

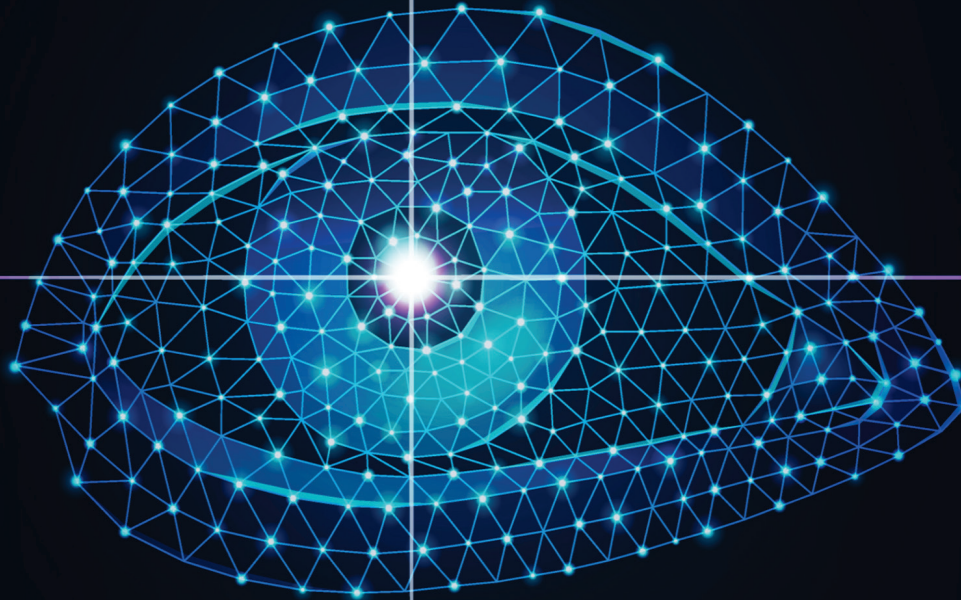


Bangalore Chamber of Industry and Commerce

-Synergy

Volume 1 | September 2022





MISSION

Namma Karnataka-
Gateway to Future India

VISION

Look Beyond

Together We Should



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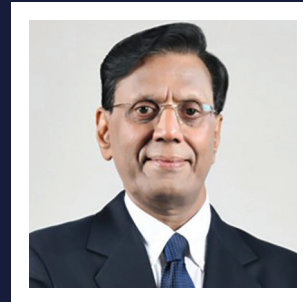
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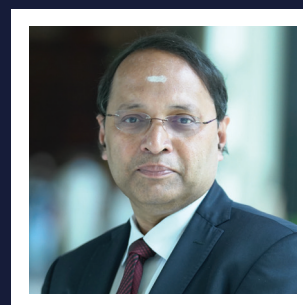
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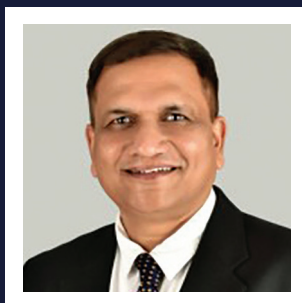
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Dr. L Ravindran
President - BCIC

“Only those who can derive synergistic value from amalgamations of consulting, design, analytics, and, engineering will succeed.”

Dear Member,

With the vast lineage and the tremendous opportunities in our midst, BCIC believes in going on an overdrive.

Significant transformations have happened over the last few years and the momentum is rightly placed in creating pillars of growth to achieve super successes in the years ahead.

The e-Synergy conceptualised as a fortnightly is a compendium of articles of topical relevance getting released now. Every one can participate with their crisp thoughts. The weekly digest and the bi monthly Synergy are the additional reading materials each with different objectives and substances.

Business and technology are now interdependent. Few years earlier it was possible to build growth strategies for a FMCG or Retail or Infra company, without focusing on technology. Not anymore.

In BCIC too, we believe that mastery in integration is a must have capability for the next generation of our members. The publishing and corporate branding team with the support of the other committees is working on integrating our best practices which will become visible as time rolls by.

Now that we have begun, we surely owe our members our best efforts at making a go of it.

Please continue to support us.

Happy festive season!

Regards,
Dr. L Ravindran
President - BCIC



Mr. Rabindra Sah
Chairman, Publications
Expert Committee, BCIC

Dear Readers,

We are living in an era of cutting-edge Digital Technology. Technology is being used extensively to solve social and industrial problems, effectively and efficiently. It provides everyone the platform to co-create and co-innovate.

There are various pillars of Industry 4.0 revolution like AI-ML-DL, Blockchain, AR-VR, Additive Manufacturing, Autonomous Robots, Cyber Security, IOT, Simulation, Digital Twin, etc. Adoption of these levers in the context of business, leads to business excellence. Furthermore, these levers enable fast-track net zero circular economy. Policy and regulations of government are the prime factors, contributing to industry and ecosystem, the base for growth.

Industry 4.0, engineering design, Supply Chain and manufacturing technology coupled with domain knowledge provides the accelerated growth of business which ultimately leads to economic growth. It leads to more focus in Research and development and finally generates intellectual property.

On the other side, collaborations of academia with Industry and government, creates industry-ready employable talent pools and also to be entrepreneurs. Additionally, in the age of

competitive market, the product or services which provide better and enhanced user experience, will lead the market.

Being physically fit and wellness of mind is also the need of the hour. Last but not the least, it is equally important to learn and enjoy our rich heritage and culture, and simultaneously we protect it safely.

All of the above aspects, combined together would be the base to connect with subject matter experts, Industry, government and Bureaucrats to capture various aspects and share with its reader through various types of publications aligning with mission and vision of BCIC.

Our publication team will put all their effort into coming up with articles, interviews, government policies, regulations, suggestions, views, recommendations in various policy formation, success stories, best practices etc to our readers, users and community.

Efforts contribute to
"Namma Karnataka – Gateway to Future India".

Rabindra Sah
Chairman, Publications Expert Committee, BCIC





India's 5G Roadmap



Dr. V Sridhar
Professor, IIT Bangalore

The 5G networks support a diverse range of services such as the massive Internet of Things (IoT) connectivity, machine-to-machine communication, gaming and augmented reality (AR), low latency communication in areas such as telemedicine and self-driving cars. The much expected auction of radio spectrum for 5G services concluded in August, with the Government of India getting bids worth INR 150,000 crores across varying bands and across the 22 License Service Areas (LSAs) of the country. The Mobile Network Operators (MNOs) who won spectrum in the auction are announcing their roadmap for roll out in the coming months.

What does it mean for businesses and retail customers?

First, for businesses, it opens up opportunities for leveraging the technology advancements including massive Internet of Things connecting sensors and devices for enhancing efficiency, safety, security and productivity in their respective organizations. An important aspect of 5G is the possibility of constructing local **Captive Non Public Networks (CNPNs)** that serve the varying requirements of enterprises, including stringent quality of service, security, resiliency and redundancy in the provisioning of services. The CNPNs as envisioned by the recent guidelines announced by the Department of Telecommunications (DoT) can provide impetus to campus wide networks powered by 5G technologies to be deployed by building and site owners across areas such as Special Economic Zones (SEZs), software technology parks, airports, ports, and malls for superior connectivity and capacity. Examples include: Bosch setting up private 5G networks in about 250 of its locations in partnership with Nokia; Volkswagen constructing its own "5G island" in its manufacturing plant in Dresden, Germany; GE healthcare in India has shown interest in building a 5G innovation lab.

The Department of Telecommunications has also initiated a **Vertical Engagement program** to build strong collaboration partnerships across 5G use-case ecosystem stakeholders to address User/Vertical Industry needs.

Second, for retail urban users where the MNOs are likely to deploy 5G networks, it would provide enhanced Mobile Broadband at high speeds capable of improving Work From Home conditions, apart from providing better Internet connectivity for online education and entertainment. However, one caveat is that due to the **failure of the auction** to sell the low frequency spectrum in 600 and 700 MHz that have better propagation characteristics, poor connectivity inside homes is likely to continue to haunt us. The rural retail customers are unlikely to benefit at all from 5G, at least for the next 2-3 years. However, initiatives such as **PM-Wi-Fi Access Network Interface (WANI)**, along with the progress made in the deployment of BharathNet, are likely to provide better connectivity in rural and remote areas of the country.

One of the important developments in 5G is Open Radio Access Network (O-RAN). The key concept of Open RAN is 'opening' the protocols and interfaces between the various building blocks (radios, hardware and software) in the RAN. The **O-RAN Alliance** has defined open interface specifications for interoperability across devices and vendor systems, which reduces the dependency of the telecommunications companies on specific network equipment manufacturers and their proprietary equipment. With more software components replacing hardware in O-RAN architecture, there is an opportunity for software start-ups in India to design and develop **indigenous 5G gear** in tune with the 'self-reliant India' mission of the government. Further the **Telecommunications Standards Development Society of India (TSDSI)**, an autonomous body consisting of equipment manufacturers, MNOs and academia, after the initial success of pushing certain India specific 4G standards in the telecom standardization process also has been very active in 5G standards, especially in pushing O-RAN.

The telecom sector that once witnessed hyper-competition with nine to ten operators in each LSA has seen consolidation and is now down to four operators. The industry has also been sluggish due to low Average Revenue Per User (ARPU), high spectrum fees and regulatory charges. However, the Government of India has taken some proactive steps including abolition of annual Spectrum Usage Charges for the auctioned spectrum, providing moratorium on payment of regulatory penalties, to name a few. With 5G, the content and applications are more value adding than mere connectivity. Realizing this, Google has partnered with Bharti Airtel for 1.28 percent stake in the company and a corresponding investment up to \$1 billion. Much like Google, Meta also has interest in the Indian telecom market with its investment in Rjio. These **partnerships between Internet firms and MNOs** is indeed good news for the telecom industry, which has been shunned by the investors – both domestic and foreign, for the past decade, due to cancellation of licenses, dispute over regulatory levies, and unviable operations.

We are all set to see interesting times ahead indeed!





Connected Vehicles and their role in Congestion Reduction, Shared Mobility & Electrification



Mr. Ashim Sharma

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Consulting & Solutions India Pvt Ltd

Abstract:

Connected vehicles would help harness the full potential of Intelligent Traffic Management Systems and Smart city features, will catalyse shared mobility and be a key enabler in the electrification of vehicles.

Future of mobility will be driven by 'connected' as vehicles & infrastructure will communicate with each other, with the increasing adoption of smart cities. The first step in this would be connected vehicles. This would be followed by a connected infrastructure which would aid the rapid deployment of Intelligent Traffic Management Systems (ITS) and also unlock efficiency in mobility in terms of fuel cost & carbon emission. Finally, Smart Cities will harness the connected ecosystem for efficient utilities and building management

Connectivity and ITMS (Intelligent Traffic Management System)

With the introduction of 5G services on the anvil, the vehicle connectivity is expected to get a boost. One way to achieve even greater benefits of connectivity is through the use of Intelligent Traffic Management Systems e.g. congestion and slow moving traffic is a critical issue in our major cities with average traffic speed in Indian cities being ~30% lower than major cities in developed economies while the fatalities and injuries due to accidents being much higher.

While Governments have been spending large amounts of money on infrastructure in order to tide over this, however, the infrastructure on its own has not been able to solve this issue, and it needs to be complemented with an Intelligent Traffic Management System (ITMS).

ITMS can integrate all the vehicles in the cities and co-ordinate them more effectively as is shown by the case of Tokyo. ITMS in Tokyo which is mainly V2I (Vehicle to Infrastructure) and now moving towards V2X, has helped reduce traffic congestion drastically by deploying intersection collision avoidance, sag congestion mitigation and dynamic route guidance. With the coming in of 5G connectivity ITMS can be V2X which has potential to further reduce traffic congestion.

The confluence of connectivity with the elements of smart city will reap benefits across the eco-system. An amalgamated use of relevant sensors, greater network connectivity, and advanced devices can aid environment, monitoring, utilities, and buildings by direct or indirect means. In addition to the better driving experience, connected technology can be used to measure pollution levels, water runoff, structural monitoring of buildings, bridges, provide smart and efficient electricity and reduce energy wastage in the city.

Hybrid Transport Models

We have seen the increasing penetration of shared models of mobility and business model innovations like car-pooling make the ride-hailing option attractive due to shared costs. However, this has also led to an increase in the waiting time as well as the overall commute times. In addition, the handovers between different modes is not synchronised / smooth, leading to capacity imbalances.

Introducing a relay model in car-pooling through the application of V2V communication (wherein arterial routes are served by a one group of cars and the branch routes are served by another) can potentially solve the issue of detours and higher pricing in long commute distance. Car-pooling can also be integrated with 2W & 3W ride-hailing to further optimize travel time and price. It could also ensure slower moving vehicles like e-Rickshaws are used in branch routes which will in turn help reduce heterogeneity of speeds and the related congestion on arterial roads. If implemented successfully, this could help reduce commute times, ensure all modes have a better capacity utilisation and ensure more users opt for the model.

Connectivity as a catalyst for electrification

The cloud interconnected networks between EVs and their public charging / swapping stations is a must to ensure capacity balancing across stations, reduce waiting times and also alleviate charging anxieties, grid load imbalances, etc. With EVs gaining traction especially in the 2/3W segment, connectivity is and will continue to play a greater role in catalysing this transition.

At the same time, there is a need to streamline some of the regulations around connected cars especially around the regulatory demarcation on type of data (personal/public), privacy and security of data which might deter people from opting for connected features. Also, the data exchange protocols for vehicle connectivity need to be standardised, which otherwise might hamper vehicle to vehicle and vehicle to infrastructure connectivity. Finally, there is a need to have a clear direction about which of the connectivity architectures for V2X communication is to be adopted.

The future is certainly connected and vehicles are going to be a key ingredient in this shift. If done correctly, these could certainly help bring about a positive change in several aspects of urban living.





Pursuit of everlasting joy



Ms. Manjula Saxena

Director - Department of Pharmaceutical
Ministry of Chemicals and Fertilizers
Government of India

Happiness!

We seek you the most!

We toil, we long, we experiment

In multiple ways all through the life.

Yet you keep deluding us....

But not now as I know for sure

That I am the bliss.

I am the Joy..

I am the love..

I am that light!

Each one of us has to come to experience this realisation as no other pursuit in the material, intellectual, artistic, literary, or even altruistic services can bring us everlasting joy. Such a blissful state may happen over hundreds of lifetimes but is to be attained ultimately. Like a pendulum, humans keep oscillating between dual forces present everywhere in all walks of life. Tranquility descends when oscillation ceases. Interview any celebrity privately and you get shocked to discover the inner poverty one feels as a human being. The status one enjoys through money and media is like a golden castle endowed with dry flowers of painful losses and deadwood of hopes belied or dreams shattered. Outer shining is always deluding. There remains always a question mark lurking in the subconscious mind of even the most eminent persons especially when health issues and old age debilitates their senses, body, and mind—where did I go wrong? What did I do that life put me in such a rigmarole? This inquiring spirit pushes us to explore further answers in books, holy shrines, scriptures and holy personages and what not? This quest does bring us closer to startling realisations about self, life, and death which is the biggest spectre that often terrifies most of the so-called worldly-wise folks.

The basic reason is that we are actually divine spark encased in biological body. As long as we go on identifying ourselves with any other identity of self, we experience ephemeral pangs of joy and frustration continually. Even self-satisfaction in charitable activities brings in superficial joy as mind is not calmed systematically. Like wind our mind keeps wavering by receiving ideas, surfacing memories of the past and imagining innumerable phobia born of media news.

Anything that is wavering, symbolizes lack of confidence. Anything that is vibrating also manifests confusion. Clarity brings in confidence and straightforwardness.

Time keeps modifying and metamorphosing each and every element of nature unceasingly. None of us can deny this basic reality of nature. The greatest problem with humans is that they store certain memories and phantasies and perceive the world through their personal spectacles and expect others to behave and act according to their personal choices which is an erroneous approach to life. In fact each person is right from personal angle but wrong in the eyes of those whose experience and perception is of opposite nature.

Many fallacious beliefs have been inculcated in human mind by the family and society. The sense of proving superiority over others is considered as the hallmark of success which is again a misconception. We know that billions of heavenly bodies are in motion in cosmos without colluding or crossing path of the other body. This phenomenon proves that an invisible power regulates creation. The question arises how can such a force create anything redundant? Are humans not part of the limitless nature? Can we survive if plants stop producing oxygen? Can we survive without

consuming food which is essentially life in various forms be it plants or animals? This realization clarifies amply the root cause of our painful existence.

We need to see and explore ourselves as part of nature. This masterkey unlocks the code of confusion.

The closer we stay to nature the relaxed, happier and blissful we feel. Nature not only sustains us, she also whispers wisdom, heals our body and mind. She teaches us lessons through twinkling stars, blossoming buds, fragrant flowers, flowing rivers, rising sun, soothing moonlight.

This spontaneously relaxes our nerves. Sleep and nightwatches remind us that we exist in other dimensions too. Our eternity starts revealing herself through sunrays, raindrops ecological cycles and seasonal cycle.

When whispers of mother nature become audible to us, our journey to love for life speeds up.

We begin to soar in higher dimensions like an eagle. Feeling of oneness with fellow beings makes heart blossom.

As spirit begins to awaken, ego dwindles, and misconceptions wither away.

The joy that a new born baby feels in the lap of mother refills the heart.. songs begin to echo.. poetry begins to flow ..like a waterfall gushing down the rocky mountains..



Blockchain 'A Breakthrough Technology for Asset Traceability and Provenance in Supply Chain'



Mr. Naresh Jain

Co-Founder & COO, Snapper Future Tech



Mr. Kamlesh Nagware

CTO Blockchain, Snapper Future Tech

Abstract:

Blockchain is being rapidly adopted in Supply Chain to elevate trust in the digital ecosystem.

- *Data cannot be manipulated;*
- *Supply chain can secure traceability and control without all participants disclosing their customers and suppliers confidential data to a central party.*

Blockchain's capability of tracking ownership records and tamper-resistance can be used to solve urgent issues such as asset provenance fraud, safety recalls, supply chain inefficiency and asset tracking in the current system.

Blockchain Blockchain....., Every digital transformation initiative must have blockchain in technology of choice. Touted to be in the top 3 technologies that will change the course of digital transformation, blockchain delivers value in being able to create trust amongst all stakeholders of a digital platform.

Forecasts suggest that global blockchain technology revenues will experience massive growth in the coming years, Gartner stated that blockchain technology will create more than \$176 billion dollars' worth of business value by 2025 and \$3.1 trillion by 2030.

What is the promise of 2022 for adoption of Blockchain?

Few years ago, Blockchain was equated with bitcoin and cryptocurrency. Jerry Coumo, man behind the Hyperledger Fabric says "Blockchain inside like Intel inside" means blockchain will be integral part of every digital transformation in the near future.

Blockchain has matured as an enterprise solution technology, 2022 is the year to fast track this adoption. Corporates have pursued PoCs and MVPs to stay ahead of their competition in digital transformation in Enterprise solutions. These are now transforming into large applications. Blockchain frameworks that are becoming fast preferred have success stories for enterprise application.

The momentum was seen when The Linux foundation started Hyperledger project and large technology companies like IBM, Intel, DTCC & blockchain start-up Consenys made their blockchain frameworks open source under Hyperledger Project. Ethereum which brings the smart contract to blockchain comes with Ethereum enterprise alliance and aids enterprise clients to build blockchains, there are many such protocols that emerged in 24 months.

Different blockchain protocols emerged to have successful blockchain implementation across business domains. R3 Corda, Quorum and Ripple are the major frameworks with many successful stories in Banking, financial and Insurance services .

Managed blockchain Platforms like IBM, Oracle & Amazon eliminate the heavy lifting involved in the setup of blockchain networks by reducing significant time, upto 60% sometimes as well as maintenance efforts. It makes it easy to operate networks and also aids ease of integration with various applications.

We are looking forward to the Amazon Managed Blockchain launch in India, currently it has a growing customer base in APAC.

Latest Forbes top 50 report is a revelation and a must read for all.

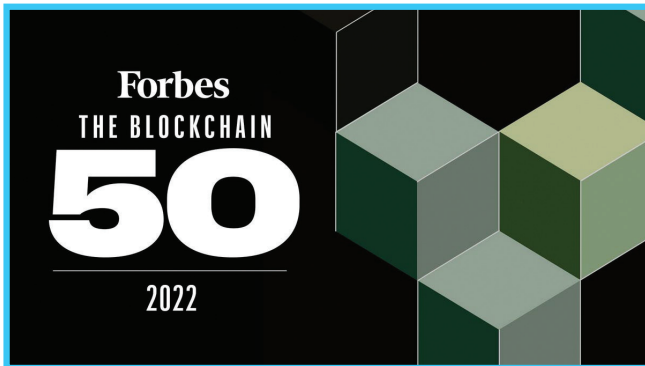
<https://www.forbes.com/sites/michaeldelcastillo/2022/02/08/forbes-blockchain-50-2022/>



Article 04



Forbes Blockchain 50 2022



Since our inaugural roundup of the Blockchain 50, published in 2019, the billion-dollar companies (minimum, by sales or market value) on our annual list have moved beyond test projects and now ...

www.forbes.com

All the technology solution providers and IoT manufacturers that create digital assets for companies through their products need to evaluate and reassess their tech stack. Integrating existing systems with blockchain platforms to create seamless digital worlds with trusted data is where the world is heading towards digital driven economy.

Asset Traceability and Provenance in Supply Chain – The Ideal Use Case for Blockchain

Gartner also believes that blockchain technology is the perfect match for the IoT and will help it to overcome some of its biggest problems. Blockchain is synonymous with security. IoT, on the opposite hand, is affected by serious vulnerabilities which have led to repeated high-profile breaches and cyberattacks. Gartner notes that 75 percent of IoT technology adopters within the US have already adopted blockchain or are getting to adopt it by the top of 2020. Only 10% of the respondents said they had no plans for blockchain adoption.

A battered supply-chain industry re-emphasized its importance, and created entirely new goals and outlooks for years to return. Blockchain has been alternatively called “the biggest breakthrough” and also “just hype” over the years. But the technology has proved its worth in various industries; the supply-chain industry is one among them. Research suggests that blockchain can save \$31 billion by 2024 for the food and beverage industry alone. In the coming year, we will expect to ascertain wider adoption of blockchain technology across the availability chain. Supply chain visibility remaining a top concern for organisations, more and more are looking to the facility of blockchain to accommodate this need. The technology can make the whole supply chain more transparent to minimise disruptions and improve the service provided.

by the number of parties involved in global supply chains. While companies collect their own data to respond to supply chain disruptions, they need to be able to analyse data across various companies and validate it for reliability before they can respond. IoT devices which will track the status of products as they move through the availability chain and share this information to a blockchain-based framework can make sure that all of the participants within the chain can access the info in real time. In highly regulated industries like food and pharmaceuticals, goods got to be transported across locations under strictly controlled temperature ranges and within specific time windows. It's currently possible to capture temperature feeds from onboard sensors and transmit them online to an IoT platform but there is no way to ensure that the captured, transmitted data is secure and tamperproof.



A blockchain framework complements an IoT-based data feed to ensure the reliability and security of data received and captured. In this case, the actual temperature feeds during the journey could be compared against the defined conditions in the smart contract to demonstrate compliance as well as any exceptions

IoT enabled supply chain will add more value to track and trace supply chain use cases, IoT data stored in shared blockchain ledgers enables all parties to see product or asset provenance throughout a product's life in real time. Sharing this information with regulatory agencies, shippers, and makers is secure, easy, and cost-effective. An IoT-enabled blockchain can store the temperatures, position, arrival times, and standing of shipping containers as they move. Trust in track & trace supply chain data will be increased when IoT devices used in blockchain systems to track the provenance, proofs and permissions of the data generated by supply chain stakeholders. Blockchain and IoT can help improve the reliability and traceability of the supply chain network in real-time. A blockchain-based supply chain management system is made on a shared distributed ledger which provides an indisputable record of all the info associated with shipment status, truck status, storage environment conditions and more.

To illustrate the benefits of blockchain and Internet of Things convergence, take an example of complex logistics supply chain whereby smart contracts can follow and blockchain technology register everything that has happened to individual items and packages. The benefits are: Trust & Transparency, audit trails, accountability, smart contracts and speed.

“Not all problem statements can be solved by blockchain, corporates need to go through a workshop to assess whether it is the right technology for their needs. Companies that provide blockchain solutions should be able to consult their clients with clarity”



Article 04



**“Three Key benefits for using Blockchain for IoT:- Built Trust – Build trust between parties and devices, reduce risk of data tampering
Cost Saving – Reduce cost of data intermediaries who process IoT Data
Faster Transactions – Reduce transaction settlement time from days to seconds”**

Blockchain is being tested in several industries and there is convergence of IoT & Blockchain in many industries. IoT and Blockchain – from Track n Trace, logistics supply chain, insurance, smart cities and manufacturing predictive maintenance.

This is the right time to digitise international trade, covid-19 pandemic has accelerated the trade digitization and blockchain & IoT has to play very important role in trade digital transformation. Hyperledger Trade finance SIG sees the growth of trade finance products and adoption across geographies. China & Singapore is leading this trade digitization using blockchain, Internet of things & AI.

The technology behind sensors and smart chips is evolving rapidly, making them increasingly portable and applicable for real-time interactions with blockchain ledgers. The combination of blockchain and IoT has broad potential for the creation of a marketplace of services between devices, and gives companies the opportunity to create value from collected data. The growing number of emerging blockchain protocols, partnerships and IoT device providers already indicates that there’s an honest fit blockchain within the IoT sector.

What is Needed For Faster Adoption of Blockchain Technology?

Implementation of blockchain technology helps in not only in achieving digitalization goals of an organization, also create opportunities for new business models. An organization has to decide whether they want to grab this opportunity of taking the lead in creating a new consortium, create new business models and increase efficiency by adopting blockchain, or wait for the technology to get matured and be a follower.

Only large scale enterprises can influence implementation of complex supply chain solutions. It is very difficult for medium and small scale enterprises to create a blockchain enabled supply chain network.

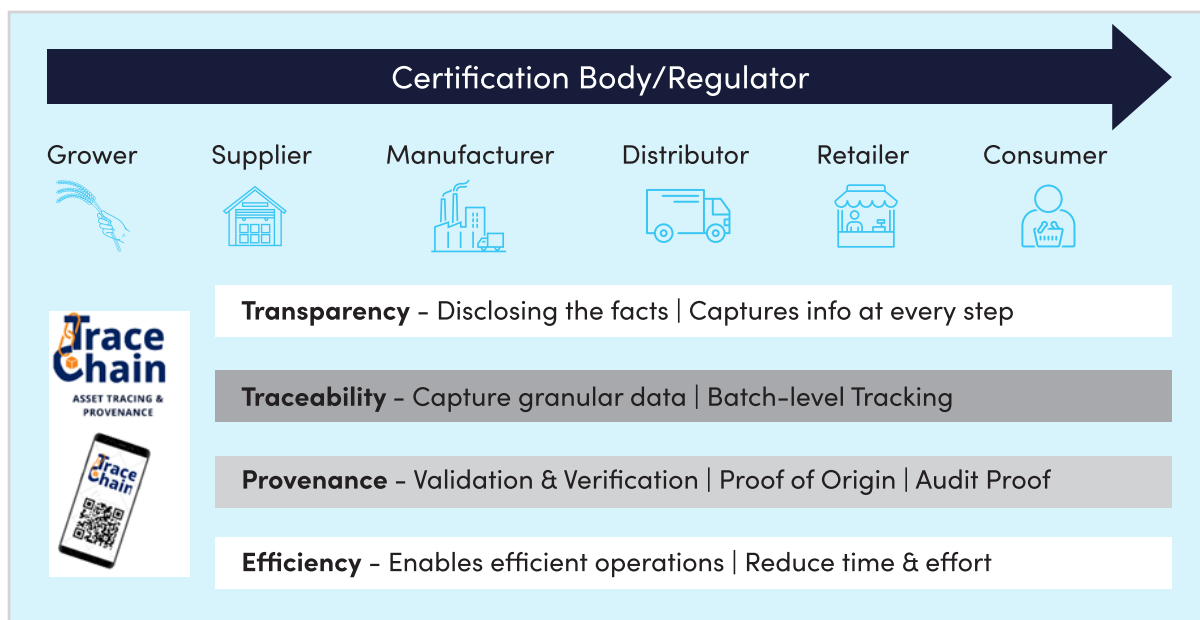
Faster adoption of blockchain can be achieved through network effect by inclusion of all sizes of enterprises, faster implementations, cost effective solutions, more and more success stories and maturity of the technology.

Snapper Future Tech is working on an innovating supply chain traceability solution in such direction to help the community in faster adoption. Snapper supply chain solution ‘TraceChain’ is designed to empower an enterprise to create its own network without any major investment or risk. Business network can be a small or big, and can be lead by any organization throughout the supply chain. Onboarding a business partner on the network is easy and flexible. This is being achieved by creating a metamodel architecture with configurable modules, transactions types and transaction screens.

TraceChain is a blockchain based track ‘n’ trace platform for supply chain, which can connect grower, supplier, manufacturer, distributor, retail location, and finally, the consumer seamlessly. Platform gives our customers the control over the module implementation and data. The data can’t be manipulated and the supply chain can be secured. With TraceChain, you will have the fullest visibility into your inventory and all your shipments.

TraceChain automates supply chain management & helps in controlling stock traceability and supply chain visibility. It provides more accountability and transparency between supply chain stakeholders by using smart, tamper-proof supply logs and ledgers.

TraceChain protects sensitive data on blockchain and provides provenance and traceability without revealing any sensitive information to end-consumers or supply chain entities.





Aviation, Aircraft, Maintenance and Complacency

Mr. Vishwanath Hampanna

VP - Training, Acumen Aviation



Abstract of article:

Aircraft maintenance requires highly skilled engineers.

Everyday maintenance task necessitates engineers to be highly alert while carrying out the maintenance. To maintain the same alert levels all the time is difficult considering human factors. If complacency fear steps in how safe is aircraft maintenance environment? What is the role of regulatory, airline and aircraft manufacturers let us review.

Aviation – Aircraft – Maintenance – Complacency

Aircraft maintenance involves scheduled and unscheduled maintenance tasks. Many of the jobs are repetitive in nature and few of them are critical tasks. Although aircraft are designed with redundancies however aviation maintenance environment always requires extreme level of alertness from maintenance Engineers, technicians, and flight crew. Engineers are subjected to refresher training regularly and depending upon the airline fleet type they will also upskill on other type of aircraft.

With multiple airplane fleet type authorization under their capability list, engineers are subjected to additional tasks based on the fleet type, while on the job they might frequently switch over from one aircraft type to another aircraft type.

While being associated with scheduled tasks and unscheduled tasks Engineers are subjected to a set of routine with repetitive jobs. It is always expected that engineers need to maintain highest level of alertness. A routine repetitive task, over the period becomes normal category task and possibilities of degraded activity or overlooking the task depending upon the situation they are in. It is likely that certain faults or damages on aircraft may be overlooked or skipped because maintenance professional has performed the same task a number of times without ever finding a fault. This false assumption for the associated task leads to complacency.

Complacency is quite natural to which most of the individuals are subjected to.

Question is, this change of guard known as complacency comes at what cost? According to expert Dr. Assad Kotaite, former president of the Council of the ICAO, he says "There is absolutely no room for complacency where safety is concerned. There never was, and there never will be," he reflects indirectly the organization culture towards complacency. Complacency can show its ugly face in many ways, all

of which can lead to a reduced awareness of danger. Overconfidence and self-satisfaction, especially when combined with contentment, will lower a likelihood of suspicion. Simply put, if one assumes nothing bad can or will happen, he/she won't anticipate danger and they won't know how to react when it happens.

It's quite possible that one may believe in the work being supported and or carried out by other support staff. But the potential danger remains when support staff have already developed complacency or have lack of knowledge and experience. One small incident may be enough and will put the associated company and aviation professional's knowledge and experience into uncomfortable levels and one may feel that aviation community has deserted those individuals who are directly or indirectly involved in the incident.





Article 05



Can the complacency be driven out?

What are the safety nets that could become useful.?

Role of Aircraft Manufacturer:

Aircraft manufacturer recommends strict adherence to WARNING and CAUTION to avoid the possibilities human error. They are written on basis thoughtful outcomes and other aircraft operator experiences. Experienced maintenance professionals are generally aware of these but probably they may presume that other support staff are aware of the maintenance procedures. However before commencing maintenance activity engineers discuss these with the support staff.

Role of the aviation regulator and airline:

Engineers are required to undergo human factors training in addition to refresher training on aircraft systems where they will learn with latest maintenance events, changes to manuals, other operator data, human errors in the past and cost of the maintenance errors.

Engineers need to follow the safety nets as described in dirty dozens to mitigate complacency with the following.

- Always expect to find something wrong.
- Never sign off on something that you did not fully check.
- Always double check your work.

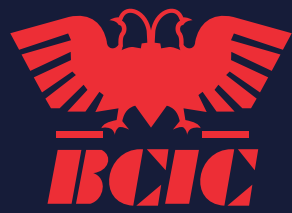
One need to watch out for certain period of time before the complacency sets in again.

Making the assumptions along the lines "Oh I have done that job dozens of times "can occur even if the task has not been undertaken for some time.

It is always to be remembered that complacency is the common denominator for many maintenances related errors.

“ **Success breeds complacency,
complacency breeds failure.** ”







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