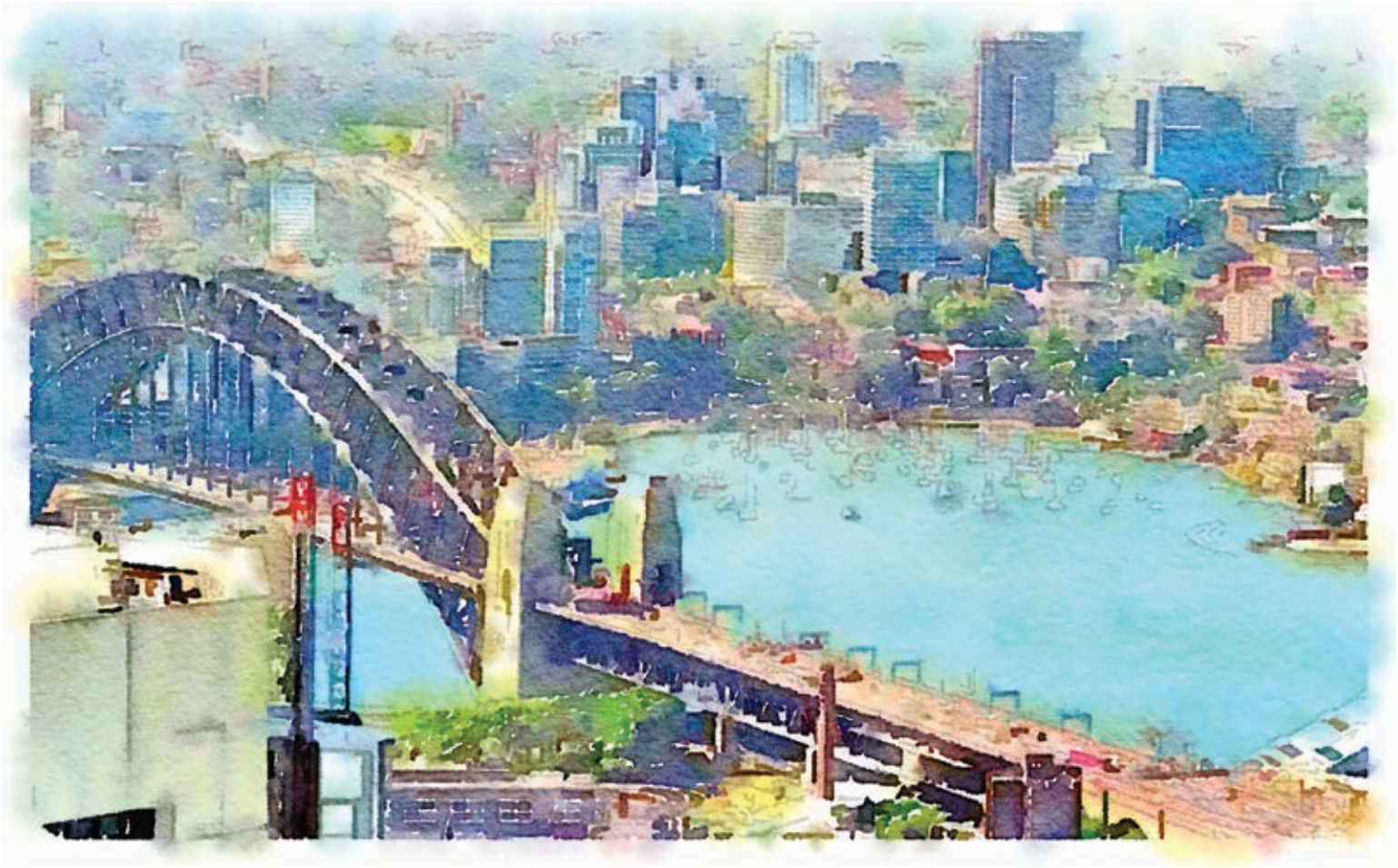
tcs 50
Experience energy

TATA CONSULTANCY SERVICES

TCS BαNCS RESEARCH JOURNAL



The Journal is also available at https://joom.ag/PgYa

ISSUE 13

TCS BaNCS

BNP Paribas Securities set out to consolidate custody operations. They found a certain way.

BNP Paribas Securities Services (BNP Paribas) is the leading European provider of securities services for fund managers, financial institutions and businesses. To keep pace with the ever-changing sector, BNP Paribas required real-time information in corporate actions. It needed a solution that would facilitate the management of all kinds of corporate events and also automate reporting of these events. Tata Consultancy Services (TCS) implemented the Corporate Actions solution from TCS BaNCS, an integrated product suite for financial services, to consolidate the global and local custody operations onto a single IT platform. As one of the world's fastest growing technology and business solution providers, TCS enabled a high degree of standardization to upgrade business processes to support higher volumes, and facilitate the processing of 150,000 corporate action events in a year, thus pushing up STP alongside accurate client reporting and scaling up of their business.

TATA

IT Services
Business Solutions
Consulting

TATA CONSULTANCY SERVICES
Experience certainty.

BNP PARIBAS
The bank for a changing world

FOREWORD

Businesses today--and FIs are no exception--are constantly engaged in a competitive battle over the turf called "customer experience". With some level of entry of Big Techs as well as other disruptors into traditional financial services and the Millennials set to become financially independent, this has the potential to become a winner-take-all contest.

In this backdrop, there is understandably constant pressure on business and technology leaders to come up with the next most innovative idea, and do the next "cool thing". While a handful of financial institutions have been able to keep pace, a vast majority still don't have a well thought through game plan.

On the one hand there is the pressure of doing something quick and innovative and, on the other, they are having to deal with decades of accumulated legacy in terms of infrastructure, architectures and platforms, which have been often stitched together into a complex patchwork. Such legacy frameworks don't give the needed agility and openness to be able to innovate and the underlying data is so fragmented that getting meaningful insights becomes nearly an impossible task.

Any fundamental reset of digital capability, delivering a world-class experience and importantly gaining and sustaining a capability to constantly innovate, will need a three-pronged approach to be thought through and put together in a sustained manner.

At the foundation is a modern, digital core platform which is functionally cohesive, open and connected and lends itself to rapid change as well as is easy to integrate.

The second layer is the organization's operating model. Baking in agile processes and embracing "change" with an "agile" mindset is important. Another consideration here is the leverage of Cloud based operating models, which releases organizational capacity to focus on delivering innovation, apart from moving to a more elastic, linear cost curve.

The third element is all about "extending the enterprise", i.e., the "outside in" and "inside out" capability. This encompasses customer/ end consumer reach, integration into value chains beyond the organizational boundary, integrating business partners and participating in larger ecosystems whereby an overarching value proposition can be constructed.

We see organizations attempting to improve the third layer without adequate focus on the former two and often times run into walls of resistance. But many of our customers are in some manner on a journey along these three planes. There is always a trade off on how much to invest in each and how to construct the ROI proposition at each level. The players who get the combination right will perhaps be the winners in the challenge thrown up by digital disruption.

At TCS BaNCS, our product investments in evolving a digital core foundation are aimed at giving our customers a best-in-class business capability, which can also be delivered either natively or via microservices and APIs. We see increasing adoption of cloud and other platform-based consumption models among our client base and expect this trend to continue. Enriching end client/end user experience by adopting cognitive technologies, delivering actionable insights leveraging resident data, and allowing integration into larger ecosystems leveraging DLT are the other areas where we are investing heavily.

In this journal, we present some of this world view and the underlying thinking that is shaping our offerings, which we believe will be of relevance to you. Hope you enjoy reading the journal.

Venkateshwaran Srinivasan
Head, TCS Financial Solutions (TCS BaNCS)

Howrah Bridge of Kolkata, City in West Bengal

VIEWPOINT

Apps to Marketplaces

Building Bridges for the Digital, Shared and Connected Economy

What can Apple teach us about the emerging landscape in financial services? Apple's App Store has more than 2.5 Million native third-party apps today. These digital Lego blocks, often connected to one another, are there for us to self-serve, discover, use and expand upon. As more blocks are added, Apple's ecosystem of users grows, offering more value and faster business outcomes. The success of the App Store is the convenience it affords. Be it for our health needs or managing our time, or cooking a meal, there's an app for that. Enabling this ecosystem is the even larger one of web APIs that have allowed Apple to move onto newer horizons and extend its reach to other apps, wearables, and so on. Remember the iPhone before the App Store? It is today clear that the hardware was the addictive teaser to what was to come.

In short, the iOS is as an anchor for innovation, an operating system for an all pervasive digital ecosystem. The financial services industry is at the cusp of something similar today. And, so are we at TCS BaNCS. We see TCS BaNCS as the Digital Core 'Operating system' around which we will enable an entire range of options for our customers.

The fintech experience is all about cutting edge technology, innovative customer journey mapping, value for money, and clean and simpler customer experiences. Their focus on underserved niches has aided their unique positioning in value chains. On the other hand, the rise of open and interconnected banking is giving them direct conversation lines with end clients, even as banks are beginning to explore new revenue models and morphing into integrators or aggregators of value chains.

In a world driven by the end customer's power of choice and demand for seamless interoperability, TCS BaNCS is rightly positioned to offer banks and financial services firms the power of creating and leveraging the emerging innovative world, fostering a culture of self-service and collaboration. The power of a system today flows from how it enables reusable, externalizable APIs. This applies to all industries and players, be it Apple or Amazon. TCS BaNCS is treading a similar path. We have our Digital innovation labs, and the TCS COIN or Co-Innovation Network that has more than 2,000 partners and startups in its umbrella, which gives us access to a phenomenal range of innovation. We are taking this innovation created by our partners, at our labs, and from fintechs and integrating it with our products.

Many of our customers are convinced about this approach and have expressed interest in leveraging this marketplace. We will distribute partner products to our clients, or our products via third-party platforms as long as we are creating value. By becoming a provider and consumer of APIs, we will help our clients leverage the combined power of fintechs, aggregators and integrators.

In many ways, we see TCS BaNCS as akin to a 'Financial Operating System' enabling a marketplace of options that extend the enterprise, leaving the choice with our customers.

R Vivekanand
Vice-President and Co-Head,
TCS Financial Solutions - TCS BaNCS

Sydney harbor, boats, ferries and bridge background at dusk

EDITOR'S NOTE

The Business 4.0™ world necessitates that organizations reach beyond the borders of their own organizations, embrace risk, reach out and participate in ever-widening value chains. The sharing economy, a manifestation of this imperative and what began with taxis and hotel rooms a few years back, has now embedded itself deeply in the financial services realm. Decentralized ownership of assets, peer-to-peer interactions, disintermediation at scale, partnerships aided by disruptive technologies are revolutionizing the industry today.

While all of this was happening, our solution experts in TCS BaNCS have been busy, too. In developing the capabilities that help our customers derive more intelligence about their customers' needs while also laying the foundation and building bridges to connect to new and extended ecosystems.

This edition of the TCS BaNCS Research Journal is focused on these very same capabilities, demonstrating some of our thinking around all of this. The authors and contributors to this edition traverse a wide range of topics.

The importance of securing our digital identities with a blockchain based solution that can make for decentralized, simpler management and the use of AI to connect unconnected risk patterns in meaningful ways are some examples.

No treatise on financial services trends today is complete without mentioning the cloud. Our authors describe how the cloud is enabling larger ecosystems and providing access to new technologies, acting as a foundation for innovation.

The regulatory side of things is not far behind. We talk about a co-existence approach to ISO 20022, something that is being recommended by SWIFT too, to facilitate easier adoption.

Digital customer engagement has been on all our minds for a while now. How best to bring this on than to talk of digital account opening, which in many ways is considered to be the Promised Land where customer loyalty begins and grows.

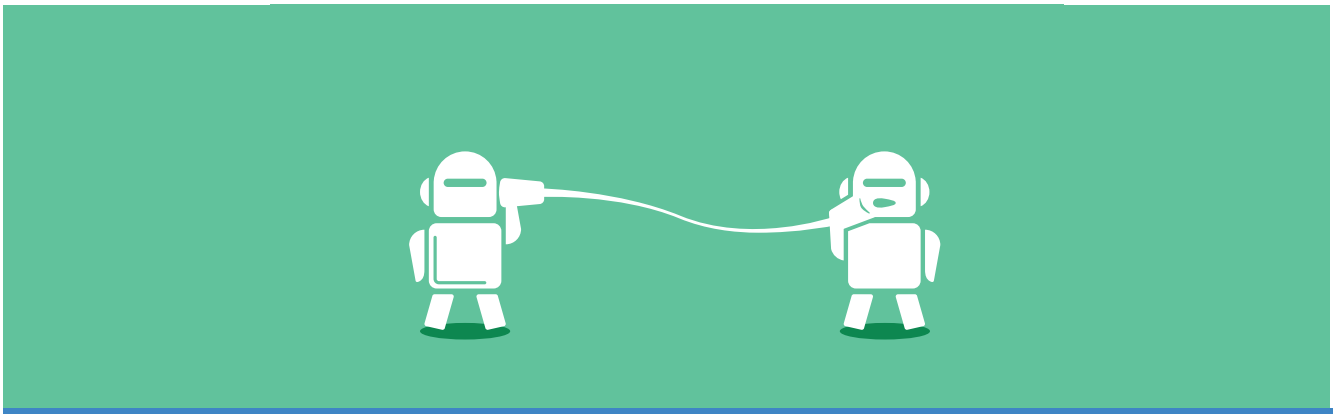
What we have presented in the Journal is a compendium of viewpoints serving as a bridge between academic theories and industry best practices. The intent is to enrich our readers' understanding of financial services trends and technologies, through the TCS BaNCS way.

Happy Reading.

Anjana Srikanth
Head - Marketing,
Communications and Research
TCS Financial Solutions (TCS BaNCS)

CONTENTS

RESEARCH JOURNAL



IMPACT OF BLOCKCHAIN ON DIGITAL IDENTITY

BUILDING TRUST IN THE CYBERWORLD

Background

The fourth industrial revolution or Industry 4.0 has the world gearing up for intelligent and autonomous systems driven by data and Machine Learning. As technology becomes more intertwined with cyber-physical systems, data privacy and digital identity in the cyber world has gained paramount importance. In this digital age, when consumers are increasingly embracing the Internet to perform online transactions—both for buying goods and services as well for banking—and across multiple devices, the concept of "Digital Identity" comes to the forefront. The International Telecommunications Union defines Digital Identity as "a digital representation of the information known about a specific individual, group or organization". Digital identity consists of all of the individual's personal data that is available online. It can be all encompassing — not just an e-mail or physical address, but also pictures, bank account information,

Figure 1: Mounting Menace of Identity Theft

shopping preferences and also physical identity information. This identity is not uniform, and can vary across platforms like banking systems, telecom and social media platforms, including Facebook and LinkedIn, among others.

Digital identity is a convergence of offline and online identities, where the latter refer to those stored or used by computer systems and embedded software (IoT). A digital identity can be assigned to an individual, a legal entity or companies and even assets.

Across the world, many organizations and nations have rung alarm bells on identity theft and are reiterating the importance of protecting "digital identity".

The objective of this paper is to discuss the importance of digital identity, as well as to explore how blockchain can help protect this sensitive information.

Why is Digital Identity important?

A crucial aspect of online financial transactions, Digital Identity ensures accuracy while expediting

Figure 2: Why Digital Identity Matters

DIGITAL IDENTITY MANAGEMENT AIMS TO STANDARDIZE AND STREAMLINE CITIZEN SERVICES PROVIDED BY NATIONS. HENCE, A STRONG DIGITAL IDENTITY PLATFORM CAN HELP DELIVER MULTIPLE SERVICES, TOUCHING OUR LIVES IN VARIOUS WAYS

BLOCKCHAIN SOLUTIONS ARE INCREASINGLY BEING EXPLORED, GIVEN THEIR INHERENT CHARACTERISTICS OF ENGENDERING TRUST AND TRANSPARENCY AND USER CONTROL ALL KEY FACTORS FOR DIGITAL IDENTITY MANAGEMENT

the customer on-boarding process and preventing Anti Money Laundering (AML) and fraudulent activities. Digital identity Management aims to standardize and streamline citizen services provided by nations. Hence, a strong digital identity platform can help deliver multiple services, touching our lives in various ways as depicted in the graphic (Figure 2).

An important area where digital identity is being leveraged to truly bring about social transformation and economic upliftment of communities is in the delivery of citizen welfare measures and some examples include:

- The National Digital Identity (NDI) system, a part of the Smart Nation initiative in Singapore, which when completed is expected to help citizens with access to e-government services more securely.
- In India, more than 1 billion Indians today have an Aadhaar ID, a digital identity that is getting linked to all the social schemes and has transformed the way subsidies are being paid out to economically weaker sections of society.
- Smart cards were issued as early as 2014 in Nigeria, enhancing security and public services in the country.
- Kenya followed suit with a digital ID that has also reduced social crimes.

The responsible use of digital identity is not only about authentication, but also its capture in a tamper-proof form that can be securely transmitted and used by multiple systems on a need basis.

Regulatory Angle to Identity Protection

General Data Protection Regulation (GDPR), an EU wide mandate that went operational on May 25, 2018, aims to strengthen protection measures impacting EU citizens' personal data and privacy, and lays down rules covering aspects such as processing of and restricting the free movement of personal data. It also addresses considerations related to export of personal data outside the EU. A whole set of data subject rights including the "Right to be forgotten" are in the gamut of this regulation. Needless to say, any breach of data privacy will be treated severely with large penalties. Data authentication, encryption and pseudonymization are all part of its ramparts, thus reiterating the importance of protection of Identity information.

Similarly in the USA, the California Consumer Privacy Act, A.B. 375 provides residents with equivalent provisions for data privacy and identity protection.

In South Africa, the Protection of Personal Information Act (PoPI), covers the data protection rights of subjects and puts forth conditions for its usage once collected from customers. It also impacts the technical, process and operational aspects related to access of personal data and identity information.

Data privacy and the need for digital identity protection is therefore resonating with law makers in multiple continents.

Digital Identity Management – Leveraging the power of blockchain

Starting from plain vanilla guidelines of security such as using a complex password to deploying cutting-edge technologies such as Biometrics, Machine Learning and Robotic Process Automation, multiple methods are being evaluated for digital identity protection.

Effective though they are, when applied on a Centralized Digital Identity Management system, these solutions prove costly and sometimes not as effective. One of the main drawbacks of such a centralized system is that the control of data remains with one entity. Tampering with and the loss of data is easy, with identification taking time. Estimates peg identification of data breaches to seven months. And, this is where blockchain solutions are increasingly being explored, given their inherent characteristics of engendering trust and transparency and user control, all key factors for digital identity management. The 5 pillars of a blockchain based solution for digital identity are:

- Trust - In blockchain-based systems, the metadata used for communications is maintained in the distributed ledger. The authenticity of the data is verified through multiple nodes, through a consensus mechanism. This decentralization is useful in the context of Digital Identities, especially when National Identifiers are used across multiple agencies.
- Security – Blockchain technology has been designed to maintain data in an encrypted and immutable manner, and secured through cryptography, thereby, keeping the ID protected and traceable. Moreover, blockchain based systems removes the vulnerability associated with password protection.

- Integrity - The advantage of this kind of identity system over traditional ones is the ability to maintain each identity across all the nodes in the network. Though the data is distributed across peer-to-peer networks, it is continuously reconciled and kept up to date. Also, the blockchain network does not have a single point of failure, making it difficult for hackers to break the integrity of the data set.
- Simplicity - A blockchain framework simplifies the process for each stakeholder involved:
  - *Identity issuers:* Automation of the issuance of digital identity – reduces time and manual interventions.
  - *Identity verifiers:* Customer onboarding and data verification is simpler and cost effective.
  - *Identity Owners:* Blockchain moves away from centralized data management, giving users control over their identity. It is also possible for users to create their own identity data for social media/payment transactions. This is referred to as a "Self-Sovereign Digital Identity".
- Privacy - Regulators across the world are clamoring for privacy of citizen's personal and sensitive information. Blockchain encryption combined with the digital signature ensures "Privacy by Design" through pseudonymization. Affixing the digital signature to all transactions carried out by the user makes it foolproof as well.

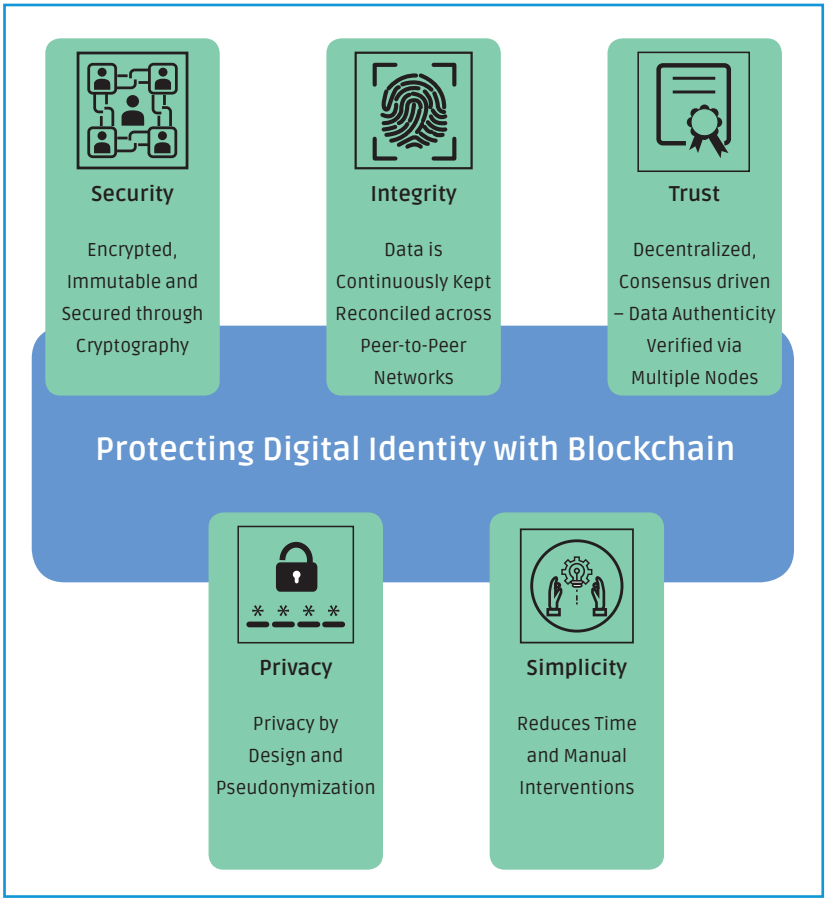


Figure 3: Five Pillars of a Blockchain Based Digital Identity System

Permissioned blockchain systems where government organizations maintain digital identities seamlessly are emerging as the platform of choice across countries. A few real life examples of how blockchain technology is being used for Digital Identity Management are:

- Since 2012, blockchain has been used in Estonia to maintain national data and services both in the public and private sector. Estonia maintains the multi-purpose digital ID card on blockchain and makes sure that every change in data is immediately detected based on audit trails left by the "digital defense dust" that covers it.
- The city of Zug in Switzerland is exploring a self-sovereign government issued identity on Ethereum, enabling access to a suite of e-government services in a convenient and secure manner. This eliminates the need of a user id/password to access government services.
- "ID2020" is a global alliance across governments, public, private and non-government organizations to accelerate the process of assigning digital identity to those who are 'invisible' to the society. To address this goal, blockchain-based solutions and interoperability across multiple

geographies and the reuse/ integration/connectivity for existing frameworks is being worked out.

- A digital identity network being built on the Hyperledger fabric in Canada will facilitate citizens to privately maintain their digital identity credentials, and to only share information as needed to service providers based on the access to the service that they apply for.
- BanQu is a proprietary platform that captures a "Self-Sovereign digital identity", allowing farmers to set up a unique digital profile and then help them connect with peers, aid organizations, governments, banks, and payment companies to help accumulate data from a variety of personal and financial transactions. The objective is to connect needy farmers with the global financial economy. This initiative has had early success in Asia.

The Road Ahead

Digital identity is associated with the socio-economic wellbeing of citizens, and slowly becoming essential to them getting the right to vote, open a bank account, and gain access to healthcare and education. A World Economic Forum published report in 2016 titled "A Blueprint for Digital Identity", outlining the need for the creation of digital identity systems and associated benefits for stakeholders, also reiterates why blockchain is best suited for digital identity systems.

Having said this, it is also important to note that blockchain cannot be viewed as the panacea for digital identity issues. It does provide the framework and accompanying benefits; nevertheless, like every system it comes with its own pros and cons. One being the evolving nature of the technology itself, and two, the lack of standardization of data exchanges. Many institutions are invested in the technology and continuous efforts are on to make blockchain-based systems fool proof.

Leveraging the benefits of transparency and trust provided by blockchain frameworks, many organizations and nations are joining hands to ensure interoperability across their borders. Siloed personal identity systems are giving way to decentralized digital identity systems that are transcending borders. Therefore, National Digital Identities are expected to lead to "Global Identifiers" thereby helping combat cyber terrorism and money laundering.

While it goes without saying that no mechanism can be completely foolproof and devoid of vulnerabilities, continuous technical innovation and awareness can significantly help in bringing down the risk and help us move towards a safer world.

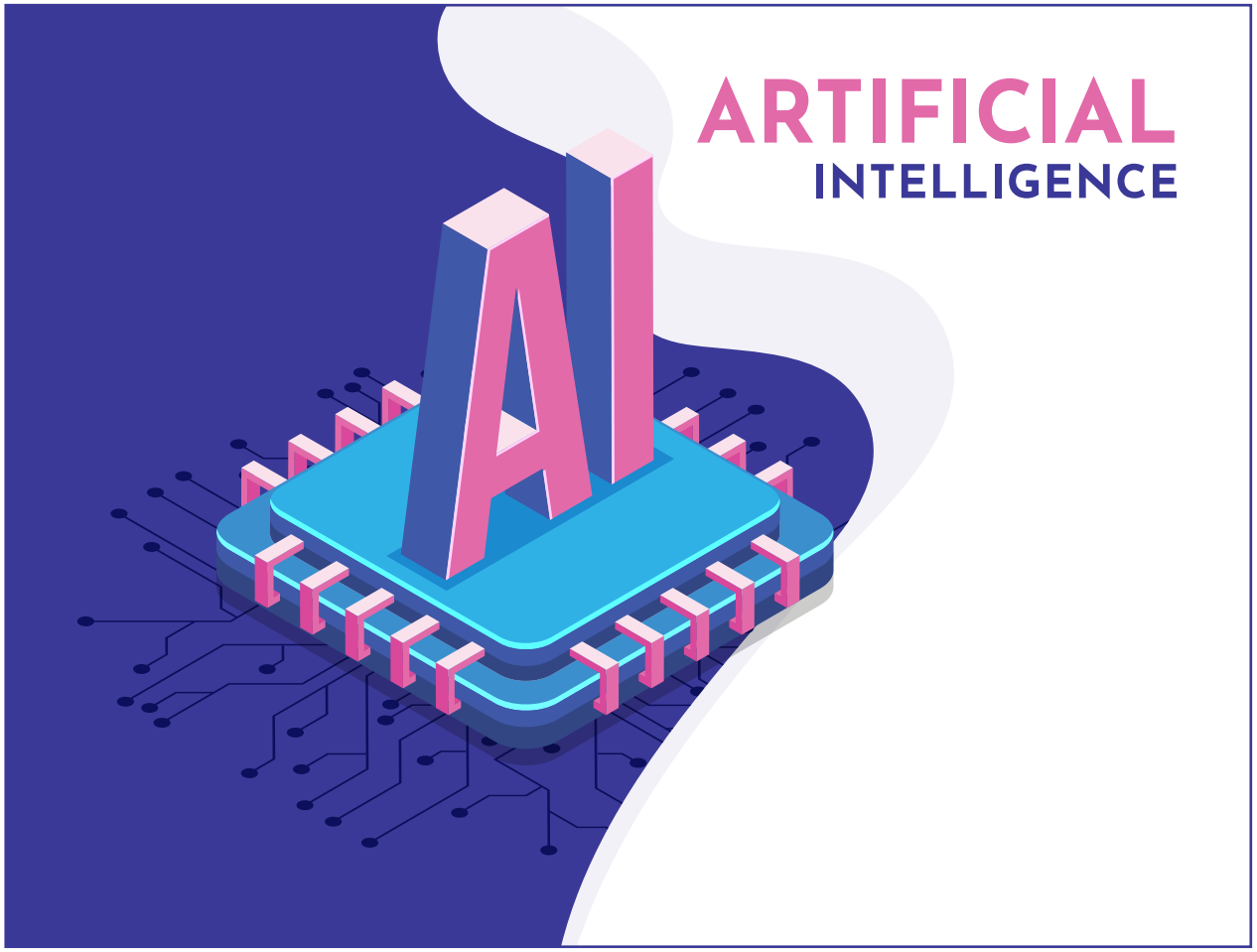
References

- https://www.forbes.com/sites/forbestechcouncil/2018/07/27/how-blockchain-can-solve-identity-management-problems/#a734f7f13f56
- https://sovrin.org/wp-content/uploads/Sovrin-Protocol-and-Token-White-Paper.pdf
- https://www.javelinstrategy.com/coverage-area/2018-identity-fraud-fraud-enters-new-era-complexity
- https://www.comparitech.com/identity-theft-protection/identity-theft-statistics/#gref
- https://www.iii.org/fact-statistic/facts-statistics-identity-theft-and-cybercrime
- https://e-estonia.com/solutions/e-identity/id-card/
- https://id2020.org/
- http://www.coincatalyst.com/using-blockchain-for-identity-management-five-compelling-examples/

V Anjana
Consultant
TCS Financial Solutions (TCS BaNCS)

Malini Raman
Senior consultant and Product Head
Quartz Blockchain Solutions

Tower Bridge London, UK



AI AND AML

Financial crime and, in particular, Money Laundering is a complex issue for financial institutions. All financial services organizations must operate appropriate processes and controls to deter criminals from using their products and services to facilitate Money Laundering and terrorist financing activities. Unfortunately, the burden of running Anti Money Laundering (AML) processes, in terms of resources and costs, the increase in transactional volumes and the high level of false Money Laundering alerts continues to grow and, as these challenges increase, so do the regulatory fines. US regulators alone have handed out fines for AML-related compliance failings, mainly related to sanction breaches, to over $17 billion since 2009.

The people behind Money Laundering are determined, sophisticated criminals who fund global terrorism, human trafficking, and narcotics distribution.

The methods used to launder proceeds of criminal and financial illicit activities are in constant evolution. Banks and financial institutions must work tirelessly and continuously with international organizations, governments, law enforcement agencies, regulators and industry peers to identify new threats of Money Laundering and close off channels within the financial system that criminals may use. Unfortunately the techniques used by criminals continue to

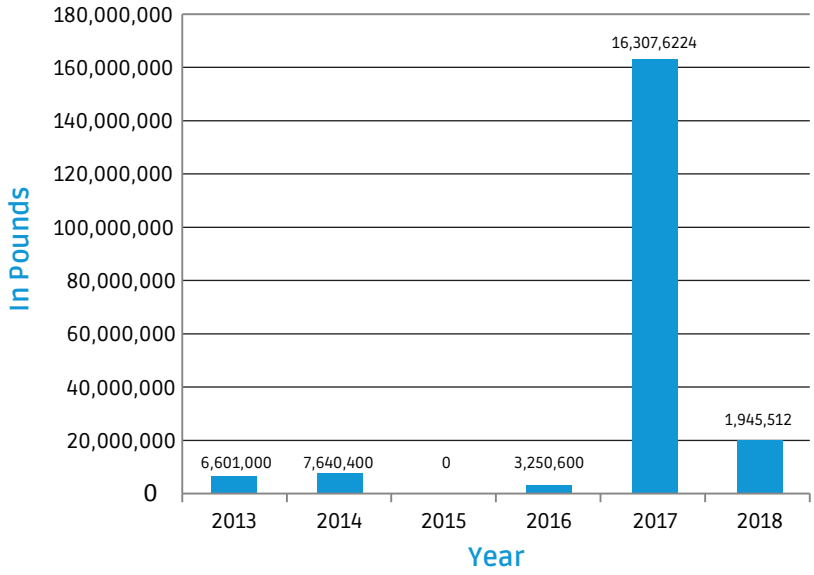


Figure 1: FCA AML Related Fines

develop and have become ever more sophisticated. Professional Money Launderings will always adapt, probing for weaknesses in financial systems that can be exploited.

So, what are the latest threats faced by the industry in 2018? What measures are being deployed to address these threats and how do organizations develop a partnership with the FinTech and RegTech community to support innovation in financial services?

Money Laundering is an illegal activity performed outside of the normal range of economic and financial statistics. The United Nations Office on Drugs and Crime (UNODC) estimates that the amount of money laundered globally in one year is 2 - 5% of global GDP, or $800 billion - $2 trillion in current US dollars. As the key objective of Money Laundering is to get the illegal funds back to the individuals who generated them, launderers usually prefer to move funds through stable financial systems.

Money Laundering activity is typically concentrated geographically according to the stage the laundered funds have reached. At the placement stage, the funds are usually processed close to the under lying activity; in the layering phase, the launderer might choose an offshore financial or regional business center. Finally, at the integration phase, launderers might choose to invest laundered funds in other locations to enhance investment opportunities.

Money Laundering - The Threats

The Financial Action Task Force (FATF) identifies three key methods by which criminals and terrorist financiers move money for the purpose of disguising its origins and integrating it into the formal economy. These include the use of the financial system; the physical movement of money and of goods through the trade system. All three methods directly and indirectly involve banking systems.

Money launderers also use a wide variety of tools and techniques. Among the most significant and common are:

Trade-based Money Laundering

This is the process of disguising the proceeds of crime and moving

THE UNITED NATIONS OFFICE ON DRUGS AND CRIME (UNODC) ESTIMATES THAT THE AMOUNT OF MONEY LAUNDERED GLOBALLY IN ONE YEAR IS 2 - 5% OF GLOBAL GDP, OR $800 BILLION - $2 TRILLION IN CURRENT US DOLLARS

value through the use of trade transactions in an attempt to legitimise their illicit origin.

Account Settlement Mechanisms

Money launderers can facilitate the settlement of accounts between multiple organized crime groups.

Underground Banking and Alternative Banking Platforms

This mechanism is used with the goal of bypassing the regulated financial sector and creating a parallel system of moving and keeping records of transactions and accountancy.

Money Value Transfer Services (MVTS) Providers

Complicit insiders (e.g. bankers) act as potential accomplices to help launder illicit proceeds and participate in the placement stage of the Money Laundering process

Financial Institutions

The use of the international financial system has been instrumental in facilitating large-scale Money Laundering schemes. All of the complex layering schemes involve moving significant volumes of funds through various bank accounts in different jurisdictions opened on behalf of shell companies.

Legal and Professional Services

In order to place greater distance between their criminal activity and the movement of funds, some organized criminal gangs use the services of third-party Money Launderings, including professional gatekeepers, such as attorneys, accountants and company service providers.

Payment Processing Companies

Payment processing companies provide services to merchants and other business entities, such as credit card processing or payroll processing services. In certain circumstances, payment processing companies essentially act as "flow-through" accounts.

How do banks comply with applicable Anti Money Laundering (AML) laws and regulations in the juristictions in which they operate?

First and foremost, banks need to meet the standards set by regulators and adhere to local legislative and regulatory requirements in all juristictions in which they operate. They must maintain a strong AML goverance model with defined responsibilities and accoutabilities.

Described below are key elements that an AML program must have in place to prove to regulators that proper controls are in place that can protect the organization completely.

A Risk Appetite that Supports the Organization's Strategic Risk Objectives

Risk appetite is the residual risk that banks are prepared to accept as a consequence of doing business, This will provide the foundation for the bank's AML policy. Its AML risk must ensure controls are appropriate to the level of risk and must be designed to prevent or identifty non compliance.

A Risk-based Approach

Many banks take a risk-based approach of dealing with their customers and assign resources and controls that are appropriate to the inherent AML risk. This is fundemental to the prevention of Money Laundering and ensures that resources are adequately applied to those areas that the bank has deemed to be most at risk. A typical example would the application of risk categorization to all customers where a high, medium or low risk is applied to customers determined by a documented risk methodology.

Customer Due diligence

Knowing Your Customer (KYC) is fundamental to AML. The term encompasses knowledge, understanding and information obtained about a customer throughout the lifecycle of the relationship, and this will include transactions and the use of products. Other important factors are the source of a customer's funds and wealth, the nature of the relationship, customer verification and beneficial owners and high risk identifiers.

Politically Exposed Persons (PEPS)

A PEP is an individual who holds a prominent public function. Identification of PEPs are required to manage the risk associated with persons who may abuse their position or influence for their own personal benefit. This is especially pertinent in jurisdictions that are economically or politically unstable or tainted by high levels of private or public corruption and criminal activity.

Transaction Monitoring

Banks will actively monitor transactions and customer activity to ensure that they are consistent with their knowledge of the purpose of the transaction, the customer, their business and risk profile. Monitoring customer activity will help identify unusual behaviour that cannot be reasonably explained and may be indicative of Money Laundering. Unusual activity can include abnormal size of transactions, high volumes of cash credits and frequent unexplained withdrawals. Ongoing

monitoring will also include keeping customer information up to date and reviewing activity and transactions during the relationship.

Suspicious Activity Reporting (SAR)

Any suspicious activity must be documented and communicated. A nominated officer is responsible for receiving and investigating internal suspicious reports to determine whether a Suspicious Activity Report is submitted to the relevant authorities.

Sanctions

Banks undertake real time screening of transactions against a relevant sanctions list and restricted countries. Documentation and investigation of all potential matches is performed, and reports are submitted for any confirmed hits.

Other AML practices include:

- A Money Laundering Reporting Officer (MLRO), who is the focus for the firm's AML activity
- Assurance to test the operational effectiveness of AML programs
- Record keeping, retrieval and sharing of information in keeping with local regulatory requirements
- Periodic and timely tracking, collection and analysis of Management Information over AML
- Training to ensure all staff maintain awareness of AML policies

Emerging Money Laundering Threats

With the recent rapid growth of digital technologies, banks are now confronted with evermore sophisticated Money Laundering threats. Digital mobile platforms, new payment methods and techniques, cryptocurrencies, e-wallets, Distributed Ledger Technologies and instant payments are placing increasing demands on financial crime control processes

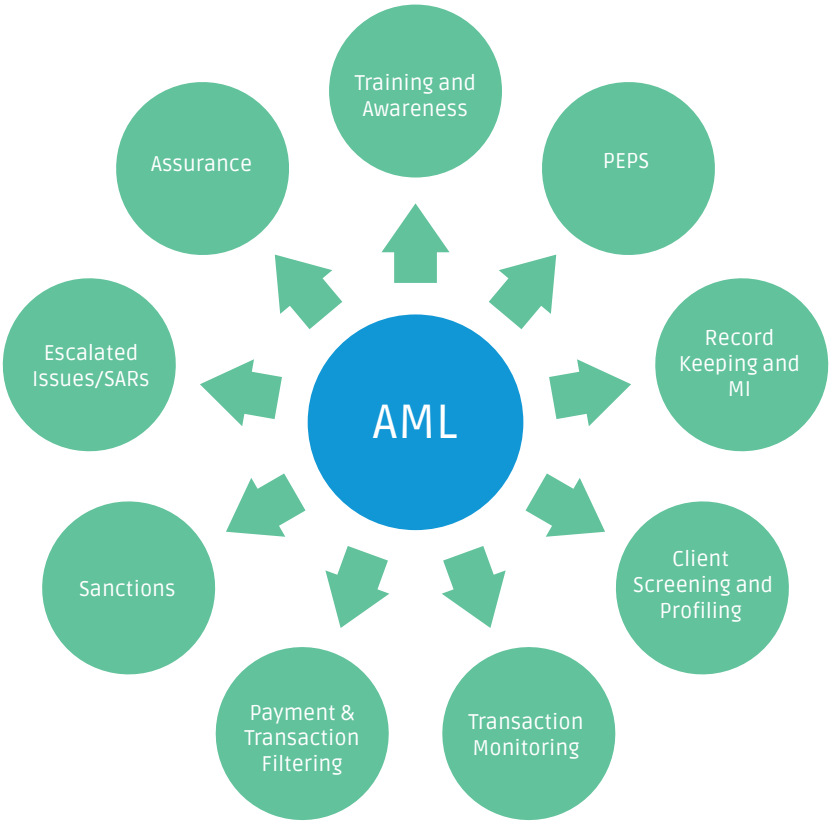


Figure 2: AML Data Sources

MANY AML AND SANCTIONS SCREENING PROCESSES HAVE BEEN DEVELOPED ON LEGACY SYSTEMS THAT ARE UNABLE TO FUNCTION, OR ARE NOT SCALABLE AND UNABLE TO OPERATE IN THE NEW REAL-TIME PAYMENTS REALITY

and real-time screening being conducted by banks and financial institutions. The variety of ways that criminals may acquire, move, disguise and dispose or otherwise launder the proceeds of crime means that the threat is unabating. In keeping with the digital era and economy, Money Laundering has evolved to involve the following:

Virtual Currencies and Blockchain

Convertible virtual currencies that can be exchanged for real money are potentially vulnerable to Money Laundering abuse. They may allow greater anonymity than traditional non-cash payment methods. They are generally characterized by non-face-to-face customer relationships, and may permit anonymous funding. They can also permit anonymous transfers if participants are not adequately identified. Some virtual currencies, like cryptocurrency, store all transactions on a blockchain which only records the transactions, not the identities, of the users. It is possible to associate Internet Protocol (IP) addresses with cryptocurrency transactions; however, routers can be used to hide a user's IP address, granting total anonymity.

New Payment Products and Services

Electronic, online and new payment methods pose a vulnerability as the use of these systems grows. Payment systems can be accessed globally and used to transfer funds quickly. Online payment systems are anonymous by design, making them attractive to criminals, particularly when the payment system is based in a jurisdiction with a weak AML regime.

Internet Payment Services

Internet-based payment services provide mechanisms for customers to access prefunded accounts. These are then used to transfer the electronic money to other individuals or businesses which also hold accounts with the same provider.

New Financial Crime Technology Capabilities in the Digital Era

So what AML systems do banks deploy and what level of automation exists to monitor and detect Money Laundering? Banks have become more aware of the financial crime threats they face and have developed responses more effectively than ever before. Furthermore, financial systems are continuously being strengthened as the partnership between banks, regulators and law enforcement agencies develops.

Customized in-house development of AML solutions allows an organization to tailor software to meet their needs. On the downside, ever-changing AML regulations can result in significant costs to an organization to meet compliance requirements. In addition, many AML and sanctions screening

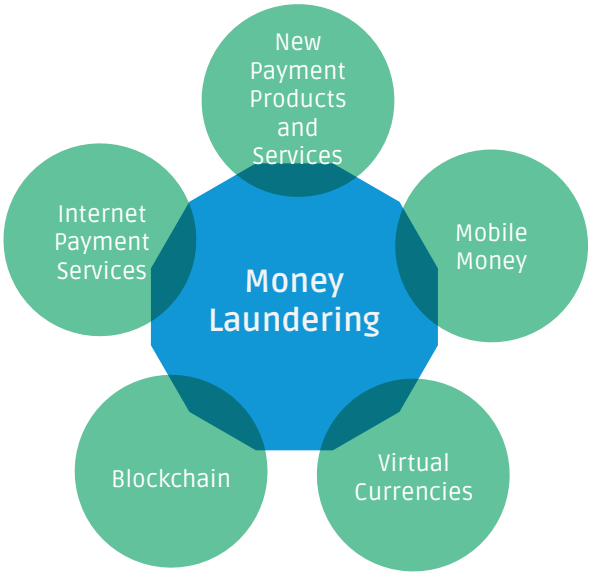


Figure3: Emerging Risks and Current Trends

IT IS POSSIBLE TO ASSOCIATE INTERNET PROTOCOL (IP) ADDRESSES WITH CRYPTOCURRENCY TRANSACTIONS; HOWEVER, ROUTERS CAN BE USED TO HIDE A USER'S IP ADDRESS, GRANTING TOTAL ANONYMITY.

processes have been developed on legacy systems that are unable to function, or are not scalable and unable to operate in the new real-time payments reality.

The acquisition of a commercial-off-the shelf software package is an alternative to in-house development. By adapting a pre-built system for AML, banks can maximize all the benefits of a custom developed system without the time and expense. The downside is that the package may not addresses all customer needs resulting in some customization to get the software to meet their initial needs. Technology-based innovations are starting to radically change the financial services industry. The identification and dismantling of Money Laundrings requires intelligence gathering and investigation of laundering activities. Dismantling of Money Launderings can impact their operations and can be an effective intervention strategy against criminal targets.

AI and Machine Learning

AI and Machine Learning are rapidly developing to become a major disruptor within the Regtech area. AML platforms with advanced technical capabilities are eliminating the complexity of managing siloed systems and multiple vendors. Machine Learning and advanced automation can replace manually intensive parts of the AML process with insights that are specific to Money Laundering. This allows banks to separate meaningful high value risk alerts from spurious data, ensuring that manual investigation resources are applied using a risk-based approach. AI can take in disconnected risk signs across payment platforms, geographies, depositors and payees, and connect the signals in meaningful ways.

Other benefits include:

- The investigations of suspicious transactions, which can be highly time-consuming, and often, due to overly-defensive mechanisms, fall victim to unsuccessful outcomes.
- The monitoring of intricate patterns via Machine Learning, reporting serious as opposed to false positive transactions for escalation and investigation by AML officers.
- Machine Learning being able to examine granular data to detect and uncover incompatible relationships, and, subsequently, complicated patterns of money laundering.
- Reducing the incidence of false positive transaction monitoring hits, allowing compliance teams to focus on the genuine ones.

As digital technologies improve and diversify, so do the threats facing banks. F inancial institutions should consider fighting financial crime with new and innovative technology in alignment with their historical approach. To ensure continued compliance, financial institutions need to embrace new technologies and integrate intelligent automation into their compliance programs.

AI CAN TAKE IN DISCONNECTED RISK SIGNS ACROSS PAYMENT PLATFORMS, GEOGRAPHIES, DEPOSITORS AND PAYEES, AND CONNECT THE SIGNALS IN MEANINGFUL WAYS

Andrew Dobbs
Solution Architect
TCS Financial Solutions (TCS BaNCS)

A CO-EXISTENCE APPROACH TOWARDS ISO 20022 ADOPTION

Financial messaging standards are at the heart of virtually all economic activity—from executing the smallest retail transaction to managing massive global institutional businesses; they play a key role in enabling businesses to function effectively. ISO messages are used throughout the industry to facilitate accurate and faster delivery of business information, to ensure Straight-Through Processing (STP), and reduce manual effort and cost of business operations.

At the same time, financial institutions are always on the look-out for newer ways to improve operational efficiencies and reduce costs. In that sense, the introduction of ISO 20022 has been seen by the industry as an improved messaging standard that helps increase STP and improve overall operational efficiency. With industry initiatives such as the Giovanni Protocol for harmonization of clearing and settlement of securities, there is an increasing need from the securities industry to change from proprietary standards to ISO standards. Standardized messages ensure that data exchanged between institutions is unambiguous and machine friendly, enables efficient automation, thereby reducing risk. ISO 20022 has seen good adoption in the instant payments market, with implementations in Australia, US, Canada, Sweden, Denmark and Singapore.

In the Capital Markets space, there are key business services where

ISO 20022 messages are seeing increased adoption and usage, and they include trade management, corporate actions and statements, general meeting and cash payments. ISO 20022 plays a vital role in distributing this financial information accurately to the market in the form of:

- Support for a wide range of event types and transaction types - All types of corporate actions as prescribed by CA standards like CAJWG and SMPG are supported using unique event types and, at the same time, allow for specific adaptions as needed by the market. On Trade Settlement, ISO 20022 supports various transaction types with the flexibility to create a new type for a market-specific need.
- Improved functionality support – ISO 20022 provides unique message structures to support the entire corporate actions lifecycle, starting from event notifications, option instructions, entitlement details, payment confirmations and reversals, claims and transformations, and reverse claims. Unlike earlier messaging standards where a single message type was used for a variety of business purposes, ISO 20022 has a unique message type for each one. These unique message structures reduce the ambiguity of message definitions and facilitate faster integration and hence improved STP.
- An exhaustive set of message data elements – ISO 20022 data elements are comprehensive and capture all necessary data elements for the entire business lifecycle. These include coverage for transaction types, parties, trade details, rates, prices, dates, additional narratives, entitlements and settlement confirmation, and others. The provision for repeatable blocks can facilitate additional information.
- Well-defined data structures - Connecting multiple ISO 20022 messages, thereby providing a clear sequence of business information.
- XML based syntax - The versatility of XML syntax and schema validator simplifies the message contents, harmonizing messages across markets. With the usage of XML schemas being prevalent in the industry, there is a wide choice of XML based validators to choose from and integrate with.

Drivers for ISO 20022 Adoption

Capital market organizations are at crossroads where the pressure to roll out upgrades are scrutinized intensively by the management based on the investment, effort and skillsets that are required for an upgrade, while on the other hand financial regulators are continuously pushing out new regulations to make the markets safe and transparent. All financial services organization are therefore looking out for smarter and less disruptive solutions to keep up. In the European context, T2S and SEPA are driving the entire European market towards adoption of ISO 20022 which aims to reduce redundancy, discard conflicting standards, improve commonalities and harmonize financial market communication. Overall, the last few years have seen increased traction

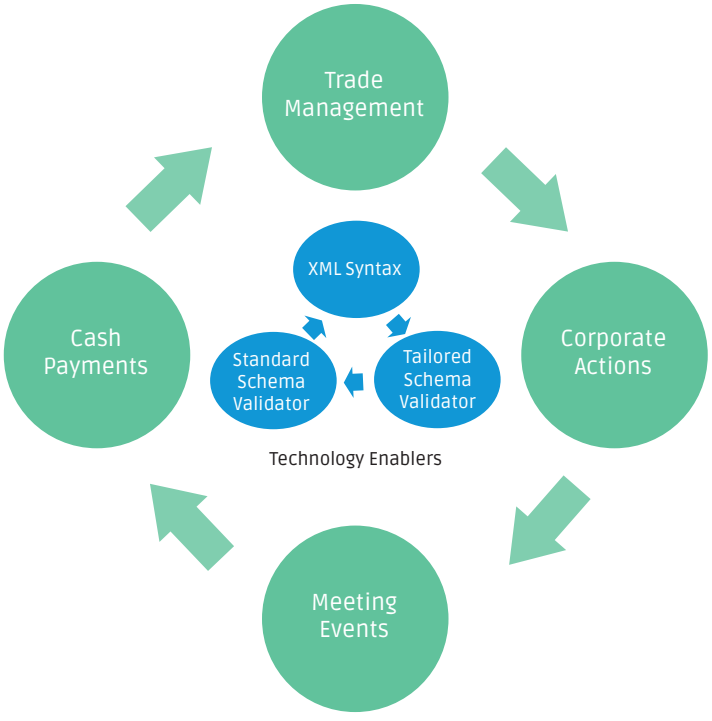


Figure 1 - Key Business Processes in Capital Markets

towards ISO 20022 adoption in the financial services industry.

Apart from regulatory drivers, adoption of ISO 20022 is propelled by:

- The richness of the structure and ease of integration

  The richness of the ISO 20022 data structures, coverage of business processes, usage of XML based schemas and validators makes ISO 20022 easier to integrate in a financial institution.

- Need for increased automation and STP

  There is a continuous drive towards increasing automation, reducing manual intervention and thereby increasing STP.

  ISO 20022 messages are well-positioned for these needs based on their improved data structures, segregated message types and wide coverage of industry needs.

- Replacement of legacy platforms

  As aging legacy platforms are replaced, financial institutions have the right incentive to invest in a new and modern platform supporting latest ISO 20022 messaging standards to future-proof their investments, and also build new world-class infrastructure.

Challenges to ISO 20022 Adoption

Although there are many benefits to ISO 20022 adoption, like with any large scale change, it comes with its share of challenges, which include:

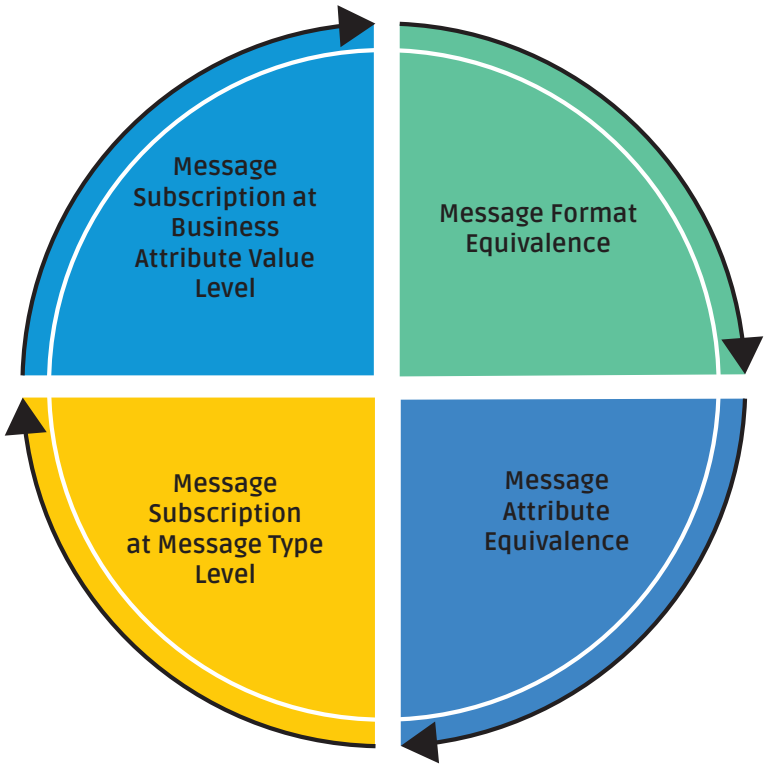


Figure 2 - Key Tenets of the Co-existence Model for ISO 20022 Adoption

IN THE EUROPEAN CONTEXT, T2S AND SEPA ARE DRIVING THE ENTIRE EUROPEAN MARKET TOWARDS ADOPTION OF ISO 20022 WHICH AIMS TO REDUCE REDUNDANCY, DISCARD CONFLICTING STANDARDS, IMPROVE COMMONALITIES AND HARMONIZE FINANCIAL MARKET COMMUNICATION

- Complexity of re-mapping from old standards

  Many organizations use a combination of ISO 15022 standards and multiple proprietary standards significantly. Such an ecosystem may make mapping from old standards to ISO 20022 rather complex.

- Lack of a coordinated roadmap across the entire financial services industry

  While T2S and SEPA have provided a big impetus to ISO 20022 adoption in Europe, this is not the case elsewhere in the world, thereby making the transition to ISO 20022 fragmented and difficult.

Need for a Co-existence Approach

On September 3, 1967, Sweden underwent an overnight transformation, a 'thrilling' mission of change. The day was officially known as Högertrafikomläggningen (right-hand traffic diversion) or simply Dagen H (H-Day). Its mission was to put Sweden on the same path as the rest of its continental European neighbors; with traffic switching from driving on the left-hand side of the road to the right.

Forcing a similar big-bang approach towards ISO 20022 adoption is neither feasible nor desirable due to the interconnected financial services industry, where the pace of change in one market varies from another, and yet all need to co-exist. Instead, a structured migration is recommended where the old standards continue to exist. This leads to what we refer to as a "co-existence" approach, which enables ISO 20022 standards to deliver enriched data elements to participants receptive to the change while, simultaneously, allowing other participants to continue with the previous set of standards. The key tenets of such a co-existence approach are outlined below:

Message format equivalence

As mentioned earlier, the co-existence approach, as the word implies, enables faster upgrades by creating newer versions of message templates in ISO 20022 to deliver enriched data elements to participants receptive to the change while allowing others to continue on pre-existing standards. This ensures seamless and improved

Corporate Actions	ISO 20022	ISO 15022
Notification	seev.031	MT564*
MovementPreliminaryAdvice	seev.035	MT564*
MovementConfirmation	seev.036	MT566*
MovementReversalAdvice	seev.037	MT566*
Narrative	seev.038	MT568
CancellationAdvice	seev.039	MT564*
Instruction	seev.033	MT565*
InstructionCancellationRequest	seev.040	MT565*
InstructionCancellationRequestStatusAdvice	seev.041	MT567*

*Same message re-purposed for different business processes.

Figure 3 - Corporate Actions Message Mapping Between ISO 15022 and ISO 20022

A "CO-EXISTENCE" APPROACH, ENABLES ISO 20022 STANDARDS TO DELIVER ENRICHED DATA ELEMENTS TO PARTICIPANTS RECEPTIVE TO THE CHANGE WHILE, SIMULTANEOUSLY, ALLOWING OTHER PARTICIPANTS TO CONTINUE WITH THE PREVIOUS SET OF STANDARDS

Securities settlement	ISO 20022	ISO 15022
Transaction Instruction	sese.023	MT540, MT541, MT452, MT543*
Transaction Status Advice	sese.028	MT548*
Transaction Confirmation	sese.025	MT544, MT545, MT456, MT547
Transation Cancellation Request	sese.020	MT540, MT541, MT452, MT543*
Cancellation Request Status Advice	sese.027	MT548*
Transaction Allegement Notification	sese.028	MT578*
Allegement Removal Advice	sese.029	MT578*
Conditions Modification Request	sese.030	MT540, MT541, MT452, MT543*
Condition Modification Status Advice	sese.031	MT548*
Transaction Generation Notification	sese.032	MT540, MT541, MT452, MT543*

*Same message re-purposed for different business processes.

Figure 4 - Trade Management Message Mapping Between ISO 150022 and ISO 20022

ISO 15022 message attribute	ISO 20022 message attribute
:23G:NEWM	<NtfctnTP>NEWM</NtfctnTP>
:22F::CAEV//SPLR	<EvtTP><Cd>SPLR</Cd></EvtTp>
:22F::CAMV//MAND	<MndtryVlntryEvtTp><Cd>MAND</Cd></MndtryVlntryEvtTp>
:35B:ISIN XX000900xxxx	<FinInstrmId><ISIN>XX000900xxxx</ISIN></FinInstrMId>
:97A::SAFE//xx00000000000001234	<SfkpgAcct>xx00000000000001234</SfkpgAcct>
:98RDTE//20140619	<RcrdDt><Dt><Dt>2010-09-07</Dt></Dt></RcrdDt>
:98A::PAYD//20140623	<PmtDt><Dt><Dt>2010-09-07</Dt></Dt></PmtDt>
:22H::CRDB//CRED	<CdtDbtInd><CRDT></CdtDbtInd>
:36B::ENTL//UNIT/200,	<EntitldQty><Qty><Unit>200</Unit></Qty></EntitldQty>
:92D::NEWO//1,/25,	<RateDtls><addtlQtyForExstg Scties><QtyToQty><Qty1>1</Qty1><Qty2>5</Qty2></QtyToQty></AddtlQtyForExstgScties></RateDtls>

Figure 5 - Equivalence Mapping of ISO 15022 and ISO20022 Attributes for CA Entitlement Message

operations for upgrades. Co-existence in this case, means that more than one message format is used at the same time in the communication flow for a business process.

The first step towards such an approach would be to map messages between standards. While the ISO 20022 standards have had a different evolution than ISO 15022, there exists equivalence between message types that can be abstracted and also factored into the rollout strategy.

The mapping is done by abstracting the business logic from the message, with the interface layer performing the mapping from one format to another. Figure 3 and Figure 4 illustrate the cases where the same ISO 15022 messages are re-purposed for different business processes and the equivalent, unique ISO 20022 message structures defined for each business process, allowing a phased roll-out of specific functionalities based on the readiness of the standard.

Message attribute equivalence

The tag level attributes from ISO 15022 can be mapped to their equivalent XML tags of ISO 20022. If a data dictionary of such equivalence between standards can be created, then it enables common usage of ISO 20022 standards for the similar business needs. Figures 5 and 6 demonstrate an equivalence between ISO 15022 and 20022 standards for the corporate actions and trade management messages.

Support for message subscription at message type level

The transition period of moving away from old message standards to a full ISO 20022 roll out in the market needs to be carefully

ISO 15022 message attribute	ISO 20022 message attribute
equivalent tag, based on message type	<SctiesMvmntTp>RECE</SctiesMvmntTp>
equivalent tag, based on message type	<Pmt>APMT</Pmt>
A::TRAD//20180112	<TradDt><Dt><Dt><2018-01-12</Dt></Dt></TradDt>
A::SETT//20180115	<SttlmDt><Dt><Dt>2018-01-15</Dt></SttlmDt>
B:ISIN XX000900xxxx	<Finlnstrmld><ISIN>XX000900xxxx</ISIN><Finlnstrmid>
B::SAFE//xx00000000000001234	<SfkpgAcct><Id><xx00000000000001234<ld></SfkpgAcct>
F::SETR//TRAD	<SctiesTxTP><Cd>TRAD</Cd></SctiesTxTp>
B::SETT//FAMT/500,	<SttlmAmt><Amt Ccy="GBP">4047151.3</AMT><CdtDbtlnd>DBIT</CdtDbtlnd></SttlmAmt>

Figure 6 - Equivalence Mapping of ISO 15022 and ISO20022 Attributes for Trade Management

managed. One way of easing the burden of migration is for the market infrastructure organizations in their respective countries to introduce a facility of message subscription for the participants. Using this feature, market participants can choose the ISO 20022 messages they desire to migrate to while at the same time retain older standards for other business processes. For example, participants can choose to adapt ISO 20022 messages for trade management business process, whilst continuing with ISO 15022 messages for corporate actions. In addition, in a business process, participants should be given a choice to send or receive messages in either messaging standards. For example, participants can send settlement instructions in one messaging standard and, simultaneously, receive settlement confirmations in another messaging standard; and, all of these managed using message level subscriptions.

Such a message subscription feature at a message type, will aid in the progressive roll out of the ISO 20022 standards in the market and alongside provide participants with a longer time table to complete the roll out. The market infrastructure organization or the regulator can set a deadline for complete ISO 20022 adoption, while at the same time giving room for market participants to vary their pace of adoption.

Support for message subscription at business attribute value level

This is a fine-grained implementation approach for subscription where the participants have a choice of message standards at a business attribute level. Such a business attribute can be an Asset Class or an Account Type or any other business attribute that is in use in the market. Using such a feature, participants can migrate one or more sets of Asset classes or Account Ttypes to ISO 20022

ONE WAY OF EASING THE BURDEN OF MIGRATION IS FOR THE MARKET INFRASTRUCTURE ORGANIZATIONS IN THEIR RESPECTIVE COUNTRIES TO INTRODUCE A FACILITY OF MESSAGE SUBSCRIPTION FOR THE PARTICIPANTS

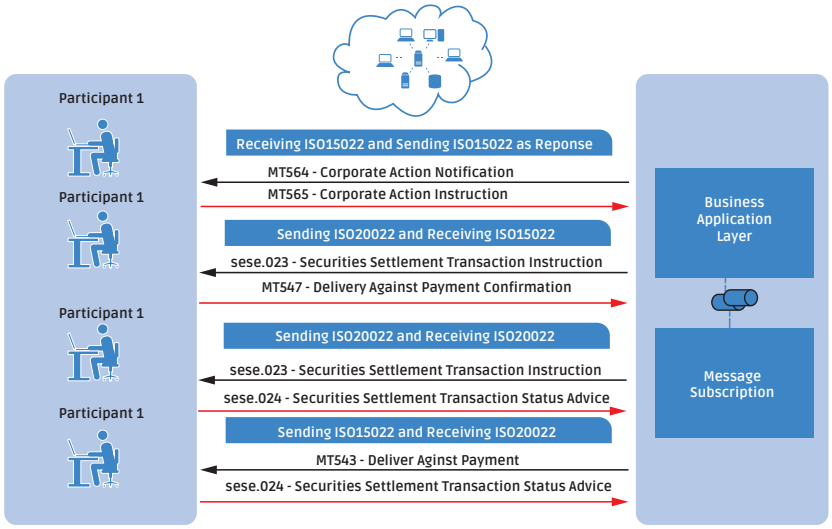


Figure 7 – Message Subscription at Message Type Level

standards while continuing with the older messaging standards for others. Using this phased approach, it is also possible to restrict certain message flows based on subscription. This will also make it more optional for participants in terms of the messages that they are in a position to use.

Benefits of the Co-existence Approach

While ISO 20022 adoption is gaining traction around the world, it is also imperative that a prudent roll out strategy is evaluated where participants are able to make the transition with ease. The co-existence approach, advocated by the industry too, is one such model that can facilitate a painless shift to ISO 20022 standards in a market. This approach is a powerful enabler by bringing in new standards while at the same time allowing market participants the flexibility of managing the pace at which they are able to adopt to the new standards.

THE CO-EXISTENCE APPROACH, ADVOCATED BY THE INDUSTRY TOO, IS ONE SUCH MODEL THAT CAN FACILITATE A PAINLESS SHIFT TO ISO 20022 STANDARDS IN A MARKET

M Anand
Principal Consultant
TCS Financial Solutions (TCS BaNCS)

Namitha Jeremiah
Consultant
TCS Financial Solutions (TCS BaNCS)

Samuel Johnson
Consultant
TCS Financial Solutions (TCS BaNCS)

Tamar Bridge spanning the river between Devon and Cornwall

ENHANCING CUSTOMER ACQUISITION THROUGH DIGITAL ACCOUNT OPENING

Gaining positive mindshare with a customer on first interaction can prove to be a game changer for any bank, heralding the potential for a long term and valuable relationship. And, many times, opening a new account at a bank is the first interaction for most customers. In this day and age, opening an account online is gaining popularity not only for the convenience it offers a customer, but also as a new channel of revenue for the bank. Needless to say, banks world over are striving towards reaching this "Digital Promised Land".

When removing friction from the customer journey is one of the top objectives of banks today, how can a bank make the digital account opening process quick, easy, and seamless across any channel or device or app?

Let's look at some facts. An instant, intuitive and contextual digital on-boarding process has a higher completion rate[3]. Abandonment rates for Digital Account Opening (DAO) average around 85% and are even higher for completion rates[12] on the mobile. According to a Digital Banking Report[1], among the 230 financial institutions surveyed, only 48% of institutions indicated that the entire online account opening process could be completed online without the customer visiting the branch at all, and with a far lower rate of 24% on the mobile. Is your bank one of these 48%?

Digital Account Opening – Crossing the Barriers

Opening an account comes with many hues and characteristics, many of which are dependent on the geography the bank is operating in, Central Bank regulations, telecommunication maturity and market acceptance. A digital account opening process can be purely online in some cases, while some are restricted to the branch; while others are intertwined with branch processes or supported by assisted channels from third parties. Further, establishment of the identity of a prospect varies by country resulting in different processes that have evolved to protect the bank and customer and also catering to various product types – for e.g., a current account or a deposit or a loan. There is scope, however, to digitalize the workflow either in part or completely, creating opportunities for a better on-boarding experience.

Based on a survey[3] of 3,000 retail banking consumers who had opened accounts from January to May 2017; the proportion of usage by channels were: Branch - 57%, Online - 27 % , Telephone - 10 %, Mobile App - 5 % and E-mail - 2%.

Digital Identity Verification

Identity management being the most critical challenge faced in digital account opening, it is important to capture the ID, be it a social security number or driver's license online, access it and verify it instantaneously, and then store it in a secure manner. For e.g., banks can chose from a combination of components that make an individual uniquely identifiable, and also in compliance with regional regulations and guidelines (Figure 2)

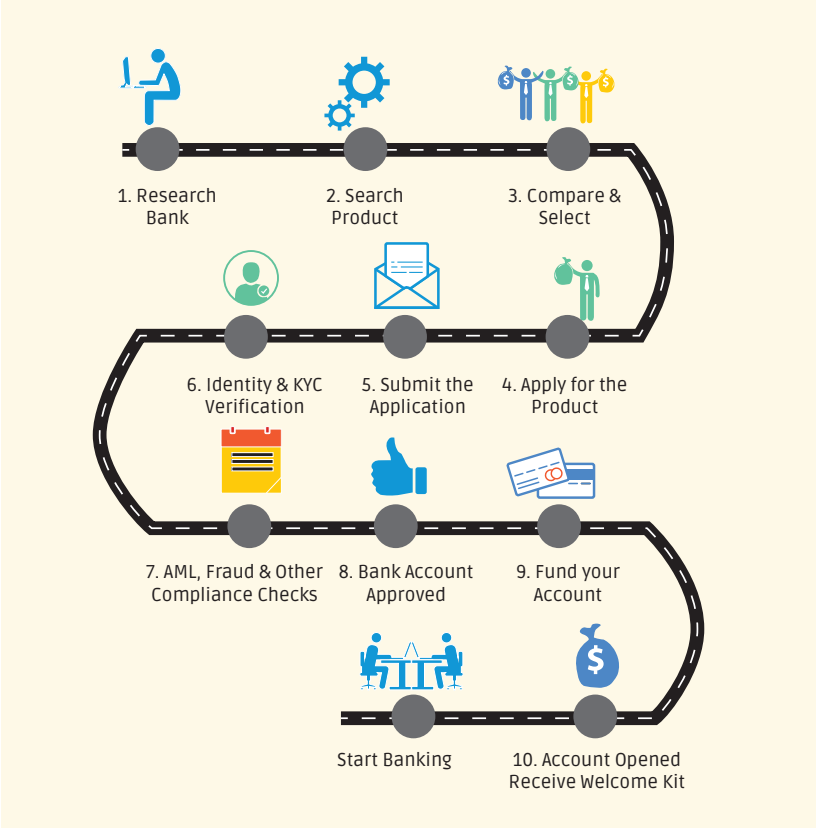


Figure 1: Typical Digital Account Opening Flow

Regulations specific to a bank's geography outline KYC compliance requirements like Personal ID, Address proof, etc., which can be processed digitally using OCR. Banks can interface with national identity databases so that KYC processes are handled as STP. Prospective customers can scan and upload documents online resulting in traditional banking processes requiring a revisit or streamlining with the new process in many cases. Credit score, fraud, cross-border and security checks need to be conducted in real-time with only exceptions handled procedurally via the STP. Adequate online tracking and resolution mechanisms for the prospect and the bank to address when exceptions are identified are also required.

IDENTITY MANAGEMENT BEING THE MOST CRITICAL CHALLENGE FACED IN DIGITAL ACCOUNT OPENING, IT IS IMPORTANT TO CAPTURE THE ID, ACCESS IT AND VERIFY IT INSTANTANEOUSLY, AND THEN STORE IT IN A SECURE MANNER

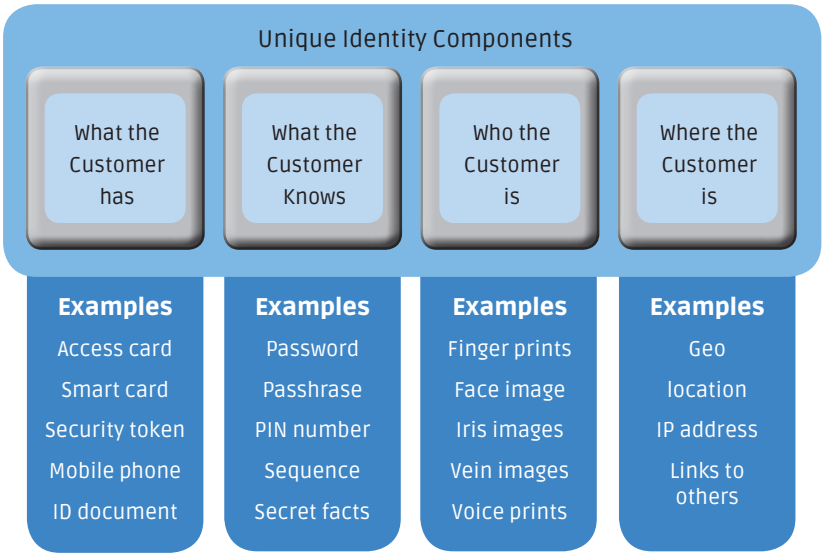


Figure 2: Unique Identity Components

Challenges Posed by Legacy Systems

Banks on legacy systems find it even more difficult to manage changing customer channel preferences and expectations related to scale, performance and go-to market time lines; and, they tend to restrain banks from using digital technologies to innovate on the account opening front as well. Typically, processes like online account opening, based on interfaces with multiple backend systems, can pose considerable challenges. Should the bank decide to go for a full transformation, or a partial but controlled transformation, or continue with legacy systems through smarter means on a short run, while planning for a longer term solution? APIs are a smarter option and can be a win-win for the prospect, the bank and its affiliates, given the nature of their reuse.

A Customer-centric User Interface is Prime

Prefilling information from data aggregators, minimized touch points, online chat, avoiding repetition of inputs — all come together to make the experience with the interface and DAO process richer. The goal is to make all aspects of customer touch points need-based, self-explanatory, intuitive and contextual. Based on the type of banking product being requested, corresponding APIs to the individual or corporate information aggregators can be enabled. Banks should automatically connect with credit bureaus, identity agencies, land record agencies to pull the needed data points based on the corresponding unique references like an SSN number, Tax ID, Aadhar number, CIN number, and so on.

Designing the user interface taking into account human behavior, contexts, manoeuvrability, advanced analytics to understand where a user has abandoned a process or spent more time on can help in refining the steps in a customer journey. The digital account opening experience must be optimized iteratively to make it perfect. Again, a bank can choose to formulate a customized on-boarding approach based on the customer segment or risks involved.

Review and Approval Processes

It is important for the review and approval process of account opening to be incorporated into workflows based on perceived risks or credit scores of customers. The key here is to continuously communicate and engage with the customer during the process.

New Account Funding

Some banks feel challenged when mandatory funding is required for opening an account digitally. How to provide STP for funding the account online, as the account is being opened is a common question. Instant new account funding is possible using Remote Deposit Capture (RDC), ACH direct debit, credit cards, online fund transfer, etc.

Security Concerns

In the age of data privacy regulations and the ubiquity of information, customers are increasingly getting worried about the data they share with the bank. Communicating about privacy policies and online guides and reassuring the customer about safety of their data, and adherence to global privacy standards can help develop trust. Additionally, banks can consider introducing a set of configurable parameters meant to reduce risk and exposure, such as giving customers the control of setting up transaction limits or authorization types.

The Last Mile

How can a bank complete a digital account opening journey effectively? When all digitized

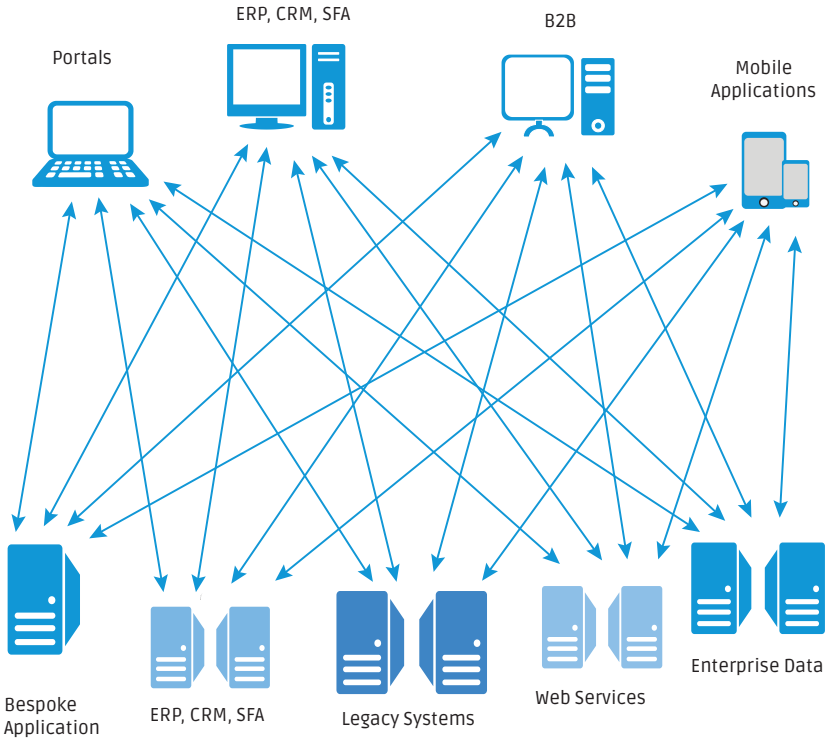


Figure 3: A Typical Legacy System having Multiple Systems and Interfaces

procedures are successfully completed, the bank can share the account number with the customer instantly, promise to send the account e-kit, communicate information about pre-approved loans or any other product, based on the demographic and financial profile of the customer, all in a non-intrusive manner.

Quantify the economic outcomes

While a bank may invest to improve the customer experience, it may not be clear about what it actually costs and the value it generates. It is very important from the bank's view to quantify the economic outcomes of differences in customer experiences; else the efforts end up having clear costs and unclear near-term results. Metrics like Improvement in Customer Effort Score, Reduction in Cost per Customer On-boarding, Count of digital applications

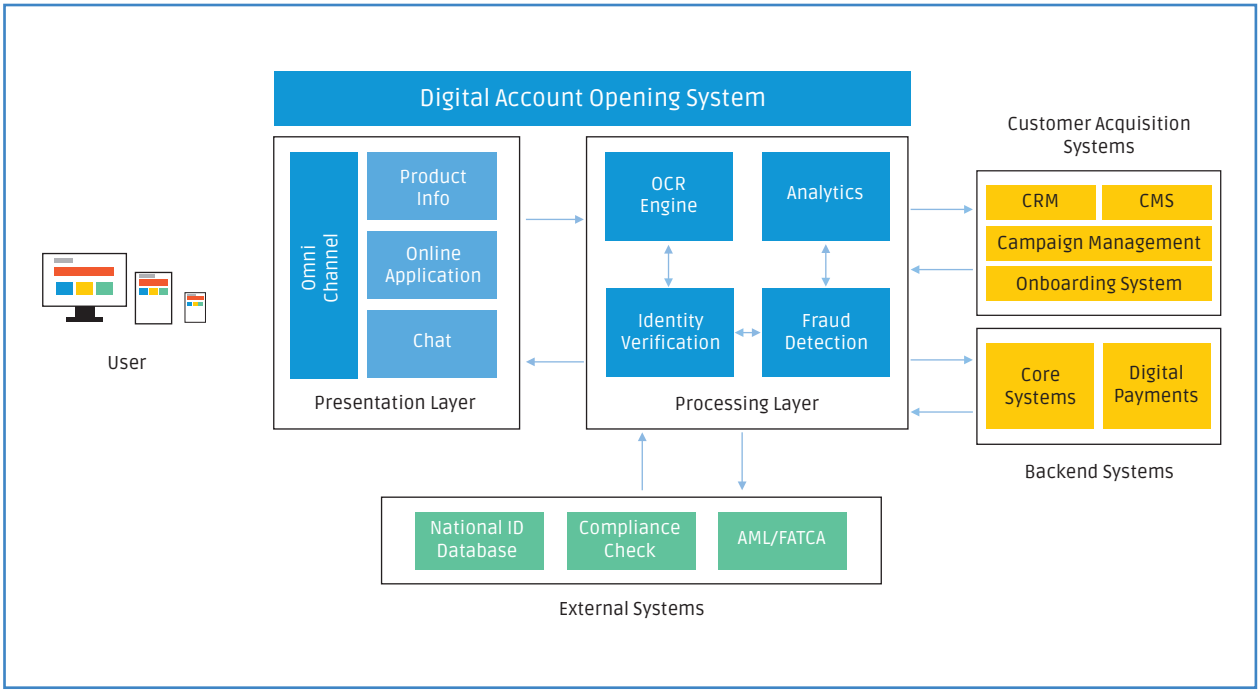


Figure 4: Customer on-boarding system representation

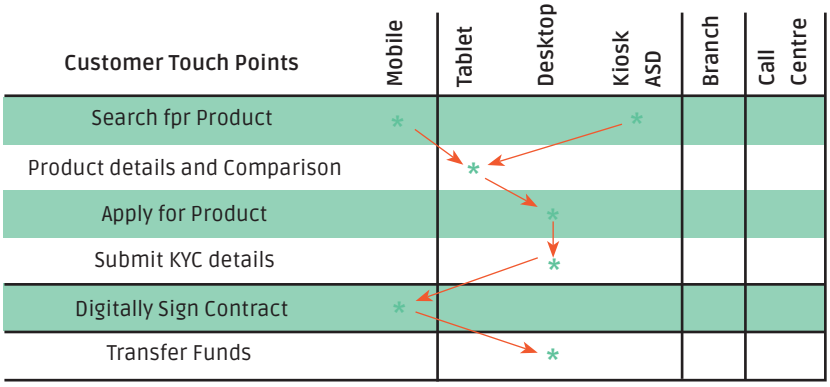


Figure 5: Digital Account Opening Multi Channel On-boarding

initiated vs completed, Conversion Rate, Average Time to On-board, etc. are required. Banks need to define performance indicators and metrics, track them to the last value and consistently evaluate and refine the account opening performance[5].

Omni-channel Solution – Resume and Save

There are many definitions to an omni-channel customer experience today, however, the most widely accepted being that where a customer goes through a seamless brand experience across devices or channels. As depicted in figure 5, a customer can commence their on-boarding process in one channel e.g. on Internet browser on a laptop and, subsequently pick up where they left off from another channel like a mobile app, and close the transaction successfully.

Using the power of AI

Conversational AI tools such as chatbots can revolutionize customer acquisition, saving time and money in the process. They simplify the user experience and enhance customer support[9]. By 2020, banking customers will manage 85% of their relationships with the enterprise without interacting with a human, predicts a leading analyst[6]. A simple chatbot use case can be that of opening a lending product online, where the bot guides the customer towards the product most suitable based on eligibility.

To sum up, a competitive solution is needed to provide a seamless and always available channel for digital account opening. Saving costs while also improving time-to-market, it can help a bank compete with new technology entrants or fintechs while also adhering to changing regulatory mandates, and delighting discerning customers.

References

1. https://thefinancialbrand.com/66268/banking-digital-online-mobile-account-opening-trends/
2. https://www.juniperresearch.com/press/press-releases/digital-banking-users-to-reach-nearly-3-billion-by
3. https://www2.deloitte.com/insights/us/en/industry/financial-services/improving-account-opening-process-in-retail-banking.html
4. https://thefinancialbrand.com/67381/banking-digital-account-opening-onboarding-experience/
5. https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/linking-the-customer-experience-to-value
6. https://www.aspiresys.com/WhitePapers/Chatbots-in-Banking-Banking-experience-Millennial-Banking-Survey-Report.pdf
7. https://acuvate.com/blog/important-use-cases-ai-powered-chatbots-banking-industry/
8. https://www.onlinemarketinginstitute.org/blog/2017/05/improve-customer-acquisition-using-artificial-intelligence/
9. https://www.marutitech.com/artificial-intelligence-for-customer-service-2/
10. https://www.i-scoop.eu/retail-banking-digital-transformation/
11. https://en.wikipedia.org/wiki/List_of_national_identity_card_policies_by_country
12. https://thefinancialbrand.com/66143/7-steps-to-improved-customer-onboarding/
13. https://thefinancialbrand.com/68318/fintech-banking-technology/

Shibu Babu
Business Analyst
TCS Financial Solutions (TCS BaNCS)

The Bandra-Worli Sea Link, Mumbai

CRYPTO-CURRENCY ON DIVIDEND DISTRIBUTIONS

Early Beginnings-Definition

Recently, an issuer announced that they would make history by being the first to pay a dividend in the form of a cryptocurrency. The distribution would result in receiving "coins" or "tokens" that would be held on a distributed ledger and transferred to the person with the "private keys" to the "digital wallet." Shortly after the announced payable date, the issuer postponed the distribution due to procedural and logistical distribution issues, as well as pending receipt of regulatory approval. Although the event was postponed, the questions that arose remain: "What is this?" "What do we do with it?" And, "what is our obligation to our clients?" To keep this simple, let's make the answer to the "What is this?" question very generic. A crypto- asset is one that is digitally represented and cryptographically secured on a blockchain . A blockchain is essentially a decentralized store of records or transactions, replicated across network participants. Through this technology, crypto asset companies and ventures have created numerous cryptocurrencies and initial coin offerings (commonly referred to as ICO's or token sales).

Understanding the nature of the asset (is the product a security, commodity, currency or other type of property) informs where it sits in the existing financial services framework.

There is no definitive answer to this question. What is known is that no token sales have been registered with the SEC, nor has the SEC approved for listing and trading any such products. However, investor interest remains in this space as evidenced by cryptocurrency and related instruments. Whether crypto-assets are securities or not, understanding what to do with them and how to perform basic custodial functions such as tax and regulatory reporting, make this an ongoing hot topic. Is a digital wallet a good control location for possession and control purposes? Who can and should have access to the digital wallet? How does a firm reflect this type of asset on its books and records, if at all?

The financial services Industry has taken steps to gain clarity on these and other questions by partnering with clearing firms to discuss and address crypto-asset operational issues as they arise. Issues related to crypto- assets are likely to continue to surface and regulators will seek the expertise of industry leaders to address these issues. For example, the SEC Division of Investment Management recently posed a series of questions to the asset manager community regarding crypto- asset issues in relation to mutual funds. Finally, understanding of this new and complex evolving space is centered around the obligation to provide investor protection and transparency to clients. To that end, the financial community continues to monitor and provide awareness of any new related events.

Additionally, through industry forums, panels and conferences, member firms are engaging, collaborating, preparing, adapting and doing what has always been done; figuring it out.

Brief History

Due to the cryptocurrency boom, the terms "token", "coin", "initial coin offering" (ICO) and many others have become an integral part of the vocabulary of every trader and investor. Their use, however, is often shrouded in uncertainty and confusion.

Here are the differences between the main types of tokens.

Currency tokens: As the name suggests, these are tokens used as a form of payment and a store of value which can be retrieved at a later time. Arguably, this makes them identical to "coins" and other cryptocurrencies.

Utility tokens: The advent of Ethereum created what became known as "utility tokens." Unlike currency tokens, this type of token gives holders access to products or services within a particular platform or network. Utility tokens are multi-functional - they typically "reside" on top of a given blockchain such as Ethereum, and for the most part, can be used within their respective network.

Securities tokens: In addition to allowing holders to purchase goods and services, securities tokens often promise investment returns and value appreciation.

Asset tokens: Asset tokens serve as a digital representation of an asset in an organization or platform.

Equity tokens: More of a theoretical than practical concept right now,

WHETHER CRYPTO-ASSETS ARE SECURITIES OR NOT, UNDERSTANDING WHAT TO DO WITH THEM AND HOW TO PERFORM BASIC CUSTODIAL FUNCTIONS SUCH AS TAX AND REGULATORY REPORTING, MAKE THIS AN ONGOING HOT TOPIC

THERE ARE BLOCKCHAINS THAT HAVE DIVIDEND-LIKE FEATURES, MAKING THEIR CURRENCIES AKIN TO "DIVIDEND TOKENS"

OUT OF THE MANY TYPES OF PASSIVE INCOME STRATEGIES, DIVIDEND INCOME IS ARGUABLY THE BEST FORM

these tokens give their holders an ownership share in the issuer's capital, pretty much like stocks do.

Reward tokens. Most commonly, these are the blockchain equivalent of loyalty points or other reward programs.

Dividend tokens. With the exception of currency tokens, most other tokens represent an investment contract in a joint establishment, promising potential for a passive income. Such income may come in different shapes and forms. Examples include profiting from value appreciation, investments and mining operations and others.

Some organizations share their profits by distributing dividends among token holders. In addition, there are blockchains that have dividend-like features, making their currencies akin to "dividend tokens."

Similar to stocks, tokens with dividend features may or may not carry voting rights. Unlike stocks, holding dividend tokens entitles the holder to passive income without necessarily constituting ownership in the organization.

Staking, or Proof of Stake (PoS), can be viewed as a form of dividend concept. Stakers hold their tokens in a designated wallet, receiving payouts for the duration of their holding.

Dividend payouts may be regular, for example weekly or monthly, and dependent on a certain level of token ownership - e.g. large holders receive payments before smaller ones - and may depend on the issuer reaching certain performance milestones.

Out of the many types of passive income strategies, dividend income is arguably the best form.

Passive income means receiving recurrent rewards for efforts made in the past, with no additional work required. Similarly, dividend tokens pay their holders a regular reward without additional investments, even in bear markets if the company has a sound business model that works despite market volatility.

A good example, that was just recently announced, is Nexo.io, a company providing instant cryptocurrency backed loans. According to the company, its token is "the world' first SEC-compliant dividend-paying asset-backed security token."

The Nexo Dividend Token pays out 30 percent of the company's profits to token holders each month. Payouts will be made in ETH (Ethereum is an open software platform based on blockchain technology that enables developers to build and deploy decentralized applications) and distributed proportionately to Nexo investors.

Current Concepts

The concept of dividend-yielding assets was borrowed from the stock market, where investors receive dividends from certain shares they own. In the world of capital markets, it is not impossible for an investor to recoup all of their original investments as a return from dividends, all the while still owning their stocks. This is despite the relatively modest returns from stocks compared to the potential of the cryptocurrency markets. When re-invested passive income can yield even higher returns and, subsequently, bring larger passive income in the future. In the meantime, holders may still profit from a possible value appreciation of their token. Let's not ignore the power of compounding - reinvesting dividends, combined with value

appreciation, is like passive income on steroids. It has the potential to return the original investment multiple times over a few years. In a world of negative interest rates, investing in the right dividend token may prove to be a game-changer. Token regulation, and dividend tokens in particular, is still to a great extent a gray area.

Apart from being a legal novelty, designing a uniform regulatory framework for the token economy is a daunting task for regulators around the world. Part of the challenge stems from the fact that by buying a token, holders acquire different tangible and intangible goods, ranging from commodities to a purchase of rights to assets or securities. The diverse aspects of token investment are covered by different laws and regulations and, in many cases, do not fall into any category at all. In the past months, different jurisdictions have stepped up their efforts to establish a basic framework around tokens.

The SEC is an example of a watchdog which views tokens promising any kind of future profit – whether utility, dividend or other types – as securities.

Dividend tokens, as far as they offer investors a possibility to generate a passive income, fall under the same classification as securities, at least as far as US legislation is concerned.

Numerous types of token investments come with a lot of strings attached. Holders can use them under certain conditions and, for the most part, they are restricted to the network they represent.

Unlike them, dividend tokens offer investors a straightforward passive income model.

In cases where tokens are regulated, they provide transparency and security for the holders which many investments and asset classes lack.

Are Dividend Tokens Worth the Investment?

In addition, the blockchain nature of those tokens mean that they are transparent, decentralized and, as the case may be, anonymous. Finally, to make sure that there are funds for dividend payments, the projects and services they are linked to need to be profitable. Organizations committing to distributing dividends have profitability inherent in their business plans, giving investors relative certainty regarding their financial holdings.

As previously indicated, token dividend payouts are not always predictable. In addition, like many other blockchain-related projects, they are subject to changes at the sole discretion of the issuer.

In certain cases, organizations distribute dividends upon individual payout amounts reaching a certain level. This may be an effort to maximize payments and avoid certain transaction costs or a result of other strategic decisions. Certain organizations, prioritize token holders based on the amount of tokens owned which may be disadvantageous for smaller investors. Furthermore, in some cases, payments may depend on organizations hitting certain performance indicators, outside of the control of the individual investor.

Dividend tokens are a form of digital financial assets. As such, they are best suited for financial and investment-related undertakings. Examples include cryptocurrency investment funds and enterprises distributing a portion of their upside as a dividend. Another

PART OF THE CHALLENGE STEMS FROM THE FACT THAT BY BUYING A TOKEN, HOLDERS ACQUIRE DIFFERENT TANGIBLE AND INTANGIBLE GOODS, RANGING FROM COMMODITIES TO A PURCHASE OF RIGHTS TO ASSETS OR SECURITIES

example is companies investing in cryptocurrency mining and sharing part of their net profits with token holders. Having said that, dividend tokens are very versatile and have limitless applications, from PoS currencies to other investment projects and individual blockchains. From a user perspective, dividend tokens unlock the monetary value that holders have tied into their digital assets. Owners can continue to enjoy their holdings while receiving payments on top of the value of the underlying asset.

The concept of dividend tokens and projects like Nexo are both aimed at solving a $5 trln problem. According to research by crypto exchange Latoken, by 2025 the total "capitalization of cryptocurrencies may exceed $5 trln as crypto wallet penetration exceeds 5 percent of the world's population and asset cryptocurrencies pave the way for trading asset tokens."

Yet, due to a number of reasons – from regulatory to market and project specific – a considerable amount of tokens and assets remains unused. While undoubtedly positive for the industry, the increased volume means that the idle value of digital assets will only grow. Their immense financial power, directly or indirectly tied into cryptocurrency-related assets, has the potential to transform the market. That is, if cryptocurrency owners could better take advantage of immediate investment opportunities that require liquid cash.

This is where dividend tokens and liquidity solutions like Nexo can play an important role.

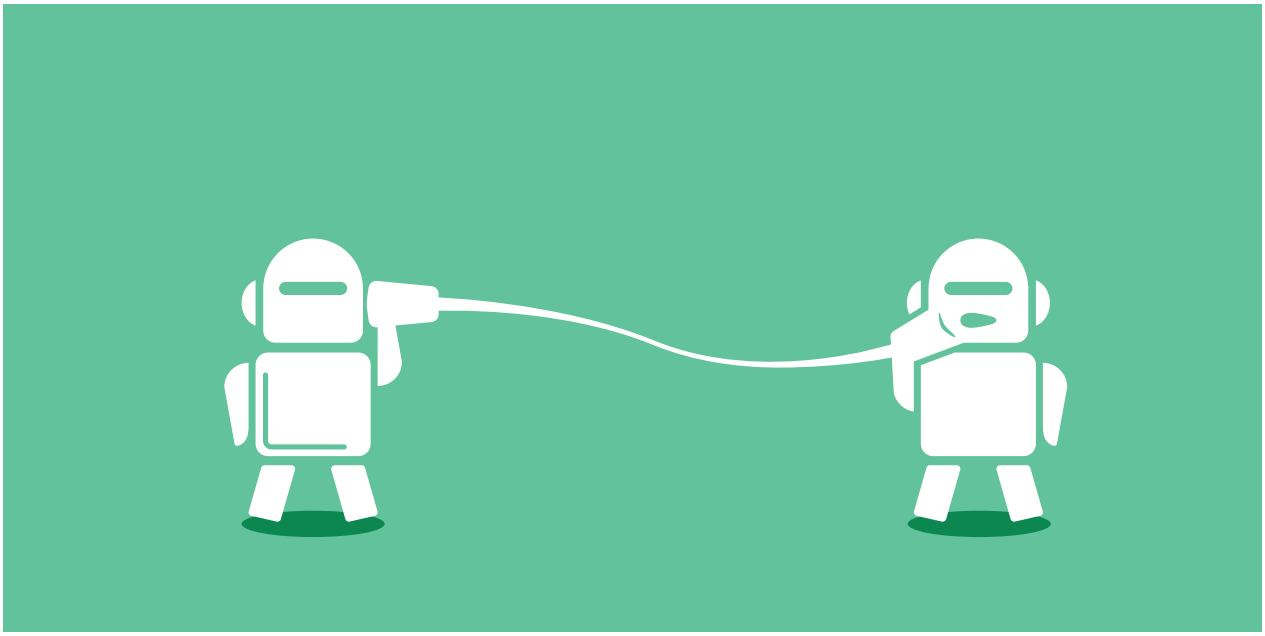
Conclusion

With every new investment vehicle, it is recommended that you seek professional financial advice when investing in the above issues. The nuanced, constantly evolving nature of the crypto-asset phenomenon, coupled with the lack of relevant formal accounting pronouncements, present complex challenges for preparers of financial information. Dealing with crypto-asset accounting therefore requires a detailed understanding of both distributed ledger technology and relevant accounting concepts. In the absence of further actions by financial regulators, holders of crypto-assets may be unable to achieve the accounting treatment they consider most appropriate. So it is with caution, that each individual situation will require a unique approach, tailored with, as stated above, professional advice.

FROM A USER PERSPECTIVE, DIVIDEND TOKENS UNLOCK THE MONETARY VALUE THAT HOLDERS HAVE TIED INTO THEIR DIGITAL ASSETS

Thomas Ruggeiro
SME Corporate Actions
TCS Financial Solutions (TCS BaNCS)

Golden Gate, San Francisco, California, USA



ROBO ADVISORY IN WEALTH MANAGEMENT – HAS IT GONE FAR ENOUGH?

We have all been witness to significant shifts in the wealth management industry from a traditional to a more technologically-driven advisory function. Robo Advisory has been the area of interest for the wealth management industry for quite some time now. The strides made in Artificial Intelligence, Machine Learning, Big Data have taken the Robo Advisory function to a higher plane in recent times. This paper will evaluate the promise Robo Advisory held when it first arrived, how it has evolved today in servicing enterprises and end users at large and, more importantly, critically analyze if it has lived up to its potential.

In the past decade, the Robo Advisory has leaped from a simple online questionnaire-based single-product asset allocation to a full service algorithm-driven multi-product one. Due to digitization, end customers now control key processes beginning from account opening with simple navigation steps, all the way to measuring risk

tolerance levels and recommending an ideal asset allocation. Right from designing a questionnaire to analyzing the needs and risk profile of a customer and, finally, providing an investment recommendation to implement the strategy, a Robo Advisor creates several simulations and tools to derive the end result without manual intervention.

Furthermore, Robo-Advisories have indeed enhanced the overall experience and helped increase industry size in terms of making it possible for mass market segments to leverage professional wealth management advice.

The initial objective was to provide low cost advisory with quick turnaround on customer expectations with digitized interaction. The expected impact was mainly to attract new customers into 'advice'. With the evolution of Robo Advisors, markets have consolidated with new digitized offerings from established participants. All this while, during all of this evolution, the fears related to loss of human jobs has proven unfounded.

Adoption Models

The two types of Robo Advisory models that are stabilizing in the industry are:

1. Wealth management advisory firms deploying completely automated Robo Advisory platforms

2. Entities such as private, investment banks, asset managers and broker dealers who prefer a Hybrid Advisory and a "Machine First approach followed by a human touch"

The table in exhibit 1 presents a high level comparison between the two models.

What has changed in the last few years?

The Robo platforms were initially focusing on ETF and Mutual Funds as part of cross

WITH THE EVOLUTION OF ROBO ADVISORS, MARKETS HAVE CONSOLIDATED WITH NEW DIGITIZED OFFERINGS FROM ESTABLISHED PARTICIPANTS

Sl No	Fully Automated Model	Hybrid Model
1	Ability to reach a larger audience across customer segments, mainly applicable for the mass markets	Scalability has certain limits; leverage robots for advice and advisors for client management.
2	Lack of access to 'live advisors' when needed	'Live Advisor' participation exists across the value chain, especially for complex needs and life events.
3	Little scope for personalization of advice to start with. Personalization is possible based on historical data and leverages AI, but will evolve.	Personalization/customization exist based on end user preferences, and can be initiated by advisors.
4	Limit on asset classes offered to start with (expected to get better with historical data)	Provides product based counsel across markets and currencies.
5	Not ready for Bearish markets (Points to note - Wealth erosion from the Shanghai market crash due to full automation, lack of historical data, and an over-dependence on automation proved to be an issue.)	Re-balancing with machine inputs determines better "time in" the market eliminating unwarranted transaction costs.
6	Lower fees may improve margins	Long term investors are open to paying reasonable fees for personal advice

Exhibit 1

sell and upsell opportunities, but now have transformed to predict various 'what if' scenarios based on global events and their impact on customer portfolios. This progress has been achieved mainly due to analytics, Artificial Intelligence and availability of historical data.

Further, platforms are factoring account aggregation into their investment analysis for better control over customers' portfolios. Though it is common for fully automated and hybrid models, this has become a key requisite for end users to view a near 360 degree view of their net worth.

Although the algorithms provide comparative data for informed decision-making, certain investor segments prefer personalized advice, especially, during turbulent markets. Pre-defined algorithms re-balance based on the market behavior but may incur unnecessary transaction costs, whereas the hybrid model provides an opportunity for consultation before execution. Life events such as marriage/divorce, child birth, higher education, major illness, accidents, etc. which could impact finances require a hybrid model.

Regulations like MIFID insist that all financial professionals focus on their customers' interests, especially, when offering products which need to be based on the risk appetite of the end customer. Presently, platforms measure the needs and risks that are available with in-house data, but they need to factor in held-away assets and personal financial data to derive a complete picture of their customers.

The above indicates that disparate systems as well as diverse data repositories need to be integrated onto a common platform to provide a holistic and consistent picture to

ROBO PLATFORMS HAVE TRANSFORMED TO PREDICT VARIOUS 'WHAT IF' SCENARIOS BASED ON GLOBAL EVENTS AND THEIR IMPACT ON CUSTOMER PORTFOLIOS

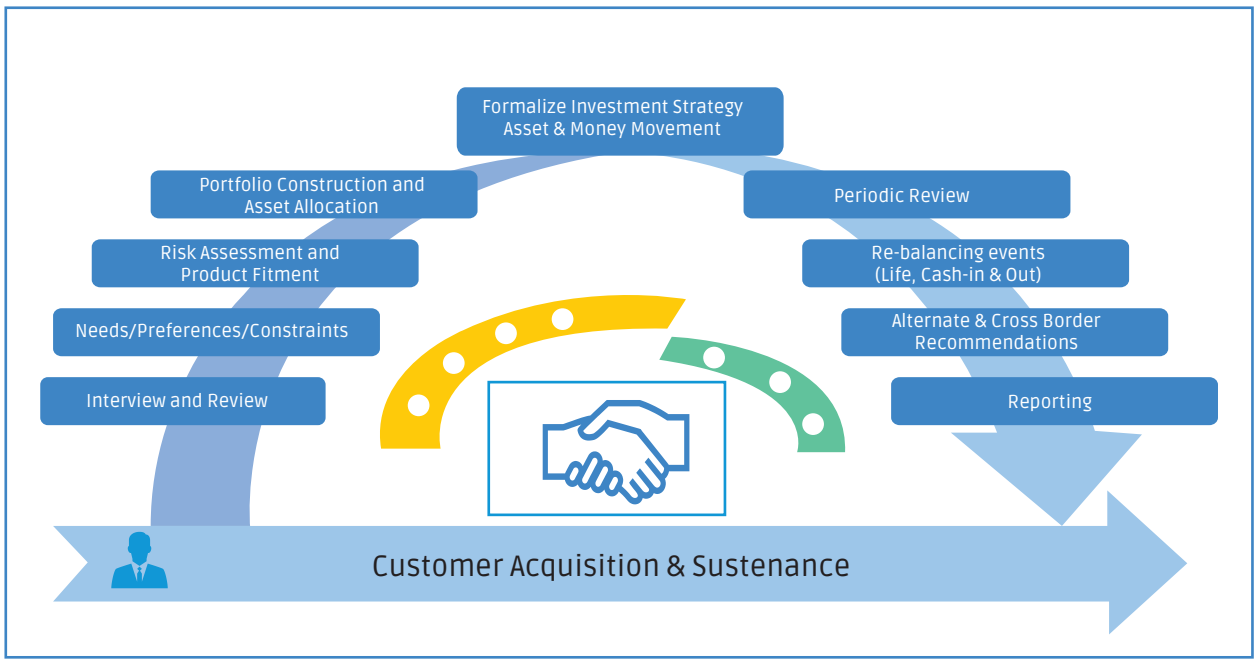


Exhibit 2

HUMAN ADVISORS NEED TO TAKE INPUTS FROM MACHINES AND ADD THEIR INSIGHTS TO ARRIVE AT A HOLISTIC INVESTMENT STRATEGY

the end user. Opportunities exist for big banks to build such a platform with the help of reputed vendors and offer Robo and Hybrid advice through a PaaS model to their customers, as well as customers of small banks, by making use of online banking services.

What Next?

The role of advisors has changed today, as they are expected to stay abreast of new IT applications, analysis, acquisition, retention and data privacy factors. Human advisors need to take inputs from machines and add their insights to arrive at a holistic investment strategy. The handshake between machine and human beings as depicted in the exhibit 2 is changing the wealth management space.

The future of wealth management will be a combination of services based on robotics, automation, and a more traditional in-person advisory piece, and it is only expected that Robo Advisors will increase the scope of the activities within the wealth management value chain. The job will likely turn into that of a trusted partner: a person who concentrates on core competencies, acts as a confidant and even coaches clients.

The inability to meet customer expectations in the past few years has led to a great deal of market consolidation. The extent of self-direction among clients and the personalization offered by firms will determine the sophistication of wealth management offerings in the future, which in turn can be possible only through a hybrid or Cyborg model.

Mahesh V Sairam
Senior Consultant
TCS Financial Solutions (TCS BaNCS)

THE RISE OF 'NON-INSURANCE'

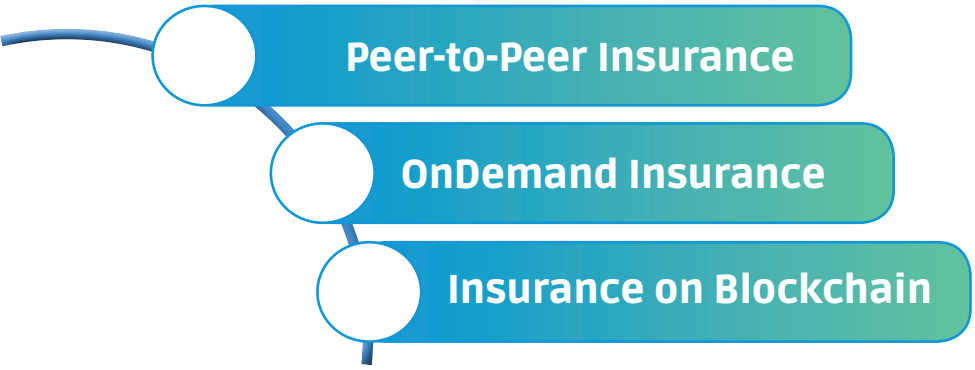
The insurance business model comes encumbered with a fundamental conflict. This conflict is inherent and lies between policyholders and insurance carriers, especially, during the claims process. While policyholders expect their claims to get paid, insurance carriers are striving to increase profits for their shareholders with better control on claims pay-outs. The claims experience is considered to be the moment of 'truth' for policyholders as it determines their loyalty to the carrier in the future.

The primary source of profit for insurance companies includes managing underwriting costs and loss control—and, the latter is largely about claims. Most traditional insurance processes are ridden with transparency issues and can be slow and inefficient, resulting in overheads that are passed onto the customer in the form of higher costs aka policy premiums.

Now, let us look at some interesting facts. Generation Z or the Centennials behave differently from the Millennials or Generation Y and account for 25.9% of the population in the USA. However, they account for a mere 10% of annual insurance premiums that are generated in the country. Gen Z is supposed to be tech-innate as compared to the tech-savvy Gen-Y, who notch up a quarter of the insurance market. Needless to say, insurers are missing out on a key customer segment, primarily due to inefficient models, practices and ever-increasing premiums. So, how can the business context evolve to cater to this key group?

Insurance companies are slowly realizing the gap and opportunity they are missing out on. The advent of digital technologies is rapidly changing the industry, giving rise to alternate and non-traditional insurance models that offer speed, convenience and ease that the new generation is looking for. More importantly, these new business models that are now witnessing funding and growing interest from start-ups and insurtechs are based on On-Demand coverage and applicable only for the duration of the need.

Let us take a look at some of the new business models that the insurance industry is witnessing today.



Peer-to-Peer Insurance

The shared economy relates to a collaborative consumption of goods and services translating to a hybrid market model of peer-to-peer exchange, with transactions facilitated via community-based online services. Catering to this shared economy from an insurance carrier's perspective means changing models and processes substantially. This is happening as we speak and we are seeing innovative products being designed to bridge this gap; for example, Tom can now rent an extra room for a weekend with a specific rate, or Sally can sell a ride using an extra seat in her vehicle for the coming week.

A shared economy naturally leads to the concept of sharing risks. This in many ways is like going back in time to the roots of how insurance models were formed. Pooling of resources to support collective causes was a common feature in times of lore. In such a model, individuals in the group pool their resources to support coverage and pay claims. Excess available resources from members are also pooled and claims are paid with mutual consent. In simpler terms, this is a no-premium insurance; and, if no claims are made, then the entire initial contribution is returned.

We must also understand that insurance is highly regulated in most countries, and where P2P insurance is allowed, it may need backing up for excesses or catastrophic losses. New players are pouring in globally to leverage this model of open and shared risks. It is prudent for insurance companies to devise and promote models to support such peer-to-peer networks and provide support for the excess

INSURERS ARE MISSING OUT ON A KEY CUSTOMER SEGMENT, PRIMARILY DUE TO INEFFICIENT MODELS, PRACTICES AND EVER-INCREASING PREMIUMS

THE ADVENT OF DIGITAL TECHNOLOGIES IS RAPIDLY CHANGING THE INDUSTRY, GIVING RISE TO ALTERNATE AND NON-TRADITIONAL INSURANCE MODELS THAT OFFER SPEED, CONVENIENCE AND EASE THAT THE NEW GENERATION IS LOOKING FOR

losses. This approach will prove to be a win-win for insurance companies as well as customers.

On-Demand Insurance

On-Demand insurance is all about the divide between insuring a risk during a moment of need versus that of a risk spread across time. The ubiquity and rampant usage of Smartphones today act as a lever for consumers booking rides or purchasing insurance via apps. Insurance which was hitherto considered dreary and uninteresting now has become exciting with the advent of apps. For an 'always on' user, it makes sense to purchase insurance "just in time" through an app.

The opportunities to insure a multitude of products with micro-payments via mobile phones are enormous. As evident, On-Demand insurance products are targeted at the Gen-Y and Gen-Z user segment.

Innovation is key. Some companies are offering "episodic insurance" for Uber and Lyft drivers that starts and ends along with the ride. Others are providing similar insurance for flight travellers against low premiums, and there are some who let their customers insure electronic gadgets only for the days of use. Key to note is that these start-ups are making buying insurance easy to understand and enabling pay-for-use features.

However, we need to understand that On-Demand insurance will not replace traditional insurance altogether; for example, a bank holding a mortgage on a house will not allow home insurance on the property to be taken off On-Demand. On-Demand insurance is a best fit for commodities than risks with very large exposures. Mobility via smartphones will drive this capability wherein coverage and claims can be settled with a few clicks of a mobile app. It becomes very important to review fraud detection and STP rules in such a model as it is not moderated by surveyors and claims adjusters.

Insurance on Blockchain

Intermediation and slow evaluation are known causes of dissatisfaction among the current crop of young insureds. Technological innovations like blockchain have opened up the horizon for disintermediation. The best case scenario is when claims rules are logged onto a Smart Contract and automatically triggered upon meeting a specific event criteria. Claims are processed and paid without the painstakingly slow evaluation process for cases that can be processed straight through. We may soon see insurance carriers bidding for risk on a blockchain. Such measures increase competitiveness and reduce redundancy. Insurance companies will note that the current method of quote comparison is thus done away with.

Underwriting and Risk Management

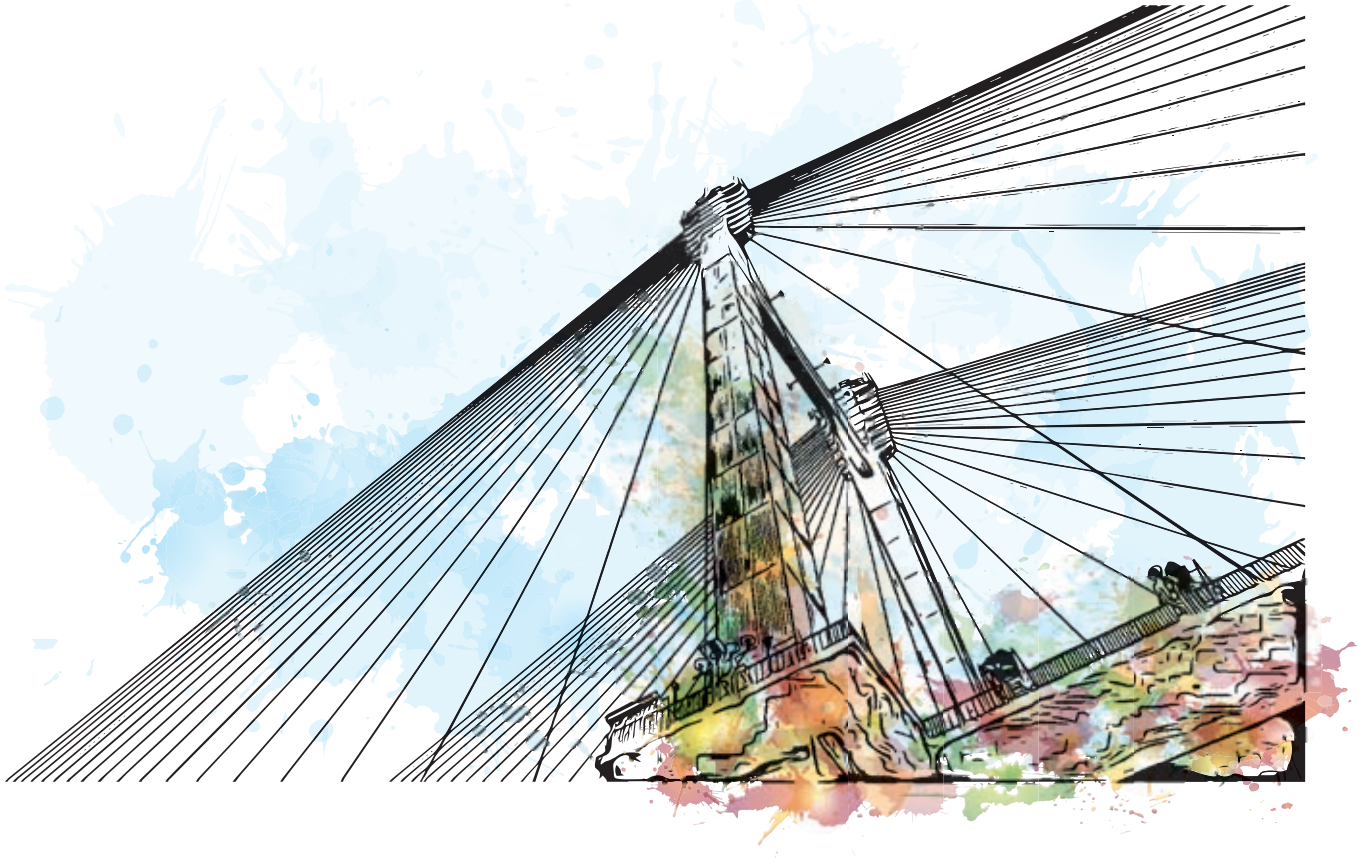
The behaviour of these emerging insurance models demands a re-think in risk management, especially in underwriting and rating. For On-Demand insurance models, underwriting is near real time or includes "continuous underwriting".

In most of these models discussed above, choosing the right set of products (risks covered) is important. These models are better suited to cater to micro-insurance within personal lines. The jury is still out on the suitability of similar insurance models for commercial lines with larger exposures.

IoT can play a significant role in providing continuous data to support run-time underwriting and squaring off claims. The ability to stay connected for the newer generation aids these instant insurance models. For example, insuring an Uber ride via these models will verify if the ride is really on. IoT supported underwriting models promises to extend its reach from vehicles to property, gadgets, and so on.

It is quite evident that traditional insurance companies need to be on their toes and watch out for the start-ups and insuretechs. New technologies are lowering costs, improving sales and helping insurers become more customer-centric, and in the most transparent manner. Products being insured are being re-imagined in a way that insurance carriers never thought of earlier, and digital technologies are aiding the rise of this 'non-insurance' wave.

Joydeep Sarkar
Senior Consultant
TCS Financial Solutions (TCS BaNCS)



Vidyasagar Setu bridge of Kolkata, City in West Bengal

CLOUD AND DIGITAL TRANSFORMATION

The last decade has seen a significant change in the way banks deliver services to customers. What with emerging technology trends, ubiquity of Smartphones, and tech savvy Millennials, customers have also become discerning and demanding. Convenience, context and speed define the way customers interact with their banks. The entry of fintechs, Big Techs and telecom companies into financial services has led to competition, partnerships and most of all, innovation. Most talked about are firms in China that use WeChat applications to deliver banking services, and telecom operators in Africa leading the way in mobile money and payments, loans and insurance. Needless to say, traditional banks see tremendous opportunities and are now trying to stay on top of the game by delivering services aligned with the new consumption patterns of their customers. Prime on their minds is a need to revisit banking models and organizational culture to regain customer trust and bolster productivity.

Many banks are turning to the cloud, employing it as a business asset to transform their companies and reshape their operating models, products, services and end customer experience. In fact, cloud is fast becoming a foundational element for digital-driven change. Bringing in agility, faster response times, scalability and flexibility, cloud hosted software and infrastructure are gaining acceptance and momentum. The demonetization drive in India in 2016 resulted in high currency notes being withdrawn

from circulation without any prior intimation. Overnight, the country saw a manifold increase in the number of digital transactions/ users, and the introduction of new innovative methods for payments, most of them outside the traditional space of banks and financial institutions. Banks immediately acted on this pressure and began looking for ways to offer instantaneous payments as well as by scaling up their infrastructure to meet the spurt in volumes.

In the days to come, the key differentiator will be how good is your infrastructure and ecosystem in terms of its ability to add new partners, fintechs or even competitors.

Some of the key factors driving digital and cloud adoption are:

Open Banking: By providing open access to application services and data to an ecosystem of vendors and partners, new entrants to banking are creating fresh revenue streams. Coupled with regulatory demands placed by the EU's Payment Services Directive 2 (PSD2) and Access to Accounts (XS2A), banks will have to rethink their conventional operating models – opening up capabilities and assets to deliver hyper responsive customer-centric solutions. They need to explore cloud and Open Banking solutions which will allow them to harness the power of Application Programming Interfaces (APIs) and microservices. In turn, it will help them transition to an Open digital platform. Successfully deploying this platform can help banks evolve from a peripheral entity to a mainstream powerbroker.

Access to new technologies: Cloud is now fast becoming a vehicle for innovation and bringing in a level playing field in the financial services industry. It is enabling large ecosystems of players to interact and work with expensive technologies like Machine Learning and AI. Cloud is now being leveraged for more than cost savings and to enable new business opportunities such as the delivery of APIs, bringing in more revenues.

Responsiveness: Technological advances in Internet and mobile technologies has facilitated fintechs and Big Techs to innovate and offer alternate delivery channels to the customer; for e.g. the use of Apple Pay, Samsung Pay. Ushering in speed in customer service and heralding the motto of convenience, these new entrants are now collaborating with banks, as the latter broaden their ecosystems. With response times becoming critical for banks, they need to be able to scale their infrastructure up or down almost instantaneously without worrying about lead times for procurement. The focus in most instances is to shorten implementation time, respond faster, reduce costs, improve engagement and make banking easier.

Small and Community Banks: Banks that did not have the wherewithal to adopt digital banking in its true sense especially in setting up new and sometimes large infrastructure now find that they can jump into the fray at a fraction of the cost and without heavy capital investments, thanks to cloud solutions. On top of all this, they get the flexibility to add resources as they grow. They do not have to worry about IT operations and maintenance, thereby freeing up resources for their core activities. With the interoperability that the cloud

BANKS THAT DID NOT HAVE THE WHEREWITHAL TO ADOPT DIGITAL BANKING IN ITS TRUE SENSE ESPECIALLY IN SETTING UP NEW AND SOMETIMES LARGE INFRASTRUCTURE NOW FIND THAT THEY CAN JUMP INTO THE FRAY AT A FRACTION OF THE COST AND WITHOUT HEAVY CAPITAL INVESTMENTS, THANKS TO CLOUD SOLUTIONS

offers, smaller banks can chose best-of-breed solutions tailored to their needs. This places them in a unique position to serve their customers better and take on the larger banks in digital customer engagement.

Costs: With cloud-based offerings, investments move from a capex to an opex model. Banks are not encumbered with the costs of procurement of hardware and software licenses and need not lose sleep over upgrades and the fear of obsolescence. In the cloud, a bank pays the service provider on a periodic basis and signs up for a specific duration. The onus of refreshing and upgrading the infrastructure and the applications is on the respective service provider.

Security and Compliance: Data security is of prime importance at a bank. It deploys and demands stringent safety measures from suppliers and has to ensure that new applications meet the latest and most rigorous security standards. With new and emerging threats, this is a continuous activity making the case for cloud solutions that offer various IT security levels, such as identity and access management. With certifications such as SOC-2, COBIT and more, cloud solution providers can help banks comply with security regulations. These standards enforce appropriate security controls during the development, including checks on access, vulnerability, compliance verification and penetration testing.

Reliability and Availability: High availability is, ultimately, the holy grail of the cloud. It embodies the idea of anywhere and anytime access to services, tools and data and is the enabler of a vision of the future with companies with no physical offices, or of global companies with completely integrated and unified IT systems. The need for software and data to be available 24*7 is critical. Even if a data center goes down for some reason, banking operations need to commence from a remote data center. Availability is also related to reliability; a service that is on 24x7 but goes offline often is useless.

Regulations: Financial regulators globally have begun to recognize the appropriateness of leveraging the cloud as long as mandates and compliance obligations are met, including those related to data protection and integrity, resilience and auditing. In addition, a decade-long maturing of cloud services, along with the active engagement of many regulatory and security experts, have produced an abundance of guidance for cloud implementations, including best practices around due diligence, risk assessments, compliance and continuous monitoring. The PRA, the British regulator has issued guidelines with respect to outsourcing to the cloud and other third party IT services.

While there is increased adoption of the public cloud, many banks have also not been able to completely overcome these challenges due to concerns around security, latency and high availability requirements for business critical applications. However, hybrid cloud application use cases are being increasingly accepted as a holistic approach to enable scale and cost-effectiveness along with superior data security and control.

Today banks are being looked at by the customers as one-stop

CLOUD IS NOW FAST BECOMING A VEHICLE FOR INNOVATION AND BRINGING IN A LEVEL PLAYING FIELD IN THE FINANCIAL SERVICES INDUSTRY. IT IS ENABLING LARGE ECOSYSTEMS OF PLAYERS TO INTERACT AND WORK WITH EXPENSIVE TECHNOLOGIES LIKE MACHINE LEARNING AND AI

THE FOCUS IN MOST INSTANCES IS TO SHORTEN IMPLEMENTATION TIME, RESPOND FASTER, REDUCE COSTS, IMPROVE ENGAGEMENT AND MAKE BANKING EASIER

solutions for all their financial services needs. Apart from providing normal banking services, the bank is expected to offer investment ideas, help a customer buy insurance, pay bills and provide PFM services, just to name a few. The core competency of banks is in offering financial solutions to its customers and not in competing on technology with fintech companies. Consequently, banks are partnering with these companies to offer innovative solutions to their customers.

The financial services industry is now witnessing rapid strides made in the areas such as Artificial Intelligence, Natural Language Processing, Big Data analytics, and IOT. These technologies lend themselves to the cloud and exploit it for its elasticity, the ability to process huge chunks of data in a short time, or edge computing that reduces the amount of data that is transferred, and API's to gather data from diverse sources. While most of the use cases are around delivering superior customer experiences, the real power of these technologies will be when the banks use them in the areas related to their core business operations; for instance, in AML and compliance, lending, fraud or risk management.

As we move forward, some of the factors which we expect to play out in the industry are:

1. Personalization at a transaction level rather than at the customer level – much similar to what Amazon does today for its customers

2. Customers will expect exponential value at the cheapest price and at the shortest possible time. Banks may not be able to deliver all services on their own and therefore they will have to create and nurture ecosystems that in turn can compete against each other. This would mean tying up with partners, fintechs to offer a complete solution.

3. Approach to risks – All along, institutions have been trying to minimize risks, but moving forward, they will court and embrace risks using cognitive technologies and gain a competitive advantage.

And, the only way, we believe that all of this can happen is if institutions look for solutions that are designed to leverage the scale and efficiencies of the cloud.

References

https://www.fca.org.uk/publication/guidance-consultation/gc15-06.pdf

https://www.dsci.in/sites/default/files/Whitepaper-on-Best-Practices-for-Security-in-Cloud-Adoption-by-Indian-Banks.pdf

ALL ALONG, INSTITUTIONS HAVE BEEN TRYING TO MINIMIZE RISKS, BUT MOVING FORWARD, THEY WILL COURT AND EMBRACE RISKS USING COGNITIVE TECHNOLOGIES AND GAIN A COMPETITIVE ADVANTAGE

R Subramanian
Program Director TCS BaNCS Cloud
TCS Financial Solutions

ARE SAAS APPLICATIONS A PREFERRED CHOICE TODAY?

The customer-driven financial services environment of today demands that banks and financial services firms develop—and move—towards innovative business models, products, operations and technology. A technology model that allows agility and speed to help them seize new market opportunities, protect current revenue streams, respond to a changing business environment, adapt quickly, and rapidly scale to meet changing business needs is therefore critical.

Cloud is expected to become a default choice for legacy replacement/enhancement and new application development today. Financial services organizations can adopt multifarious paths to cloud migration depending on the existing state of their applications. They can adopt a SaaS model or custom develop applications using microservices, DevOps and containers for the cloud.

There is no one right cloud strategy for all financial companies. In this article, we look at what makes for reasons behind slow adoption

and also at what makes for a competitive SaaS strategy, one that can engender revenue growth and create a scalable, resilient environment.

SaaS providers can achieve higher economies of scale, which translates into lower pay-as-you-go prices due to a large number of banks using the same services.

Are there inhibitions to an open-hearted adoption of the SaaS model in the industry?

1. An obvious reason could be the perceived risk. Risk of ensuring privacy, security, control and ongoing compliance, which in varying degrees is entrusted and delegated to the chosen SaaS vendor.
2. Complex regulatory compliance needs with sometimes overlapping regulations that change by geography and the breadth of services offered, can be challenging for both the provider and consumer.
3. The SaaS vendor in turn might have sourced part of the solution from other third party vendors and subcontractors. This can be perceived as an unnecessary complexity.
4. To meet local market needs and regulations, core banking vendors will need to customize their cloud offering targeting a specific market segment and geography. Most banks have multi-country operations, and having a common system and single deployment is not possible.
5. Existing cloud set-ups at most large enterprises - Most enterprises, especially the established large organizations have set up their own private and hybrid clouds and will want to use them to deploy core banking solutions rather than opting for a solution from a vendor.
6. With a greater regulatory push towards Open Banking, new business models are emerging, widening the scope of services and solutions available to end customers. In such cases, fintechs and other new entrants to financial services might be completely unconnected to the core banking vendor and not be part of the offering.
7. Pricing and liability sharing models – A core banking SaaS vendor can realize economies of scale only after gaining and developing a reasonable size of clients and operations. Some banks may demand that the vendor even share liability.

The exhibit in the next page, explores the key attributes of a SaaS strategy that banks can adopt to offer a better user experience and gain a competitive advantage. A successful path to SaaS migration means putting technology at the center of the business and looking at it as a foundation for growth.

This approach gives financial services organizations the required agility, which in turn can help them transform into a digital business, strengthen their enterprise security and compliance, reduce their infrastructure footprint, and introduce automation to deliver improved efficiency and cost savings.

A "DevSecOps" Approach to SaaS

Keeping in mind the importance of application security at every

SAAS PROVIDERS CAN ACHIEVE HIGHER ECONOMIES OF SCALE, WHICH TRANSLATES INTO LOWER PAY-AS-YOU-GO PRICES DUE TO A LARGE NUMBER OF BANKS USING THE SAME SERVICES

A CORE BANKING SAAS VENDOR CAN REALIZE ECONOMIES OF SCALE ONLY AFTER GAINING AND DEVELOPING A REASONABLE SIZE OF CLIENTS AND OPERATIONS. SOME BANKS MAY DEMAND THAT THE VENDOR EVEN SHARE LIABILITY

Application Capability	• Digital Accessibility: "Anytime", "anywhere", "on-the-move", "24×7×365" through Digital Access. Also, an enabler for financial inclusion • Customer-centric: New services and offerings, convenience and control over banking services • Enhancing Customer Experience: — Omni-present digital access with Conversational User Interfaces (CUI) like chat or voice bots — Analytics for personalization • Financial Superstore – A one-stop solution for banking and financial services • Open Banking, APIfication and microservices Architecture: Small independent services that communicate over well-defined APIs • Containerization: Operating system virtualization, allowing applications and their dependencies to run in resource-isolated processes • Appropriate back-up, retrieval and redundancy • Process automation and toolsets for effective monitoring, control and audit trail. • Zero downtime • Higher adoption rate due to a lower learning curve • Artificial Intelligence and Machine Learning
Agility and Time to Market	• Easy and fast rollout of personalized products for customers • Timely technology upgrades • Low entry barriers — New Banks (Bank-in-a-Box) — New Markets — New Products
Scalability	• On-demand scalability and performance for seasonal loads, and volatile business cycles without additional investment
Compliance, Security and Regulations	• Strong enterprise security, compliance and data privacy • Safeguards against data vulnerability which is high due to access via public networks for digital channels, social media interfaces and interfaces with business • Regulatory compliance and ease of implementation of new concepts like PSD2, Open Banking, and GDPR
Low cost structure	• Server-less computing • Transaction based pricing • Pay-as-you-go with a low infrastructure footprint

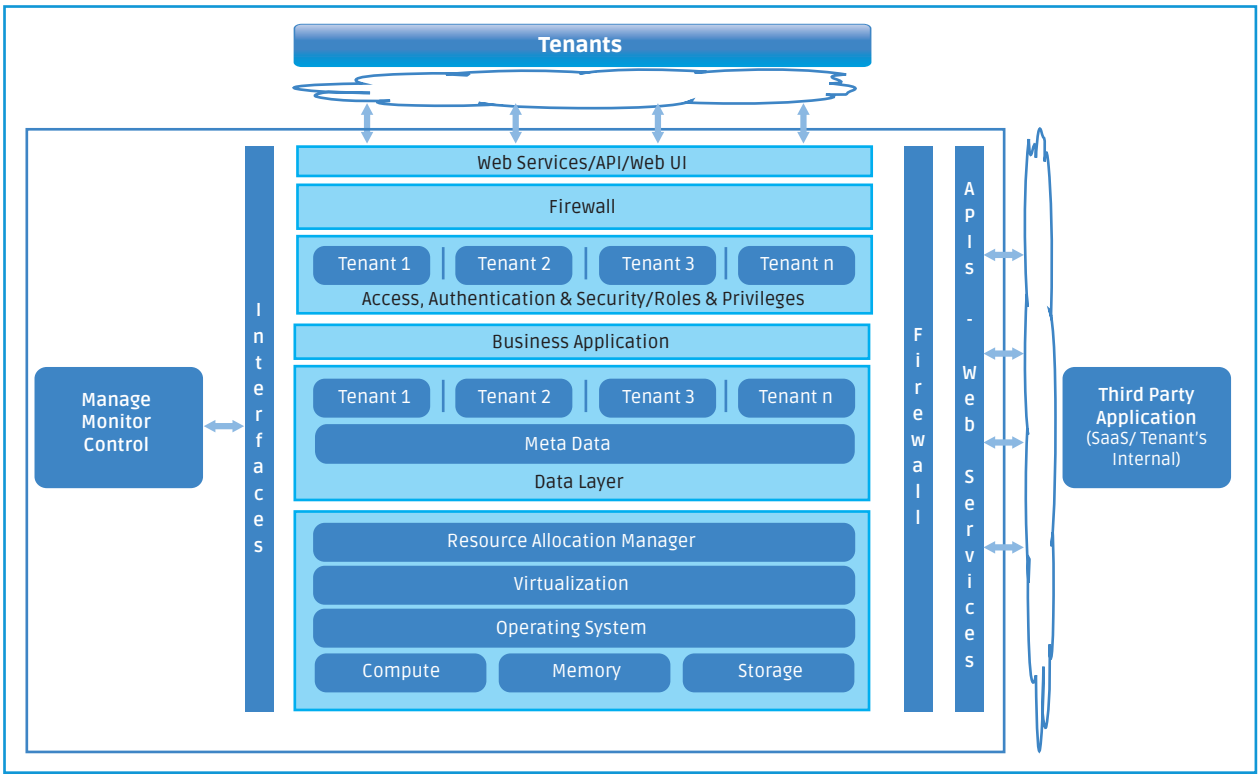


Figure 1: SaaS Architecture

The graphic below demonstrates the various roles that banks, SaaS providers and technology have to play to enable success.

Application and Technology

- Scalability due to elasticity of processing resources
- Robust security architecture, which also ensures privacy of data
- Local regulatory compliance
- Configurability and parameterization
- Monitoring and controls with built-in tools
- Extent of Service Oriented Architecture in the application
- Containerization: Modularity of business functions
- Use of Open standards in the application
- Automation of operational processes
- Pre-certified applications
- Server-less Computing (like AWS Lambda, Microsoft Azure Functions and Google Cloud Functions)
- Application availability (24×7×365)
- Ease of deployment: Lift and Shift
- Microservices architecture: APIs and Services for integration (to provide as well as consume) with other SaaS based and internal legacy systems
- Data: Fungible storage, backup, retrieval and processing capability

Banks

- Clearly defined Objectives: Legacy to SaaS/New Modules on SaaS/Complete Transformation
- Management buy-in
- Push to overcome resistance to change and assurance of job security to employees
- Extensive executive involvement from business and IT
- Governance policies for SaaS.
- Planning :
  - Migration sequence (from existing model to SaaS)
  - Deployment sequence (Business Priority)
  - Rollout Strategy: Parallel run, controlled user use, Beta run
  - Rollback strategy
- Clear definition of roles and responsibilities

SaaS Providers

- Adequate skills
- Capital for upfront and ongoing investment
- Roadmap for constant improvement(Technology, Functionality)
- Trainers
- Reliable hosting partners. (Long term commitment and high stake)
- Integrating DevOps/DevSecOps as a part of the SaaS Product Development Strategy.
- Transaction based pricing

stage, taking DevOps one step ahead into a "DevSecOps" model, wherein development, security and operations are combined into a single unit, is another key factor in developing a compelling SaaS strategy.

Contractual arrangements between banks and the providers need to come with sufficient safeguards, while also taking care of:

- Service levels, acceptable use and privacy, confidentiality and security of financial and customer data
- Customers' right to access, audit application and data
- Warranties and liabilities
- Business Continuity Plans

The road ahead

The financial services industry is witnessing a significant shift to SaaS models in the areas of product initiation, customer servicing (CRM), marketing, human resources, and digital channels. The next phase is expected to include new products, customer analytics, Enterprise Content Management (ECM), KYC, IT development and other peripheral non-core applications. Smaller banks are now taking steps to move core functions of retail and corporate banking, asset and wealth management, payments processing, collections and reconciliations to SaaS. For the mid-sized and large banks, the transition to SaaS is likely to be phased and gradual and will involve the migration of:

- New products and digital channels
- Peripheral and non-core systems
- Core legacy applications
- Data analytics

New entrants and non-traditional players have also begun adopting the SaaS model as a "Bank as a Service". Horizontal SaaS providers have been active in the market for a while now, and this space is fast becoming crowded and competitive resulting in a lack of compliance with industry specific needs and regulations. On the other hand, vertical SaaS providers are focused on niche industries and are seeing more acceptance.

In the future, we expect banks to have better contractual arrangements in place that will take care of services levels, obligations and industry specific needs. As regulations come into the fray, we hope to see more resilient and fail-proof cloud infrastructures coming into play. SaaS has also become a key enabler for smaller banks to compete with the large banks. In all, there are sound reasons to believe that all banks will go digital, use disruptive technologies and transform their business models in a few years, with SaaS being a core enabler.

R Subramanian
Program Director TCS BaNCS Cloud
TCS Financial Solutions

Bharat Shah
Head.TCS BaNCS Cloud
TCS Financial Solutions (TCS BaNCS)

V Kamesh Thatikonda
Product Specialist
TCS Financial Solutions (TCS BaNCS)

Bank Yahav set out to transform its banking landscape, in a first of its kind for Israel. They found a certain way .

Bank Yahav, a retail bank, was looking for an end-to-end universal banking system to offer a wide spectrum of services in banking, payments, securities trading and advisory services across local and international markets. They selected TCS BaNCS for Universal Banking from Tata Consultancy Services to fulfill this strategic imperative. TCS deployed an end-to-end solution to meet the bank's business requirements, including infrastructure and data security set up, and a range of IT and operational services. This core banking transformation entailed integrating over 500 interfaces with nearly 100 entities into a complex ecosystem as well as ensuring compliance with over 1,800 regulations. As the first bank in the country to adopt an international core system, Bank Yahav has set a benchmark in the Israeli banking industry.

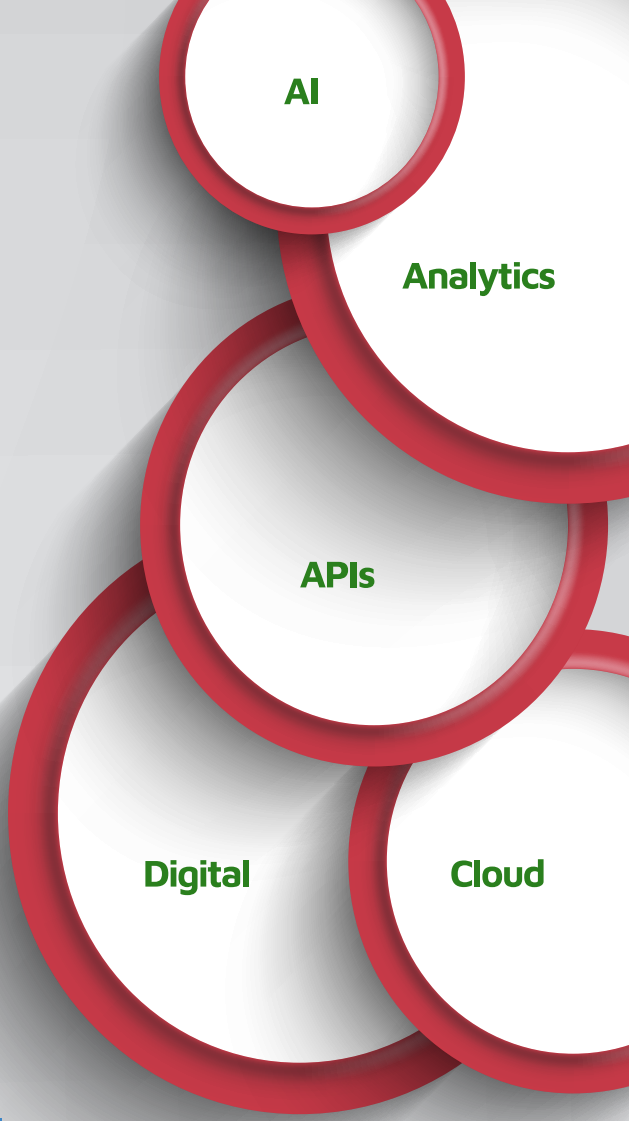
TATA

IT Services
Business Solutions
Consulting

Bank Yahav

TATA CONSULTANCY SERVICES
Experience certainty.

TCS BaNCS™



Banks today wish to be seen as offering **Innovative**, **Intelligent** and **Intuitive** experiences to their customers.

Innovative, in using digital and cloud technologies to enable a rich customer experience.

Intelligent, in tapping into tools like machine learning and conversational AI to know and understand customers, and their own banks, better.

Intuitive, in being able to predict customer needs, and design technology that is future proof.

Digital First, Cloud First Banking with the TCS BaNCS Global Banking Platform.

A solution that rides on disruptive digital technologies and designed to leverage the scale and efficiencies of the cloud.

Ensure seamless, contextual customer experiences even while continually enhancing transaction processing, tapping into the power of new and extended ecosystems.

Design, build and position personalized solutions to customers—at the right time and right place.

To know more about how:

- A European financial institution laid the foundation for a digital future
- A multilateral development bank set up a platform on the cloud and got it up and running in weeks
- A retail bank in Israel reduced time to market substantially with a modern core platform

Write to us at **tcs.bancs@tcs.com** or visit our website: **//http://sites.tcs.com/tcsbancs/**

tcs 50 Experience energy | TATA CONSULTANCY SERVICES

Meet us at I-09 at SIBOS in Sydney

Turning our Technology to your Advantage™

Stay in touch