

2020 Number 2

the NEW AGE

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FROM THE EDITOR



We are pleased to share several exciting items in the second edition of the Quartz magazine.

We recently launched **Quartz Crypto Services**, a state of the art, end-to-end, integrated and secured crypto custody facilitator and transaction processing solution for banks and financial institutions. Quartz Crypto Services will enable banks and financial institutions to hold cryptocurrencies and digital assets on behalf of their customers, with integration into existing core banking solutions and full compliance with relevant regulations. (See page 16.)

Just one week after the launch of Quartz Crypto Services, we hosted our first Quartz Live event on “The New Age Crypto World,” featuring two Quartz clients – **Lloyd’s & Partners AG**, a Zurich-based consulting company setting up a crypto bank in Switzerland, and the **National Stock Exchange of India**, one of the top ten derivative exchanges in the world. We’ve condensed the contents of the panel discussion on page 4, and you can listen to the entire discussion on-demand.

UK-based startup **Zapaygo** will deploy the Wallets and Rewards solution from Quartz for its pre-order mobile ordering and payment platform for the entertainment, hospitality, and leisure industry. The next time you go to a sporting event, a concert, or a restaurant, the Quartz-powered Zapaygo App will let you skip the line. (See page 8.)



Beyond improving the experience for retail consumers, Quartz is also becoming an essential component in the functioning of the banking industry. One of the largest private sector multinational banks has deployed Quartz to manage and simplify the core operational aspects of securities borrowing and lending, a fundamental activity in global banking. (See page 12.)

We also feature highlights from some of our recent event presentations at **Blockchain Revolution Global** (page 22) and **Blockchain Expo** (page 23). Quartz customers have achieved success in real-world deployments across industries, moving beyond the pilot phase into production.

To make it easier than ever to move from pilot to production, Quartz is now available on **Microsoft Azure Blockchain Service** (see page 14).

Lastly, Quartz was a gold sponsor at the **Blockchain Expo - Europe Virtual**. For more information, visit: <https://blockchain-expo.com/europe>.

Happy Reading,
Anjana Srikanth
Editor, Quartz magazine
anjana.srikanth@tcs.com

**P.S. Stay tuned for Quartz Cast,
our podcast on blockchain for business.**



THE NEW AGE CRYPTO WORLD

Highlights from the first Quartz Live event, held in partnership with TechEx Digital on July 15, 2020. This article answers many audience questions from the event.

Listen to the audio:



**R Vivekanand,
Head -
TCS Financial
Solutions
Global Head -
QUARTZ**



The panel, moderated by R. Vivekanand, Head of TCS Financial Solutions and Global Head of Quartz, featured:

- Adrian C. Bürgi, Managing Partner, Lloyd's & Partners AG
- Lucas Landolt, Director Operations, Lloyd's & Partners AG
- Shiv Kumar Bhasin, Chief Technology and Operations Officer, National Stock Exchange of India

Discussion topics included cryptocurrencies, crypto trading, the role of traditional banks in decentralized finance, asset-backed coins and stable coins, tokenization, regulatory initiatives, and specific initiatives in India, Switzerland, Australia, and elsewhere around the world. The panelists also explored the specific uses of Quartz for banks and investment firms.

Investors in most countries are, in general, showing interest in holding crypto assets as part of their portfolio. These assets provide many benefits including portfolio diversification, lower transaction costs, flexibility, and better accessibility 24x7. Crypto assets will therefore become one more asset class along with traditional asset classes such as equities and debt instruments.

Tokenization of assets will require multiple aspects coming together: operations expertise, legal support, regulatory approval - and a robust IT platform to manage the entire life cycle of tokenized assets.

It is possible and necessary to bring together traditional/legacy and new age technologies. New technologies cannot thrive on islands. Quartz solutions are built on the principle of Coexistence, Integration and Interoperability.

THE NEW AGE CRYPTO WORLD

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Asset-backed coins and stable coins will prevail in the future.

We believe that technology will make compliance easier in the future.

We see public as well as private organizations leveraging fintech, including blockchain, for their needs.

Blockchain is already being explored extensively in India by multiple organizations. We are seeing huge interest from customers across various business domains.

Digital currency – a “Central Bank Digital Rupee,” or CBDR – is being explored by policymakers in India, given the focus towards moving towards a digital economy, and the value that digital currency can offer in terms of enabling instantaneous settlements, reduced handling of paper and coins, and increased transparency. Many banks already offer crypto transactions for their customers via third-party providers. However, in order to enable full conversion and to be able to use the virtual assets as collateral for loans, etc., banks must have their Virtual Assets Service Provider (VASP) service approved by their local regulator. They must therefore demonstrate that they comply with all the rules of local banking legislation and have the appropriate facilities, regulations and instructions, people with the appropriate know-how and, above all, adequate risk management.

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**Lucas
Landolt,
Director
Operations,
Lloyd's & Partners AG**



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At the end of the day, the community decides which systems will prevail. At the moment, there are so many concepts, ideas and offers on the market. Technology is secondary. Primarily, it is about a larger group of people joining together to form a community and formulating needs together, which can then be satisfied with a solution.

We live in a world where all cash flows for the legal purchase of goods and services are monitored with AML. Traditionally, banks have always been responsible for the transport and safekeeping of assets in the system. Whether gold, paper money or virtual currencies, what's the difference?

The future for digital assets will be black and white – legal for banks, and illegal for unregulated providers.

THE NEW AGE CRYPTO WORLD

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Banking IT systems are not designed to handle crypto or integrate blockchain solutions. Quartz is.

TCS is establishing Crypto- and Blockchain-ready IT systems in Swiss banks, and FINMA is currently approving such systems and processes, thus confirming compliance. This is a significant competitive advantage, differentiating TCS from all the other suppliers of IT solutions by proving that their solutions can function within a regulated environment.

Regulation has only three main tasks: to secure well-functioning financial markets, to protect the public, and to prevent money laundering and financing of terrorism. FINMA adopted what they refer to as a “technologically neutral” approach, clearly stating that it was not interested in the technologies used, as long as the bank could credibly demonstrate how it will comply.

**Adrian C. Bürgi,
Managing Partner,
Lloyd's & Partners AG**



In the very near future, you will not need a bank, as we define it today from the customer's perspective. No need for a building and a counter – it's all in your pocket. But all jurisdictions, to maintain a well-functioning financial industry and to protect the public, do regulate and supervise activities relevant in this field. Only regulated and supervised entities are allowed to offer and provide such activities, and such entities are called banks. You may, in the future, not need much of what defines banks from a client perspective today, but it is a robust estimation that regulators will keep regulating banking activities and allow only “banks” to provide them.

The technology can handle unlimited numbers of cryptocurrencies. In theory, there could be one cryptocurrency per human being, per corporation, even per asset. There is an unlimited number of cryptocurrencies possible, each having a very specific and unique function or value, and these may live next to each other without competing and displacing each other. TCS already has IT systems to consolidate all these different cryptocurrencies and functions into one client user interface.



ZAPAYGO

Quartz to power pre-order and pre-payment at food and beverage venues



UK-based startup Zapaygo will deploy the Wallets and Rewards solution from **Quartz: The Smart Ledgers** for its first-of-its-kind initiative, a pre-order mobile ordering and payment platform for the entertainment, hospitality, and leisure industry.

The Zapaygo App will allow consumers to pre-order and pay at food and beverage venues, enabling their orders to be ready for easy collection or delivery. This will improve customer experience while increasing revenue and efficiencies for venues. In addition, the venues can mitigate the spread of communicable diseases by eliminating the need for physical payments and long queues.

Quartz will help provide wallet services to Zapaygo's customers through tokens managed on the public blockchain and leverage a private permissioned network for rewards program management.

Zapaygo will also support reward programs, through which customers can easily collect, purchase, and redeem reward points from multiple merchants through a single secure wallet, managed using cryptographic keys.

Running on a private cloud through a managed services model, the Quartz Command Center will facilitate monitoring and administration of the entire ecosystem.



R Vivekanand, Head of TCS Financial Solutions and Global Head of Quartz said: “Targeted at multiple industry segments spanning travel & hospitality, e-commerce, telecom and financial services, the Quartz solution for wallets and rewards, can help organizations reimagine the way these programs are currently administered. The solution can be used to securely hold tokens in wallets and manage the end-to-end rewards management process, ushering in more efficiency, transparency, and ultimately a superior customer experience. Quartz has the potential to transform dormant loyalty points held in multiple end customer accounts into an easily redeemable token on a secure distributed ledger, and will foster trust and allegiance to brands. We are excited to be part of Zapaygo’s journey, and the innovative proposition they are bringing to the market.”

Elliot Hall, Founder CEO & Chairman, Zapaygo, said: “We were impressed by the start-up friendly aspect of Quartz and the solution’s technical capability to help us launch to aggressive timeframes and support our vision of geographical expansion. The objective is to support numerous merchant venues and redefine how they deliver services, and in the process increase customer loyalty. The solution from Quartz provides a hybrid network that allows our customers to pre-order goods and services from merchants utilizing the rewards on the private blockchain network and manage the Zap tokens on the public network simultaneously.”



ZAPAYGO

Wallets and Rewards

The **Wallets** solution from **Quartz: The Smart Ledgers** provides a secure way to create and operate accounts in the public blockchain and to maintain the custody of digital assets for customers using a Hardware Security Model (HSM) to store the private keys and operate wallets on behalf of customers.

The **Rewards** solution ensures real-time settlement, fungibility of points, and greater transparency for merchants and customers, enabling creation of an ecosystem that connects multiple customer loyalty programs. Organizations can configure Quartz to convert existing rewards points systems to digital wallets on a blockchain ecosystem. By using smart contracts, rewards



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programs can instantly handle the accrual and redemption of funds and rewards and convert funds to equivalent points across multiple issuers.

Both solutions provide an audit trail that delivers a complete history of transactions, while allowing access only to authorized participants to maintain customer confidentiality.

Cloud delivery of **Quartz Rewards** means that companies seeking innovative blockchain solutions can now connect and use a readily available and secure hosted offering, without having to develop their own blockchain-based solution or invest in expensive in-house computing resources.



REDEFINING INTERBANK BORROWING

Interbank borrowing and lending are essential activities in the capital markets. Borrowed funds represent a critical source of funding for banks, and a healthy interbank money market enables participants to manage interest rate, currency, and credit risks.

Yet this fundamental banking activity typically involves significant manual processing by borrowers and lenders alike. Given the high asset values involved, it's certainly important to have human oversight of these critical transactions. Yet that's no reason to forego automation and operational efficiency. In fact, a high reliance on manual processes often impacts the core business with delays in deal finalization timelines.

To improve the situation for the entire marketplace, one of the largest private sector multinational banks in India is implementing **Quartz: The Smart Ledgers**.

With its unique combination of off-chain and on-chain services, Quartz will seamlessly integrate into the existing systems of the bank to enable DLT to manage and simplify the core operational aspects of securities borrowing and lending.

By **Malini Raman**,
Product Head, Quartz
Blockchain Solutions,
Tata Consultancy
Services and
Ganesh Jayapalan,
Business Consultant,
Quartz Blockchain
Solutions, Tata
Consultancy Services



- Identifying collateral assets
- Tracking repayment
- Bidding and negotiating on loan prices
- Asset sharing
- Maintaining payment schedules
- Compliance approvals
- Lender query resolutions

The solution will provide participants a real-time view of assets, deal status, and repayment schedules.

Using the decentralized architecture of **Quartz** banks will be able to securely negotiate deals with multiple counterparties simultaneously, ensuring faster deal closure than the legacy point-to-point messaging approach.

By automating and redefining the entire lifecycle of interbank borrowing and lending, **Quartz** will pave the way for onboarding of additional banks into the ecosystem, leading to business expansion, improved liquidity, and greater transparency.

Quartz Now Available on **MICROSOFT AZURE**



Award-winning Smart Ledgers Suite Adds Cloud Benefits of Flexibility, Scalability and Efficiency

TCS' award-winning Quartz™ suite of blockchain based solutions is now available on Microsoft Azure Blockchain Service.

The Quartz suite of products helps organizations set up truly connected ecosystems delivering real-time, efficient transaction-processing based on a single source of truth on the ledger, hosted on a secure cloud. It comprises Smart Solutions, a ready-to-use set of verticalized business offerings for different industries using distributed ledger technology; the Quartz DevKit, a low code smart contract development kit to enable programming of high quality code on multiple blockchain platforms; the Quartz Gateway for the integration of existing solutions with varied ecosystems; and the Quartz Command Center that can administer and monitor entire ecosystems.

TCS has already signed up customers for Quartz on Azure and expects greater demand for its ready-to-use solutions off the Azure platform. The general availability of Quartz on Azure brings together the transformative power of business-ready, innovative, cloud-based blockchain solutions, with the scalability, security, availability and cost-efficiency of a trusted global public cloud platform. This is also expected to help customers significantly reduce their overall time to market and build competitive differentiation in a post-pandemic world.

“With Quartz, enterprises across industries like financial services, e-governance, utilities, travel and hospitality, telecom and aviation, can readily harness the power of blockchain technology to connect with larger ecosystems and evolve augmented multi-industry offerings aligned to a purpose-driven strategy, a key aspect driving blockchain adoption,” said **R Vivekanand, Head of TCS Financial Solutions and Global Head of Quartz**. “Quartz on Azure adds all the benefits of a best-in-class public cloud to an already compelling value proposition and makes distributed ledger technology readily accessible to the user.”

Matthew Kerner, General Manager, Azure Blockchain at Microsoft Corp., said:

“We are pleased to have **Quartz, The Smart Ledgers** solution, take advantage of **Microsoft Azure Blockchain Service**. The solution is targeted at enterprises seeking to harness the potential of blockchain, while benefiting from the scalability and elasticity offered by the cloud.”



QUARTZ CRYPTO SERVICES

Powering the New Age Crypto World

Cryptocurrencies and other digital assets have seen exponential growth as alternative assets in investors' portfolios. Yet the growth of cryptocurrencies as an asset class will be severely constrained without public trust in the robustness of safety and security of the infrastructure. Most investors are still apprehensive about having to depend on third-party wallet providers for private key storage, on relatively unknown crypto exchanges for transaction security, and on highly complex processes for integrating cryptocurrencies with mainstream financial holdings.

Banks and regulators have taken notice of both the excitement and the concerns over cryptocurrencies. Around the world, regulators are starting to show support for financial industry involvement in cryptocurrencies, which makes the



By **Malini Raman**,
Product Head, Quartz
Blockchain Solutions, Tata
Consultancy Services
and **Namitha KP**, Product
Specialist, Quartz
Blockchain Solutions, Tata
Consultancy Services



situation highly conducive for banks and financial institutions to facilitate Crypto Asset Management on behalf of mainstream customers.

Building a robust offering for crypto/digital asset management and trading services will require financial institutions to overcome the technical challenges involved with integrating multiple public blockchains into existing core banking platforms.

In response to this pressing industry need, Quartz has developed a robust, flexible and functionally rich foundation to manage crypto assets.

Quartz Crypto Services is a state of the art, end-to-end, integrated and secured crypto custody facilitator and transaction processing solution for banks and financial institutions.



QUARTZ CRYPTO SERVICES

Features

- Streamline crypto asset transfer with seamless integration into multiple public blockchains, including Bitcoin, Ethereum, Ripple, Bitcoin Cash, and others.
- Connect to multiple crypto exchanges and OTC Desks to enable buying and selling of crypto assets at the best rate available in the market.
- Enable customers to trade and transfer crypto assets through existing channels, with simple integration of Quartz Crypto Services to core banking systems.
- Guarantee a secure environment for risk-free transactions using enterprise-grade, tamper-proof, FIPS-certified HSM with multi-signature authorization.
- Conform to evolving crypto regulations with Crypto Forensics that prevent illicit crypto transactions.
- Easily deploy as a Cloud Native service or as an on-premise application.



Benefits

- 1. It's the most comprehensive solution.** Quartz Crypto Services spans the full lifecycle of ownership in digital assets, with coverage of Trading, Transaction Management, and Custody for Cryptocurrencies and Crypto Assets.
- 2. It's the safest solution.** Quartz Crypto Services delivers enhanced security that guarantees secured transactions using multi-signature authorization, with monitoring and detection of spurious incoming transactions, drawing upon unmatched knowledge of the global financial services industry.
- 3. It's the simplest solution.** Quartz Crypto Services uses simple and lightweight APIs to interfaces with leading custodians, existing core banking platforms, and standard liquidity providers, Exchanges and OTC Desks for crypto assets.

Quartz Crypto Services enables banks not only to participate in the New Age Crypto World, but to accelerate adoption to new levels.

THOUGHT LEADERSHIP

**TATA
CONSULTANCY
SERVICES**



Blockchain - Foundational
technology for 2021 & beyond



**blockchain
revolution
global**



During Global Blockchain Week, held October 26-30, 2020, Blockchain Revolution Global brought together executives from the world's leading enterprises alongside foremost leaders, thinkers, and practitioners in blockchain. Co-hosted by the Blockchain Research Institute, a global independent blockchain think-tank, and MCI Group, the world's largest event management company, BRG educates, inspires, and prepares leaders to be part of the revolutionary transformation that blockchain technology is bringing to business, government, and society.

TCS was a presenting partner at Blockchain Revolution Global, and the Quartz team gave a presentation: "The Token Economy"

Presenters:

- R. Vivekanand - Head of TCS Financial Solutions and Global Head of Quartz
- Malini Raman - Product Head, Quartz Blockchain Solutions, Tata Consultancy Services
- Ganesh Jayapalan - Business Consultant, Quartz Blockchain Solutions, Tata Consultancy Services
- Namitha KP - Product Specialist, Quartz Blockchain Solutions, Tata Consultancy Services

<https://blockchainrevolutionglobal.com/>

Which industry segments do you feel are leading the drive to implementing Blockchain?



BLOCKCHAIN
EXPO VIRTUAL 2020

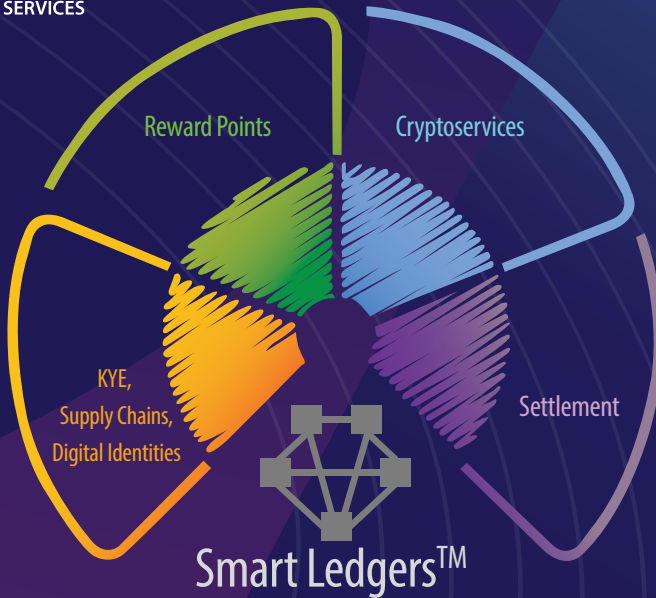
At the Blockchain Expo Virtual 2020 in September, R Vivekanand gave a presentation titled: **“The bumpy ride to blockchain adoption – Setting up a blockchain pilot”**

In his presentation, Vivek shares insights on what it takes to move into production. He describes how organizations have succeeded in blockchain deployments by focusing on solving specific business challenges that can demonstrate a strong business case. He also discusses the topics of industry consortia, public awareness, regulatory clarity, and integration with legacy systems.

Watch the video: <https://on.tcs.com/3lviz8C>
<https://www.blockchain-expo.com/virtual/>

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We don't just think blockchain.

We think agent of change in decentralized technology.

Where every participant, be it within an organization or a larger ecosystem, can play a significant role in creating a reimagined smarter business process.

Quartz, The Smart Ledgers™, are a set of enterprise DLT solutions predicated on co-existence, integration, and interoperability.

A startup incubated in TCS, Quartz set out to deliver the network effect of ecosystems communicating with each other seamlessly. Our ready-to-use business offering, **Quartz Smart Solutions**, can jump-start organizations looking at implementing applications on distributed ledger technology. Offering interoperable decentralized solutions, the **Quartz Gateway** helps move data from one blockchain ecosystem to another just like any messaging system. More importantly, it makes sure that the integrity of a blockchain system remains intact, something that most enterprise players have been looking to achieve. We also help our clients build their own solutions on blockchain platforms combining our Smart solutions as per their choice, using the **Quartz DevKit**, which is an intuitive, low-code solution.

In short, we are way past the hype around blockchain and have moved beyond promise to production, helping our customers show real, meaningful results, and drive change.

Write to us at quartz.tcs@tcs.com for a demo.