital Identity, Supply chain, Trade Finance, and Provenance.

A full-page background image featuring a large, detailed moon with numerous craters and maria. In the lower-left foreground, a white rocket with a blue flame is shown launching towards the right. The scene is set against a dark blue space background with some distant stars.

**Other current projects include blockchain deployments for wallet services, reward points, and cross-border payments.**



One of the primary accelerators of blockchain adoption will be the availability of Blockchain as a Service models. As an extension of Software-as-a-Service (SaaS) models, BaaS will allow customers to leverage cloud-based solutions to build, host, and operate their own blockchain apps. BaaS will help customers with faster application development, lower maintenance costs, and faster adoption of blockchain technologies.

With BaaS, the biggest challenge in the post-Covid economy will not be technology, but rather interoperability and compatibility. That's why we built Quartz on the core principles of coexistence, integration, and interoperability, so that organizations can quickly and easily connect their existing systems with multiple blockchain platforms and messaging networks.

Given the fast growth rate and transformative potential of blockchain technology, organizations in virtually every industry will need to assess emerging blockchain ecosystems, measure their potential impact on legacy business models, and take decisive steps to adapt. Beyond deployments within industries, blockchain also enables the creation of solutions that span across industries. As a decentralized technology, blockchain is the perfect fit for cross-industry applications where it would be difficult to coordinate participation and management for vastly different entities.

We have built Quartz to simplify the technology aspect of this ongoing cross-industry transformation, delivering the operational flexibility to meet enterprise needs. No matter how your customers and business partners seek to connect within and across industries with a wide variety of blockchain platforms, cryptocurrencies, NFTs, or smart contracts, you'll be more than ready to respond.



**At Quartz, we're excited about our customers' ongoing and future blockchain projects, and we look forward to facilitating enterprise transformations throughout the blockchain economy.**

**Listen:** 

## **QuartzCast: The Essential Podcast for Blockchain and DLT in Business**

### **Moving Towards a Token Economy with Quartz**



**Malini Raman**, Product Head, Quartz describes tokenization using distributed ledger technology. With scenarios in real estate, art, luxury goods, energy and utilities, tokenization promises to democratize access to a world of investment options. Issuers will improve liquidity through a broader investor base with low issuing costs, and investors will benefit from diversification, fractional ownership, and instant settlement.

<https://www.tcs.com/bancs/quartzcast-moving-towards-token-economy-with-quartz>

# QUARTZ™



By V Anjana, Solution Architect, Quartz  
and Malini Raman, Product Head, Quartz



# FOR MARKETS

**When high-net-worth individuals want to buy or sell expensive artwork or premium property in downtown New York or London, it's their wealth managers and investment managers who are responsible for making it happen.**

Tokenization of real-world assets now offers an alluring opportunity to the global investor community. Innovation powered by blockchain has opened up new marketplaces for tokenized asset classes, including newer types of illiquid and exotic assets.

And tokenized assets are not just for high-net-worth individuals. Tokenization democratizes the access of assets to mass market investors, enabling people to make fractional, small-value investments into high-value assets.

To meet market demand, the entire wealth management industry will need to build capabilities to trade tokenized assets of all kinds. This poses a challenge not only for asset managers, but also for the market infrastructure institutions (MIs) supporting them and their clients throughout the value chain.

Tokenization will change market structure given its inherent potential for trading across jurisdictions with instant settlement. In response, MIs are exploring a hybrid market model for the end-to-end life cycle of digitized assets, operating under the precision and robustness associated with the traditional system.

# QUARTZ™ FOR MARKETS

## Tokenization is the reason we created Quartz™ for Markets.

Quartz™ for Markets offers end-to-end next generation services around tokenized securities to drive future growth for MIIs including exchanges, depositories, central banks, payment infrastructures, private banks, custodians, and issuers. Quartz for Markets builds on TCS' position as the largest independent software provider to MIIs, with its proven TCS BaNCS for Market Infrastructure and Custody solutions powering the operations of over 50 market-critical institutions across 66 countries.

With Quartz for Markets, MIIs will be able to conduct any or all of the following marketplace activities:

- Convert real-world assets into digital tokens and market them to the world
- Invest in tokenized asset-backed digital tokens for real estate, gold, and art, alongside purely digital assets such as non-fungible tokens (NFTs) and loyalty points
- Manage the full lifecycle of asset-backed digital tokens, including token issuance custody
- Conduct secondary market trading activities through order management, matching, atomic settlement, and surveillance
- Service digital assets with eVoting and general meeting services
- Comply fully with relevant KYC/AML regulations
- Settle with flexibility and liquidity using the customer's choice of fiat currencies, cryptocurrencies, stablecoins, and digital currencies
- Interoperate with market infrastructure for equity, fixed income, warrants, and other traditional financial instruments





# QUARTZ™ FOR MARKETS



# Global deployments

The solution is being implemented for leading Market Infrastructure and Capital Markets firms across the globe, including:

- Support for bond issuance using DLT for one of the largest depositories in India
- Integrated crypto custody and transaction processing for a private bank and financial services firm in Switzerland
- Rewards marketplace, mobile ordering and payment platform for UK-based Zapaygo
- Pay-by-Proxy functionality for Bankserv Africa, a leading payment infrastructure provider in South Africa
- Market surveillance across multiple asset classes for a leading exchange and a central bank in the Asia-Pacific region.

The portfolio of solutions supports the full lifecycle of tokenized securities across asset classes, fully integrated and interoperable with traditional market infrastructure.

Quartz for Markets powers the creation of a decentralized ecosystem that helps foster trust, provides a single source of truth for different stakeholders, and enables real-time processing in order to address diverse market needs.

Quartz for Markets works with public as well as private blockchain platforms and supports multiple token standards such as ERC and R3 Token SDKs. In addition, the solution includes an intuitive, low code development kit to enable MIs to meet their future needs by extending the capabilities of Quartz for Markets.

# QUARTZ™ FOR MARKETS

## Ready for deployment

Quartz for Markets has been designed for easy integration and interoperability with existing core platforms and third-party solutions, including built-in connectivity with TCS BaNCS for Market Infrastructure and Custody solutions.

- ✓ **Delivers** a fast and comprehensive solution for supporting digital assets and tokenization
- ✓ **Offers** 24x7 accessibility with instantaneous atomic settlement
- ✓ **Complies** with regulatory aspects of IOSCO-PFMI, CSDR and EMIR.
- ✓ **Works** with public as well as private blockchain platforms and supports multiple token standards such as ERC and R3 Token SDKs.
- ✓ **Includes** an intuitive, low code development kit to enable MIIs to extend the capabilities of Quartz for Markets.
- ✓ **Supports** administration and monitoring of the ecosystem through Quartz Command Center.



The background of the slide features a digital theme. On the left, there are vertical columns of red and white binary digits (0s and 1s). On the right, a blue line graph with an upward-pointing arrow is visible. The word 'BLOCK' is partially visible in blue capital letters at the top right. The overall color palette is dominated by red, blue, and black.

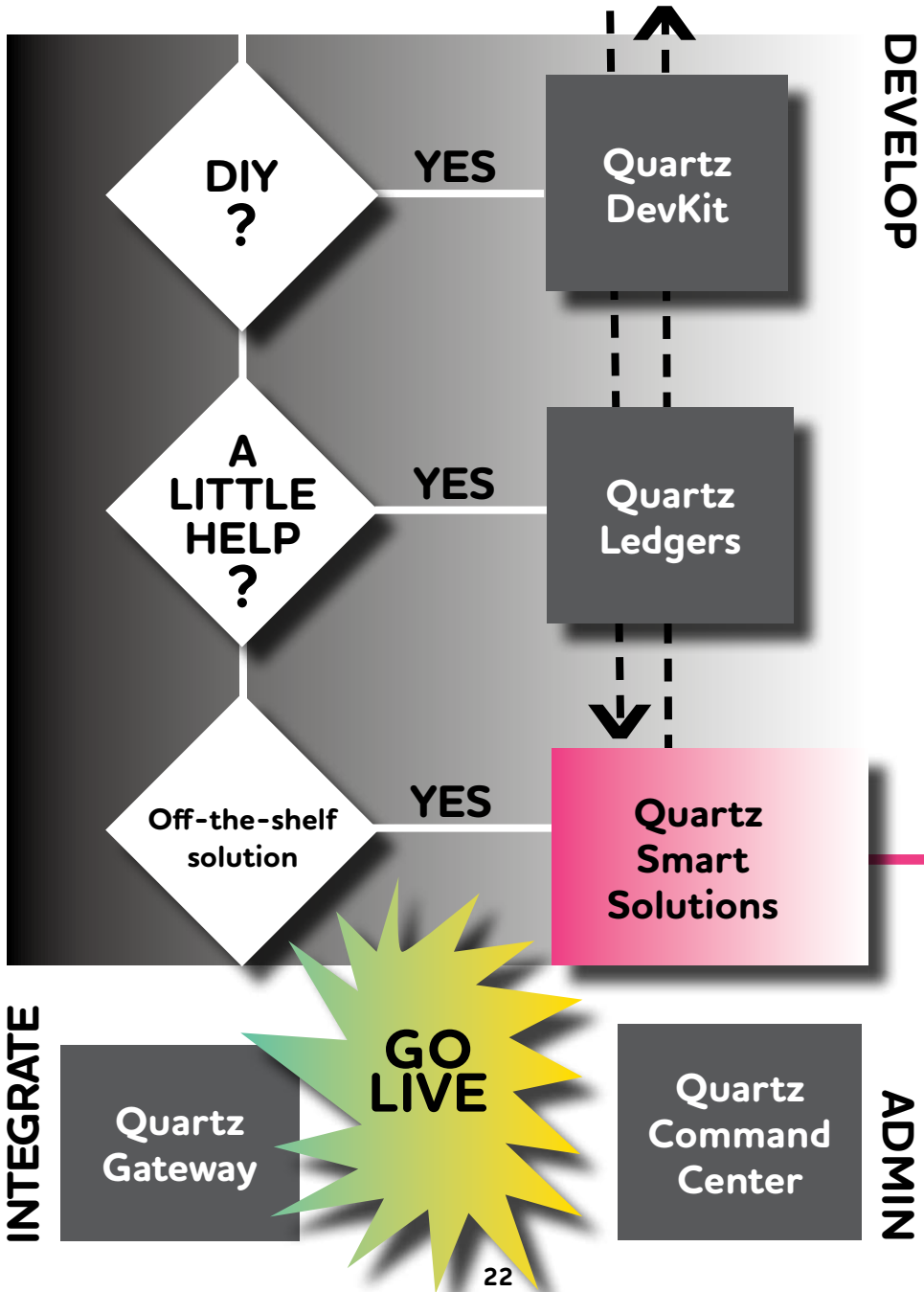
**“Tokenization democratizes access to assets by turning material as well as digital assets into tokens that can be traded at a fraction of the current cost. This represents an opportunity for MILs to launch innovative new services around tokenized assets, attract new classes of investors and drive growth.”**

**“Quartz for Markets is a robust, secure and future-proof solution that can support the end-to-end transaction life cycle and instant settlement for a wide range of tokenized assets, including NFTs, which are gaining in popularity and value. We have leveraged our contextual knowledge and extensive industry experience in capital markets to design a solution that seamlessly serves the needs of a broad spectrum of market players and accelerates their growth and transformation journeys.”**

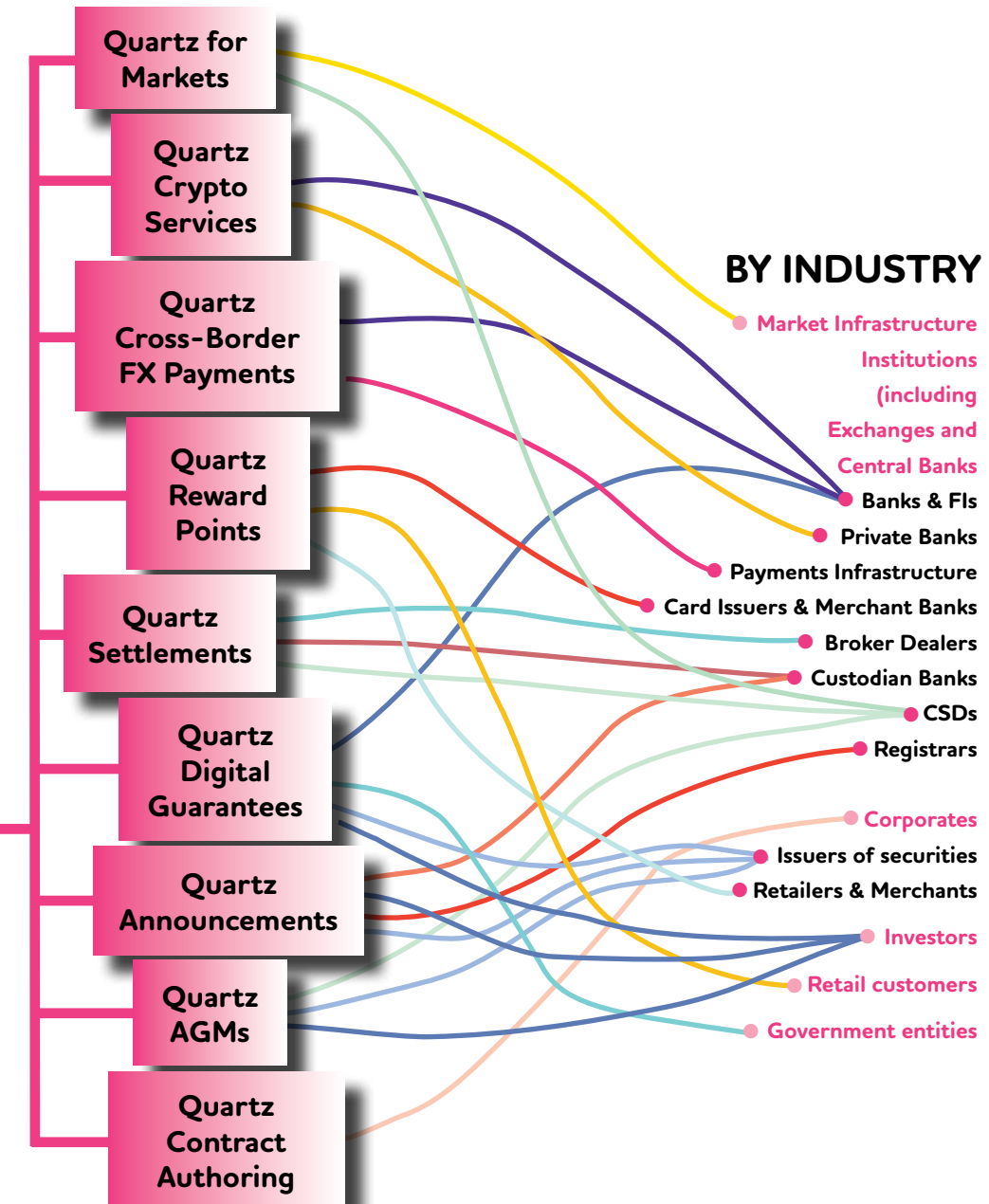
**—R Vivekanand,  
Head –TCS Financial Solutions  
Global Head – Quartz**

# QUARTZ™

START



# at a glance



# QUARTZ PARTNER PROGRAM



By Raghu Krishnamurthy,  
Head – Sales, Quartz

The singular technology of blockchain also has a unique manner of thriving on synergy and collaboration. That's why, at Quartz, we believe strongly in the power of alliances.

Quartz offers cross-industry blockchain solutions designed to help companies become more efficient, more transparent, and better prepared to deliver cutting-edge blockchain-based services to their customers.



The background of the page features a dark, textured surface with a pattern of binary code (0s and 1s) and a series of interlocking chain links, suggesting a connection between technology and traditional industry structures.

# Alliances put you in the fast lane from idea to deployment

The Quartz  
Partner Program  
invites technology  
providers, system  
integrators, cyber  
security firms, cloud  
providers, educational  
institutions, start-ups,  
industry consortia,  
and resellers to work  
directly with us. By  
doing so, you'll change  
the status quo by  
jointly positioning  
solutions to help  
customers adopt and  
use blockchain.

# Quartz Hub

Customers can access the combined power of our collaborative efforts through the Quartz Hub, a convenient resource for enterprises investing in blockchain, with offerings in several areas:

**Solution and Technology Partners** – Our roster of solution and technology partners in Quartz Hub already includes ROXE for global payments, Thales for secure encryption, signing and authentication services, and several other providers of blockchain platforms, vulnerability assessment, and crypto security.

**Thought leadership** – To ensure that our enterprise customers progress with best practices in blockchain, we have created tie-ins with leading industry consortia, messaging networks, and startups. Through active participation in online and in-person events, industry publications, and digital resources, we can best ensure that our collaborative product roadmap reflects the beliefs and expectations of market participants across industries.

**Implementation partners** – Given the global, cross-industry nature of blockchain and the scope and ambition of its visionaries, it's critical for enterprises to have local experts who can assist with in-market delivery and connectivity to local networks. That's the role of our implementation partners, who can provide last-mile resources in specific markets along with subject-matter expertise within specific industries.

**Universities** – We have entered into pro-bono partnerships and revenue sharing engagements with leading research universities, ensuring mutual benefit from higher levels of participation in blockchain ecosystems along with the cultivation of a higher-skilled workforce. We are also partnering with educational institutions on certifications and electives.

**Quartz Certification** – With blockchain adoption outpacing the availability of blockchain skills, we are applying our substantial workforce training expertise to gear up people for current and future competencies in blockchain. We have tailored certification courses to scale up the workforce ready to work on disruptive and innovative blockchain solutions. We offer beginner, intermediate, and advanced certifications in blockchain, including certification on Quartz DevKit, an intuitive, low-code, platform-agnostic development platform that enables developers without specialist training to develop distributed applications quickly and easily.



# Accelerated development using Quartz

For IT service providers and startup companies, the benefits of partnering with us through the Quartz Partner Program include:

- **Quicker time to market.** By developing applications using the Quartz DevKit while using any of our existing applications as a solution accelerator, startups can bring new solutions to market much faster than going it alone. For example, a startup launching a reward points solution can build upon the foundation that we've already created, extending it to fit specific use cases.
- **Focus on your strengths.** The Quartz Partner Network offers access to a growing network of solution and technology partners. That means rather than having to develop internal competencies or form partnerships to handle each and every aspect involved with launching a blockchain service business, you'll be able to focus entirely on your idea and how it will transform enterprises and industries.
- **Expanding the value proposition.** Your great idea combined with proven solutions in adjacent areas will result in synergistic value for the customer. By using pre-built Quartz solution accelerators, custom-built add-ons created with the low-code Quartz DevKit, or through integration with third-party solutions, you'll be able to go to market with a complete solution to solve real-world problems. For example, a rewards solution might capture the customer's interest, but when combined with a market-proven CRM system, it becomes a highly compelling offer that our channel partners will be able to license and sell.

For more information on how to join the Quartz Partner Program, contact: [tcs.quartz@tcs.com](mailto:tcs.quartz@tcs.com)

Visit <https://www.tcs.com/quartz>

# PARTNERS

# ROXE

## **Quartz™ customers to leverage Roxe's interoperable global payments ecosystem for faster asset transfer**

Roxe, a next-generation blockchain global payment network, will partner with Quartz to enable the seamless integration and onboarding of TCS' customers in the banking and financial services industry to add new payment corridors, instantaneously send and receive payments, and benefit from the network effects of Roxe's fast-growing ecosystem.

Quartz offers solutions that are tailor-made for banks and financial institutions such as KYC, settlements, payments, rewards management, and the end-to-end management of tokenized and crypto assets comprising issuance, wallet operations, trading and settlement. Roxe will facilitate Quartz (and TCS) customers with the flexibility to use and transfer fiat, Central Bank Digital Currencies (CBDCs), and cryptocurrencies globally. The integration of Roxe with Quartz will help accelerate the pace of digital enablement for banks, cross-border remittance companies, offering a vastly superior customer experience.

The Roxe payment network is compatible with the existing financial

system as the common infrastructure for frictionless value transfer across fragmented markets. Using a digital token model to conduct P2P transactions, it uses blockchain technology (the Roxe chain) for fast and reliable payments. It is designed to save financial institutions significant time by using blockchain technology to provide highly reliable, secure, real-time clearing and cross-border settlement of payments and remittances, including traditional and digital assets.

"The global payments landscape is continuously changing and is likely to see much higher adoption of Digital currencies particularly CBDCs. We also see this as potentially a more secure, inclusive form of Payments that can be transformative and purpose driven," said R Vivekanand, Head – TCS Financial Solutions and Global Head – Quartz. Our partnership with Roxe will help provide instant next generation payment solutions to our customers and help them integrate into future state ecosystems for domestic and cross border payments."

Roxe's technology allows member nodes to access a permission blockchain network

so they can settle in seconds instead of days. Unlike previous approaches that attempted to enable clearing and settlement via the use of one digital asset, Roxel member nodes can transfer and settle many different assets and asset

classes. The Roxel network is currently designed to support USD, several major fiat currencies, and fiat from select countries with large remittance markets such as Nigeria, Egypt, Turkey, India, Philippines, Mexico, and Brazil.





# PARTNERS

# THALES

## **Quartz Integrates with Thales to Safeguard Crypto Wallets and the Trading and Transfer of Digital Assets**

Quartz™ has successfully integrated its ledger management solutions with Thales to provide customers with best-in-class security for custody, trading and settlement transactions across a diverse range of crypto and digital assets.

While crypto and digital assets are fueling the creation of a tokenized



economy, secure custody of these assets continues to be an area of concern in the face of an explosion of digital threats and the risk of theft. Quartz leverages **Thales Luna Hardware Security Modules** that provide secure encryption, signing and authentication services to protect cryptographic keys against compromise.

Targeted at banks, brokers, custodians, marketplaces, and investors in a diverse range of digital assets, the enhanced Quartz will enable robust security, trust and governance and the end-to-end management of digital assets. With these fully automated and highly secure authentication services, wallet service providers, token and crypto exchanges and marketplaces can customize authentication to meet their unique needs. Quartz solutions leverage Thales' FIPS140-2 Level-3 certified HSMs to safeguard critical operations including address generation, encoding, and transaction signing in a secure device, delivering a multi layered governance model to ensure safety and resilience in digital asset transactions.

"We have been making continuous investments in our Quartz solutions to provide best-in-class, enterprise grade

security features to our clients. The enhanced solution will help fast-track our customers' journeys into the crypto/tokenized economy in a secure manner. Wallets store private keys that are used to digitally sign transactions, and their application goes beyond the trustless economy – for self-sovereign identity, enabling restricted access to private information including medical information, vaccination status, educational records among others," said R Vivekanand, Head – TCS Financial Solutions and Global Head – Quartz. "Our collaboration with Thales will offer purpose-driven solutions that can deliver the comfort of enterprise-class security and create compelling value for our customers."

Todd Moore, Vice President, Encryption Products, Thales, said, "**We are delighted with the successful integration of Thales with Quartz solutions, which will help organizations in extending their product portfolio to the exciting world of crypto and digital fungible and non-fungible assets. The integrated offering with Quartz enables trust by protecting keys that are the bedrock of digital tokens representing goods, financial assets and securities.**"



*TCS announces continued collaboration  
with prestigious global think-tank*

TCS is excited to continue its collaboration with the Blockchain Research Institute™ (BRI), the world's largest independent blockchain think-tank. As an early member of the BRI program, TCS has taken a leading role in the BRI community, helping the organization to drive blockchain research, education, innovation, and adoption across industries and around the world.

The BRI member community spans 90+ of the world's leading enterprises, governments, associations, and technology platforms. As a member of the BRI program, TCS receives access to a suite of program deliverables, including research projects, courses, webinars, events, and other exclusive activities.

“Tata Consultancy Services is a long-time friend and supporter of the Blockchain Research Institute and we're honored to keep the collaboration going.

As a member of the BRI program, Tata Consultancy Services will help guide our research program and strengthen our member network.”





**Blockchain Research Institute is an independent, global think-tank dedicated to inspiring and preparing private and public-sector leaders to lead blockchain transformation. Funded by a member community of 90+ companies, government agencies, and technology platforms, the BRI brings together some of the world's leading thinkers to undertake ground-breaking research on the strategic implications of blockchain technology, producing practical insights to help its members drive digital transformation across industries.**

“We see Blockchain as a foundational technology that can simplify business processes and transform industries.

Be it in the unlocking of value through the tokenization of real-world as well as virtual assets, the ability to guarantee provenance of luxury goods and commodities, or the seamless tracking of life-saving drugs, vaccine information, blockchain technology is transforming businesses and society.





TCS is focused on building purposeful associations with organizations operating in the Blockchain ecosystem and advising our customers.

R VIVEKANAND, Head – TCS Financial Solutions and Global Head – Quartz

## EVENTS

# THE NETWORK FORUM

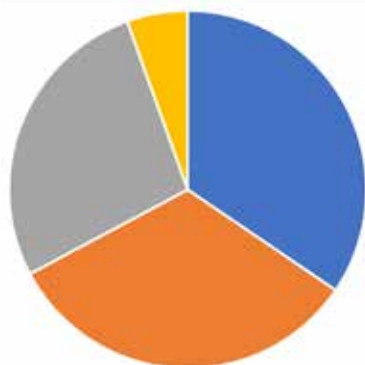
## Virtual Autumn Meeting

Quartz and TCS BaNCs were Event Partners at the Annual Meeting of The Network Forum (TNF), held virtually on 29 June to 1 July 2021.

R Vivekanand, Head – TCS Financial Solutions and Global Head – Quartz, joined fellow panelists from ESCDA, SIX, Euroclear, and Euronext to explore and delve deeper into the topic: “CSDs In Focus - Recent Lessons Learnt, Key Developments And 2022 Outlook.”

TNF featured key regulatory, technological, and strategic updates, primarily focused on regional custody, regional financial market infrastructures, digitalization, cyber security, digital assets and specific macro issues relevant in this environment.

### The Network Forum polled its membership on the topics of crypto-assets and tokenization.



#### What are the greatest risks when investing in crypto assets?

- 34.5% Volatility
- 32.7% Loss of assets
- 27.3% Adverse regulation
- 5.5% Other

See the rest of the survey, watch the recorded sessions, and much more:

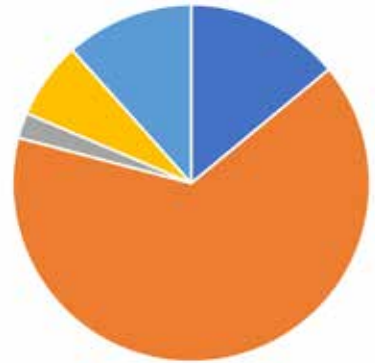
## What main purpose or benefit does securities tokenization bring?

- 7.0% Minimize need for reconciliation
- 30.2% “Democratize finance” – bring new/smaller investors to new/smaller issuers
- 18.6% Unlock client liquidity
- 30.2% Reduce non-STP risk & effort
- 14.0% Other



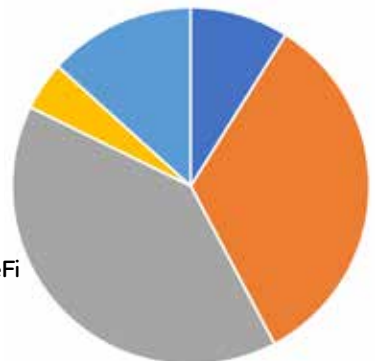
## What timeframe for broad adoption of securities tokenization in the wholesale space is your firm is planning against?

- 14.0% It’s already here!
- 65.1% In the next 1-5 years
- 2.3% In the next 6+ years
- 7.0% Only when CBDCs are widely used in the wholesale space
- 11.6% Other



## What evolution scenario for securities tokenization is your firm is planning against?

- 8.9% For non-traditional asset classes only (e.g. digital native firms’ issuance)
- 33.3% For non-traditional asset classes and some traditional assets (e.g. corporate debt)
- 40.0% For all asset classes
- 4.4% Will stay in the retail investor segment / DeFi
- 13.3% Other





# QuartzCast: The Essential Podcast for Blockchain and DLT in Business

## Season 1 episode guide

- Episode 1 - Moving from Pilots to Production in Blockchain
- Episode 2 - Moving Towards a Token Economy with Quartz
- Episode 3 - Key Learnings from the Quartz Enablement Center
- Episode 4 - Solutions for Creating Blockchain Ecosystems
- Episode 5 - A Vision for Cryptocurrencies and Tokenization
- Episode 6 - The Leading Industries for Blockchain Implementation
- Episode 7 - From Networks to Ecosystems

Listen to the latest episode: <https://on.tcs.com/3ARlqnW>

## Quartz™ Named a Leading Crypto Player in Transaction Banking and Payments by Celent

In an August 2021 report, “Mapping the Crypto Galaxy, Part 1: Transaction Banking and Payments,” Celent recognized Quartz™ as a leading crypto player in transaction banking and payments.

The report describes how traditional

banks, fintechs, and big tech companies are vying to build better transaction banking/payment rails. In an examination of 11 firms driving the new rails in retail and wholesale payments, Quartz has been included as a leading provider of software used to build blockchain networks and issue smart contracts/digital assets. The report highlights the availability of targeted solutions from Quartz that are enabling the production roll out of blockchain ecosystems for areas including cross border remittances, inter-bank borrowings, cross border settlements, and crypto services.

Quartz’ differentiators highlighted in the report include easy integration with existing tech and ecosystems as

# Blockchain Expo

Quartz was a Platinum Sponsor of Blockchain Expo Global 2021, held as a hybrid event in September 2021.



R Vivekanand, Head – TCS Financial Solutions and Global Head – Quartz, gave the keynote address:

## **“Expanding Blockchain into the Enterprise”**

### **Topics included:**

- Customers who have begun using blockchain for new business processes.
- Customers who are generating new revenues with tokenized assets, crypto trading and beyond.
- Rapid deployment of blockchain solutions in the enterprise in a meaningful, purpose-driven manner.

**Learn more: <https://bit.ly/quartz-blockchainexpo>**

well as new blockchain ecosystems, platform-agnostic architecture, and flexibility with support for both public and permissioned blockchain and cloud and on-premise deployments. The report also showcases Quartz Devkit's and Gateway's ability to enable agile deployment of solutions in 3-6 months with 40-50% productivity savings in blockchain programming.

“DLT, smart contracts, and digital assets are showing promise to align the performance of banking and payments systems with those of the digital economy. Based on Quartz's deployments in the remittances, intrabank transfers, and interbank payments, we find that Quartz merits

inclusion as a leading cryptonaut.

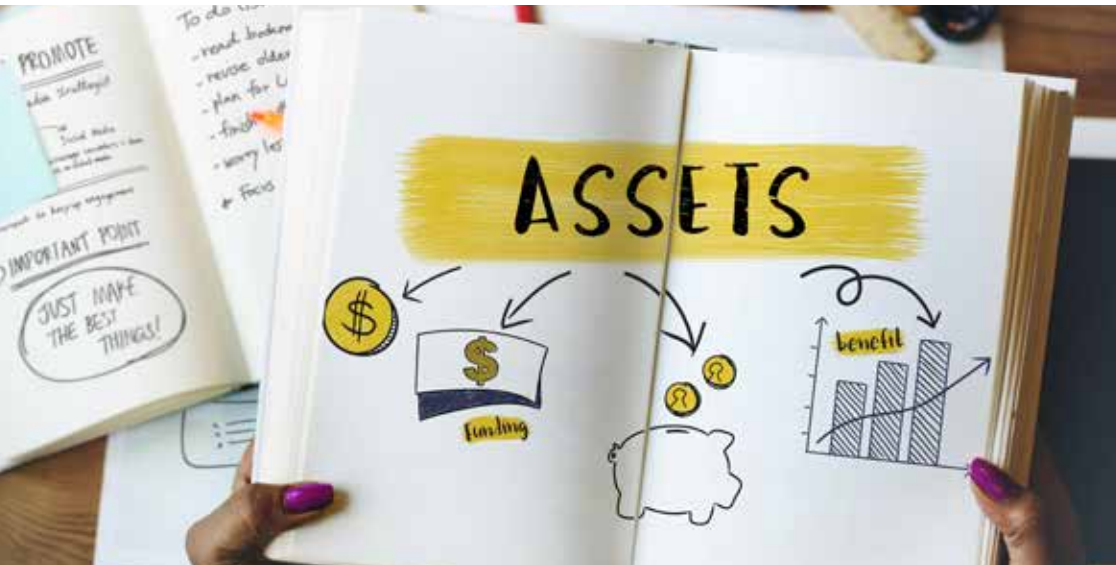
Celent selected cryptonauts based on their ability to readily move from experiment to implementation, deliver value, and scale.”

—Alenka Grealish, Senior Analyst, Celent

“This recognition as a leading crypto software provider is a testament to our successful approach towards designing and deploying DLT to build better banking, payments and settlement solutions, and helping customers achieve their purpose.”

—R Vivekanand,  
Head – TCS Financial Solutions  
and Global Head – Quartz





## Quartz™ for Markets

**Have your HNI customers demonstrated interest in investing in world-famous art or premium property in downtown New York or London?**

Innovation powered by blockchain has opened a new world of tokenized asset classes. This poses a challenge not only for asset managers, but also for the market infrastructure institutions (MIs) supporting them and their clients throughout the value chain.

**Quartz™ for Markets** offers end-to-end next generation services around tokenized securities to drive future growth for MIs, including exchanges, depositories, central banks, payment infrastructures, private banks, custodians and issuers.

It builds on TCS' position as the largest independent software provider to MIs, with its proven **TCS BaNCS for Market Infrastructure** and **Custody solutions** powering the operations of over **50 market-critical institutions across 66 countries**.

Reach out to us to know about how **Quartz for Markets**, complemented by TCS BaNCS for Market Infrastructure and Custody solutions can help you.

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