

Fintech - Riding on BLOCKCHAIN



Content	Page No.
Programme Schedule	2-4
Summary of Recommendations	5- 36



Programme Schedule

9.30 a.m. – 10.00 a.m.	Registration and Tea/Coffee	
10.00 a.m.	Opening Session	
10.00 a.m. – 10.10 a.m.	Welcome Address	Mr. Arnab Basu , Chairperson, IT Committee, The Bengal Chamber of Commerce and Industry
10.10 a.m. – 10.20 a.m.	Opening Remarks	Mr. C S Ghosh , President, The Bengal Chamber of Commerce and Industry
10.20 a.m. – 10.35 a.m.	Special Address- West Bengal as ideal Fintech Destination	Shri Debashis Sen , IAS, Additional Chief Secretary, Department of Information Technology & Electronics, Government of West Bengal & Chairman and Managing Director, Housing Infrastructure Development Corporation Limited and Chairman, Nabadiganta Industrial Township Authority
10.35 a.m. – 10.50 a.m.	Keynote Address	Mr. Bhaskar Pramanik , Former Chairman, Microsoft India and Member of the Board, SBI
10.50 a.m. – 11.00 a.m.	Special Address on Digital in the backdrop of changing technology landscape of ASEAN Countries and its scope in West Bengal	Mr. Ambarish Dasgupta , Former President, The Bengal Chamber of Commerce and Industry and Senior Partner and Founder, Intueri Consulting LLB and Advisor to IT&E Department, Government of West Bengal
11.00 a.m. – 11.05 a.m.	Vote of Thanks	Mr. Debasis Basu , Co-Chairperson, IT Committee, The Bengal Chamber of Commerce and Industry
Inaugural Session will be moderated by Mr. Tamal Bandyopadhyay , Consulting Editor, Mint and Adviser – Strategy, Bandhan Bank		
11.05 a.m. 11.10 a.m.	Felicitation of winners of Health Hack	
11.10 a.m. – 11.15 a.m.	Changeover	

Fintech - Riding on BLOCKCHAIN

11.15 onwards	Lead Session - Landscape & Legal Modalities Session will be chaired by Mr. S Radhakrishnan , Former President, The Bengal Chamber of Commerce and Industry	
11.15 a.m. – 11.30 a.m.	Master Class on 'Mapping the expansion of Fintech with realistic demand of Indian Financial Infrastructure'	Mr. Vivek Belgavi , Partner, India FS Tech and FinTech Leader, PricewaterhouseCoopers Private Limited
11.30 a.m. – 11.45 a.m.	The Da Vinci Code of Innovation with i(ntelligent) ERP - Business with Purpose	Mr. Souvik Das , Senior Solution Advisor: Evangelist for Digital Transformation, SAP
11.45 a.m. – 12.00 p.m.	Special Remarks : Blockchain – how close to the ground it is in business landscape	Mr. Diptiman Dasgupta and Mr Debojyoti Das , Bengal Blockchain Believers
12.00 p.m. – 12.15 p.m.	Blockchain, Fintech and beyond	Mr. Xavier Kuriyan , Director - Solutions and Alliances, Global Compute and Network, India, Dell
12.15 p.m. – 12.30 p.m.	Master Class on Techno-Legal Perspective: <ul style="list-style-type: none"> • Smart Contracts • Cryptocurrencies • Global Trends 	Mr. Prashant Mali , Cyber Law Expert, Bombay High Court
12.30 p.m. – 12.40 p.m.	Interaction	
12.40 p.m. – 12.45 p.m.	Changeover	
12.45 p.m. – 1.45 pm.	CIOs' Forum: Blockchain and AI transforming BFSI	Session Moderator: Mr. Leslie D'Monte , Technology Editor, Mint Panelists: Mr Jimeet Modi , CEO & Founder, SAMCO Securities & StockNote Mr Suresh A Shan , Global CIO, Mahindra &

Fintech - Riding on BLOCKCHAIN

		<p>Mahindra Financial Services Limited</p> <p>Mr Hemant Adarkar, CTO Digital Venture, The Nainital Bank Ltd</p>
1.45 p.m. – 2.45 p.m.	Lunch	
2.45 p.m. – 2.55 p.m.	<p>Opening Remarks of the Afternoon Session:</p> <p>Business Collaboration with Japan on cutting edge Fintech.</p>	<p>Mr. Soichi Umeki, Director, JETRO (Japan External Trade Organization) (under Ministry of Economy, Trade & Industry, Government of Japan)</p>
2.55 p.m. – 3.00 p.m.	Changeover	
3.00 p.m. – 4.00 p.m.	<p>Blockchain in Fintech creating Innovations and Disruptions</p>	<p>To be chaired by : Mr. Sanjoy Sen, Co-Chairperson, IT Committee, The Bengal Chamber.</p> <p>Ms Indrani Saha, AVP, Cognizant Technology Solutions India Limited</p> <p>Mr. Kaustubh S Oak, Executive IT Architect, IBM</p> <p>Mr. Pankaj Mittal, Digital Enabler AI, IoT, Co Founder Pune Angels, Member CIO Angel Network, Board Adviser Global Block Chain Foundation.</p> <p>Mr. Sumit Misra, General Manager, RS Software (India) Ltd.</p> <p>Mr. Subash Shanmugam, Associate Director – IT Consulting, Protiviti</p>



During the Inaugural Session, (L-R): Mr. Tamal Bandyopadhyay, Consulting Editor, Mint and Adviser –Strategy, Bandhan Bank; Mr. C S Ghosh, President, The Bengal Chamber of Commerce and Industry; Mr. Bhaskar Pramanik, Former Chairman, Microsoft India and Member of the Board, SBI ; Mr. Arnab Basu, Chairperson, IT Committee, The Bengal Chamber of Commerce and Industry; Shri Debashis Sen, IAS, Additional Chief Secretary ,Department of Information Technology & Electronics, Government of West Bengal; Mr. Ambarish Dasgupta, Former President, The Bengal Chamber of Commerce and Industry and Senior Partner and Founder, Intueri Consulting LLB and Advisor to IT&E Department, Government of West Bengal & Mr. Debasis Basu, Co-Chairperson, The Bengal Chamber of Commerce and Industry .

Summarization

➤ **Mr. Tamal Bandyopadhyay, Consulting Editor, Mint and Adviser –Strategy, Bandhan Bank:**

Blockchain is a very radical decentralization of technology –a record-keeper and adjudicator, which does not depend on any 3rd party or outside institution. It is a sort of radical new governance creating a parallel economy and parallel legal system.

A McKinsey study states blockchain will grow by 2021, at a CAGR of 61.5%. Big techies are all embracing blockchain. Microsoft has joined an alliance called ID 2020 –a global partnership, creating an open-source blockchain-based digital identity system in the US. It will allow access to sensitive online information via an encrypted Data hub. It has also entered into a deal with Israel's largest bank, called Bank Hapoalim – it's creating digital bank guarantee based on blockchain.

IBM has partnered with Stellar and Clipits group to help south-Pacific financial institutions, to improve the process of universal cross-border payments. It has launched its first commercial blockchain deployment for



private equity market, in collaboration with Northern Trust. It has also announced the world's smallest computer based on blockchain technology; it will be smaller than a grain of salt.

Accenture has collaborated with Walt Disney Studios, to purchase virtual reality machine learning and blockchain.

➤ **Mr. Arnab Basu, Chairperson, IT Committee, The Bengal Chamber of Commerce and Industry:**

Most fintechs today are riding on what blockchain allows them to do. Several organizations are now trying out different kinds of use cases on blockchain - insurance sector, insurance claims, digital payments, land records, health records, reducing fraud. Today's India requires technology to make that breakout growth.

Fraud is being reduced by using technology. You have use cases for blockchain where you need instant reconciliation, you have a high number of transactions, you need trust, and transactions are interacting with each other.

From this part of the country we have a lot of tech start-ups working on financial services solutions which are being taken up by many of the large banks.



Mr. Arnab Basu, Chairperson, IT Committee, The Bengal Chamber delivering the Welcome Address



(L-R): Mr. Arnab Basu, Chairperson, IT Committee, The Bengal Chamber & Shri Debashis Sen, IAS, Additional Chief Secretary, Department of Information Technology & Electronics, Government of West Bengal



➤ **Mr. C S Ghosh, President, The Bengal Chamber of Commerce and Industry:**

Banks are fully IT-based now. In my experience, banks need to keep updating themselves technologically. Blockchain comes in here.

Blockchain is defined as a digitized and decentralized ledger. In India, fintech ecosystem was evolved by startups, and offering digital mobile charges and introducing digital wallet. Ecommerce, wallet, mobile banking, all are used now to do business. These new offerings have strongly impacted consumer behaviour, attracted attention and investments from technology-savvy individuals.

India currently has over 600 fintech startups. So the market is big. This number is expected to grow further with initiatives like Focused Accelerator Progress programs by local and regional govt, banks and funding support by the leading corporates and business.

Blockchain is not only limited to the financial industry, but used in the non-financial sector also – in telecom industry, healthcare, travel, retail, and public sector industry. The key focus of these industries is to incorporate the primary features of blockchains such as decentralize the data storage and data into their system.



Mr. C S Ghosh, President, The Bengal Chamber delivering the Opening Remarks



On the dais (L-R): Mr. C S Ghosh, President, The Bengal Chamber; Mr. Bhaskar Pramanik, Former Chairman, Microsoft India and Member of the Board, SBI & Mr. Arnab Basu, Chairperson, IT Committee, The Bengal Chamber of Commerce and Industry



- **Shri Debashis Sen, IAS, Additional Chief Secretary, Department of Information Technology & Electronics, Government of West Bengal & Chairman and Managing Director, Housing Infrastructure Development Corporation Limited and Chairman, Nabadiganta Industrial Township Authority:**

We are convinced from the Government that we have to lay emphasis on emerging technologies like blockchain. Blockchain has gained its eminence from cryptocurrencies. But cryptocurrencies are not valid in India.

But the whole world is integrated and digital... there is no point in saying that the boundary of India ends here for blockchain and Bitcoin... or saying that it's banned in India, and so you don't need to learn blockchain or cryptocurrency.

A way to track criminals internationally is to track where money is flowing, and these financial dealings are largely happening in cryptocurrencies. So there should be no fallout, no lack of faith in blockchain and the need to study it.

The technology world is very sharply divided into those who believe and those who do not. Blockchain is going to transform society. You can't afford to lose sight of blockchain, cryptocurrency, and everything that comes with it, and therefore fintech. If you are not ready, somebody in some other company or country is going to overtake you.

Smart contracts using blockchain can ease cross-border trades and transactions.

There is a great need to build up skill on this. The recent National Telecom policy says that 'Propel India' is one of the keystones of the telecom policy; it says that emerging next generation technology should be encouraged, and blockchain, fintech, AI and robotics are all part of it.

Startups do great business, and can get talents and skills from the millennials. They help to cull out the talent pool in the society. So it is very important to look at and encourage startups. This is a policy that the Govt of West Bengal is taking, and one of the ways to encourage this is to create hackathons.

This year's hackathon, we are tying up with the National Payment Corporation of India, which is having an all-India hackathon contest on fintech. The only objective is to encourage people to come in. That is how we create a pool of talent who can change the society.

So encouraging startups and talent for Propel India, for fintech, for smart contracts, for across-the-border trade, and for stopping crime – for all these we need to encourage fintech and blockchains.

To build up a fintech society, we are having a cluster approach in Rajarhat New Town, in financial hub, where already 23 banks and insurance companies are working. In the fintech hub, we have the second campus of



Presidency University, Alia University, Amity University, St. Xavier's University, and in Katakol, is the ISI, who already have a center of excellence on Cryptology and encryption, which is the base of blockchain.

So we are very hopeful that the fintech hub in New Town Kolkata, surrounded as it is by financial institutions, by educational institutions, will become a real future growth point for the whole state and the whole country.

Lately, Hon. Chief Minister has announced that there will be a Bengal Silicon Hub in New Town Kolkata. We are hopeful that for fintech and blockchain, Bengal will emerge as a nodal point for further development.



Shri Debashis Sen, IAS, Additional Chief Secretary, Department of Information Technology & Electronics, Government of West Bengal delivering the Special Address- West Bengal as ideal Fintech Destination

➤ **Mr. Bhaskar Pramanik, Former Chairman, Microsoft India and Member of the Board, SBI :**

Technology is something which every CEO, every Chairman should be aware of – not in terms of the intricacies with which it works, but for them to be able to imagine how the business should be run.

Coming to banks today, you have regulators, global markets, lots of intermediaries, and governments which are also involved especially if you are a public sector bank.

I believe that that has to change, and technology can help change that. Banks' basic vision as a company should be to financially empower every individual and every organization in India. Then they need to figure out how to do it.

The goal is that customers will constantly interact with SBI for all its financial products and services to empower them for everything they do, whether they are a housewife, a small or medium enterprise –that's where technology can help.



SBI has massive reach; the size, the reach, the transaction intensity of SBI is huge. This is where technology has to play an important role.

Today, the top 4 priorities for any bank are: No. 1 – credit & risk management. The new policy of the RBI is focusing, not on auditing banks for profitability, but for risk management. This is going to bring about a huge change not just in the banking system, but also the industry. But going forward, what do we do that we don't have those problems, and technology can play a big role.

The second is in terms of growth. How are we going to grow the business? Because consumer lending is growing at a massive pace; but the enterprise or the commercial is not. That's a big concern for bankers who are lending to enterprise customers.

Also, the net interest margins are declining, so there have to be other ways in which you can charge customers for services.

The third area would be in looking at the PNL of the companies, because there's lots of scope in banks for further efficiency and cost reduction.

The fourth one is the structure of the banking industry, which is because now there are so many different players - traditional banks, which are highly regulated; NBFCs which are regulated to some extent; fintechs. Fintechs look at the value chain, and find out where there is maximum profit and maximum customer dissatisfaction, and that's where they apply technology. The large banks are also starting to apply that.

Looking at venture capitalists - the banking industry has never given much money to startups because they still work on the principle that they need a physical collateral. And startups are not about physical collateral – they're about Intellectual Property. So is there a way that banks can start lending to software companies, technology companies, to IP; and it's not necessarily software – it could be many new areas. The US economy is growing because of the knowledge-based industries. Banks need to fund those.

Finally private equity is into what was traditionally being done by banks; now with all the stressed companies, these private equity companies are actually investing in all that.

Private equity banks are not allowed to do that; in fact private equity companies borrow from the banks, reconstruct the company, then sell it and make more money than the banks actually do. So that's the other priority - how can technology be used to do that.

Technology can only do 3 things: Number 1 is about improving customer outcomes; number 2 is about risk mitigation, and number 3 is about cost reduction.

In most banks, IT projects are focused on 4 areas; it's about empowering your employees, engaging with your customers, optimizing your business or transforming business.



Empowering employees is about productivity, analytics for better decision-making, mobility, virtual reality, augmented reality for training.

Engaging with customers - chat bots, internet and digital banking, CRM.

Optimizing business is about CBS integration, data warehousing, cyber security, loan management.

Transforming business is digital banking... trade finance using blockchain; this is all about creating new customers, and about creating and marketing new products.

If you have a problem today, do not use future technology, use today's technology. When you want to look at transformation, look at future technology, because it can help you, but you have to change your business model, otherwise you won't get the benefit.

Blockchain is a secure, shared, distributed ledger. It has a new shared data structure where banks can record transactions and work together to validate updates. Smart contracts act as a shared tool to govern changes to the underlying ledger in accordance to pre-agreed rules or terms. We call this a permission-less blockchain. What we use in industry, because of the underlying regulatory requirements and contracts, is called the permission-led blockchain.

Today, the speed at which you can operate blockchains is only 7 transactions per minute, which cannot work in normal trade, finance, or any other business applications; you need transaction speeds to be much larger. This is one of the limiting factors.

A common misconception about blockchain - it's not another form of distributed or encrypted database which everyone has a copy of. You can solve a distributed database problem more simply with current technology.

The financial services industry is fundamentally about facilitating the trusted exchange of value between multiple untrusting parties. Brokering that trust is an enormous responsibility and carries significant risk, which is why the industry has become increasingly reliant on costly intermediaries, manual processes, and error-prone reconciliations. Blockchain can help in this; it's a completely automated system where all the contracts, checks, balances and security are in place.

Blockchain adds accountability, reliability, and universal transparency; and on the internet, it is the only technology which has a payment layer, which is critical, as blockchain will mostly be used when there are some form of payments required.

One of the challenges of blockchain technology - it requires an understanding at a fundamental level of all aspects of security, law, value exchange, decentralized governments, process and commercial architecture. So traditional lines of business and organizational silos can no longer operate under the historical structures.



Banks charter should change; they should be focussed on empowering the individuals and the organization. Look at blockchain from the perspective of who you are empowering and how you are going to do it differently from what is done today.



Bhaskar Pramanik, Former Chairman, Microsoft India and Member of the Board, SBI delivering the Keynote Address



(L-R): Mr. Bhaskar Pramanik, Former Chairman, Microsoft India and Member of the Board, SBI & Mr. Arnab Basu, Chairperson, IT Committee, The Bengal Chamber of Commerce and Industry

- **Mr. Ambarish Dasgupta, Former President, The Bengal Chamber of Commerce and Industry and Senior Partner and Founder, Intueri Consulting LLB and Advisor to IT&E Department, Government of West Bengal :**

Bengal's potentialities for the ASEAN countries and the digital scene in the ASEAN countries have an extremely contextual relevance to today's world.

There is a role which the economists and the businesses will have to play, and we have to chart out a path amidst these turbulences which the world today goes through. The BCC&I's attention got diverted towards the ASEAN and the SAARC nations or Far East countries in the 2017 beginning, then we started to hear about multiple other trade agreements coming into the picture to make the ASEAN economy prosper as a block.

At this time there were reports published from World Bank, a subject called global value chain, where they mentioned that there are a huge block of countries, which are not actually at the point of innovation of a product. But these countries did not innovate, and they do not consume also. But they play a very important role within the path that traverses from the point of innovation to the point of consumption. And therefore they said that the GDP of the world is actually an incompletely leading information about the countries' contribution to the world's economy; but the value addition of these countries matters.



It is observed that the emerging economies, both from LATAM and ASEAN, that the major league, which we all know, are playing a very heavy role as a cluster in these, not so much contributing to the GDP, but contributing to the gross value addition of the world. There is a propensity of some countries in that cluster to gradually fall behind, and not to play a very significant role any more in that value chain, and increasingly, they may get marginalized. These countries need to play a significant role in enhancing their production efficiency, reducing their non-tariff barrier, and bringing more predictability into the non-tariff barrier costs.

At this point, we met many representatives of these countries and found that they are echoing that sentiment. They are saying that since there is an opportunity that has come to us right now to grasp the economic leading position, we do not want to lose it. Therefore we want to release the combinatorial effect of the entire technology that is available to leapfrog into a state where our efficiency and cost of production cannot be questioned, and where we are extremely sustainable in maintaining this.

They also mentioned, if we really want to produce architects or designers or developers to take us into this industry 4.0 or blockchain, we do not have those skills. We do not want to depend on the western front, because of the situations and unpredictability factors, also not on the Middle Eastern organizations. Preferably India, having served the world with this kind of technology, can play a very big role in moving this ASEAN absorption of the technology up.

There was a Forrester report that corroborated what kind of growth these 13-14 countries will be having in an IT consumption... like 5-8% of growth, justifying the amount of market which exists there. That market has lack of skills, and wants nearby, some kind of a delivery center, development center, coming up very quickly. The same situation is in Bangladesh also.

BCC&I analyzed the situation, they figured out Bengal is conducive to produce that, for multiple reasons. Therefore there was a strong need for Bengal to establish itself, maybe jointly with Bangladesh, to cater to this entire ASEAN side. We discussed this, and the govt also that the formation of the joint ventures with these ASEAN countries companies, the formation of training institutes here, to penetrate and deepen our position into these ASEAN countries would be extremely beneficial for Bengal to flourish as a Bengal Silicon Valley with a focus on ASEAN.



Mr. Ambarish Dasgupta, Former President, The Bengal Chamber and Senior Partner and Founder, Intueri Consulting LLB and Advisor to IT&E Department, Government of West Bengal during the Inaugural Session



Mr. Ambarish Dasgupta, Former President, The Bengal Chamber and Senior Partner and Founder, Intueri Consulting LLB and Advisor to IT&E Department, Government of West Bengal during the Inaugural Session

➤ **Mr. Vivek Belgavi, Partner, India FS Tech and FinTech Leader, PricewaterhouseCoopers Private Limited**

I'll tell the story in 3 chapters: Chapter 1 – why are fintechs expanding; Chapter 2 – where are they expanding; Chapter 3 – what are the challenges and opportunities linked to the phenomena.

With regards to why they are expanding – a professor named Clayton Christensen wanted to study disruption in industries and markets. He studied the semiconductor industry as to why disruption happens.

He found the disruption happens because the incumbents in that industry assume certain segments to be unprofitable – they don't play in that segment.

Looking at financial services, and taking the case of something like wallets; for last 20 years why didn't incumbent banks launch their wallets? It was not deemed profitable. Now fintechs, based on differentiated technology models, can make it profitable, they can monetize data better - that is one reason why it's expanding.

Second reason it's expanding is latent market demand. All of us need relevant wealth advice. The penetration of loans, mutual funds, insurance in India – everything is in single digits, so that 90% of the opportunity left is untapped, and so fintechs are growing.



The 3rd reason is talent. In Kolkata, they are a lot of people who understand financial services and technology. How many financial institutions are based out of India, between ops and tech teams, or even business and product teams, who understand technology? So the talent access in India is also is very high.

The next question, where are they expanding? What are the opportunity areas? One is digital payments. There is still a hugely underpenetrated offline payment section.

The second area where we're seeing a lot of traction is alternative lending. Invoice-backed financing has picked up, as an example of alternative lending. The same thing is happening on the retail space.

The third area... there are new age technology products and platforms which are emerging in this fintech world. These platforms are cloud native platforms, they have AI and ML baked into it, and they're in different areas.

I think there are 3 challenges –one is sustaining behavioural change.

The 2nd challenge is market access. Unfortunately every segment in India, including a segment like banking and financial services is heavily fragmented. I have been working very closely with many of these fintechs for the last 3 years, and I feel that they scale to a certain stage and then they stagnate. So scaling after a point becomes a challenge.

The 3rd is sustained funding access. Now, with funding access, the challenge we see is, there's always a pressure to monetize very quickly. In India, within 6 months as soon as you deliver a product, the urge to go hit the market and start making money is very high. And as soon as you get into the services space, the product focus goes away.

Also we probably have the best infra available anywhere in the world. And it is going to get improved, with UPI 2.0, with BBPS being launched further, with the new Aadhar e-KYC norms being in place, etc.



Mr. Vivek Belgavi, Partner, India FS Tech and FinTech Leader, PricewaterhouseCoopers Private Limited



➤ **Mr. Souvik Das, Senior Solution Advisor: Evangelist for Digital Transformation, SAP :**

We as SAP are working on different solutions which will help and protect the environment by delivering solutions that address the need for sustainable energy.

By 2025, blockchain is supposed to create \$176 billion value addition on the overall economy. It will grow to a \$3.1 trillion by 2030. Life science is one of the primary sectors where the blockchain will be a key impact driver. So 83% of the life sciences companies in the next 5 years are working to do something in the blockchain space.

Similarly, there are over 1.4 billion investments that have been made over past 3 years, and at SAP we are also committed on the hyper ledger area to work on the standard solutions which will be coming up.

2 different industries where blockchain is going to have a significant difference: One is the foreign aid section – so where there will be a transfer of the money from the donors, and whenever you are receiving at the backend of the actual recipient, the whole system can be tracked as a blockchain sequence. There are multiple companies who are working on this.

Recently we have done a blockchain study between the SAP and ATB, a Canada-based bank. So the multi-country transactions which used to take multiple days to transfer money from one country to another country have come down to 20 seconds using this technology.

In recent days every organization is focusing on digitization, on transformation as a journey - there are 2 phases of it –one phase where you are focusing on running the business as it is, and the second part is doing the innovation. So blockchain and everything related are the innovation part. If you are going to do something apart from innovation, you have to focus on your existing technology; and if you are to do something on the innovation part of it, then you have to focus on the next generation technology. So that's how we are bringing the 2 different aspects of it into a single solution.

With the inside infinite loop model that we have come up with, we have both the solutions in place. So first solution will take care of your existing landscapes, existing processes ... on top of that we are bringing you the Da Vinci Code of Innovation, called SAP Leonardo, where we are giving you the platforms to do the innovations - certain base platforms ready for the developers and customers to work on those solutions and bring innovation faster.

So if you think about what could be the value diverse for a blockchain, or if you are thinking about doing an innovation project within your own organization to have a blockchainvariness, then typically the blockchains will have a multi-party ledger. If you are the only organization involved, then probably that is not a case for a blockchain. If you are thinking about distribution of ledger across different companies or groups, then probably that is a test case or test POC element for a blockchain.



Also blockchain brings time and cost reduction as it basically removes the intermediaries. So if you have any use case based on this kind of factors, you can consider them as blockchain innovation projects within your organizations.

Transparency and auditability are the built-in trust factor in blockchain. You cannot change a block. So it is almost impossible at the present technology to hack a blockchain. This leads to risk and fraud minimization.

We are one of the premium members for the hyper ledger, and are part of the founding members for the Blockchain Research Institute. We are working on different open-source groups who are actively involved in the blockchain space, so that we can get the firsthand information about the blockchain and how it's shaping up the whole chain.

We are collaborating with Alastria so that we can also have a blockchain space in Europe; and with BITA – Blockchain in Trucking Alliances – will help us to understand the transportation industry in a better way on the blockchain space.



Mr. Souvik Das, Senior Solution Advisor: Evangelist for Digital Transformation, SAP delivering his speech

Innovation doesn't happen in isolation, it's always linked with customer situations or established processes which you are working on. In blockchain, this is not a single technological stack –there are multiple different technologies which will be available in the overall landscape. We cannot consider SAP as only a technology vendor working in a blockchain space. That's why our innovation is happening right now on the cloud platform. Here it's very easy for us to collaborate with different technology stack and different technology platforms, and integrate them all together.

One of the enabling layers here is the technical integration aspect... there are different connectivity between the participants where the blockchain will play a major role. So we have defined this in the blockchain as a



service and the blockchain nodes, that will be integrated not only with the cloud solutions, but we are also trying to bring them together as optimized solutions as well. So this will be the innovation across companies in the cross-organizations with the help of the open-face APIs that we are developing right now and we will be exposing it to the world to consume them.

What we are positioning as platforms on the blockchain, we are giving you 2 things to work on. One is the hyper ledger and the multichain. If you see on the below side, there are 6 blocks which is part of the Leonardo stack, blockchain is one of that – and apart from the blockchain there will be other factors as well. So if you want to explore something else in conjunction with blockchain, you should consider that technology platform.

We have an organization inside SAP, called ‘SAP Startup Focus’. We are helping startups in funding, giving our technology, our space, mentoring them to work on the solutions in the new age space. There are almost 6500+ startups from 58-60 different countries working on these solutions in actual different areas.

➤ **Mr. Diptiman Dasgupta, Bengal Blockchain Believers:**

In the blockchain, there are 4 key principles: the shared ledger, being the shared repository distributed ledger; smart contract being the rules of business; privacy is one of the pioneering things in the blockchain; and the consensus mechanism.

It is helping to reduce the time, reducing the fraud, it is coming up with the business model, and it is a case where technology drives the business, because many of the existing business models of today are already getting changed tomorrow, because of blockchain. One fundamental thing that we can solve using the blockchain – a food trust chain or the food trust solution that IBM has already come up with – that is one of the pioneering solutions in this area.

➤ **Mr. Debojyoti Das, Bengal Blockchain Believers:**

Trade finance is one of the examples that has become really popular, and a lot of banks across the globe are trying to build platforms for trade finance on blockchain. Primarily banks are joining hands in a consortium, and trying to help their customer on a trusted platform.

Trust is the most important thing when it comes to blockchain. We started our IT journey with systems of records, and then we moved on to system of engagement where we started generating loads of data. Now today if you go to any social networking platform, you see a lot of data – but 90% data is not completely trustworthy. Now we are moving towards a system of trust, and that’s where blockchain plays a major role. The more we adopt technology, the more we generate data – there has to be something that will actually help you trust the data, or certify data. So blockchain creates a backbone which gives a particular platform of exchanging data with a mass, to come up with a trusted model.

The major global banks are already adapting blockchain.



I'd say blockchain has matured enough so that it can be made real for business.

➤ **Mr. Diptiman Dasgupta, Bengal Blockchain Believers:**

Being IBM-ers, we work on blockchain a lot. So we created a public community on Facebook, so that there could be a widespread impact of blockchain, it should not be a closed door technology.

Day by day it got increased, people started joining, and we started doing a lot of programs with NASSCOM. We had a massive program last month in New Town Convention Center with a full day blockchain workshop.

More people should be inclusive in the whole ecosystem. Then only it can be a perfect community where both consumer and the producer are there, where we want the investors and startup mentors to join in.



Lead Session – Landscape & Legal Modalities being chaired by Mr. S Radhakrishnan, Former President, The Bengal Chamber of Commerce and Industry

➤ **Mr. Xavier Kuriyan, Director - Solutions and Alliances, Global Compute and Network, India, Dell:**

There are 2 technologies that we believe can change the world – one is AI and its entire tree; the other is blockchain.

AI is going to take a lot of the mundane out of our lives and today already does. Blockchain is going to revolutionize the way we do a lot of the businesses today. Nothing is going to make a radical change until it is widely adopted. Almost all industries nowadays use blockchain.



Logistics has a huge part to play in how blockchain is going to develop. In the logistics field, in the medical field, there are massive uses of blockchain.

The same technology is being used in the financial world - cross-border transfers, credit scoring and ratings etc. And that's going to promote the development of blockchain. Every industry is going to contribute in some amount to the development of the blockchain technology.

Where this is going is in personalized chains – chains that are personal to people. So you and everything that you need, is associated with a single chain – which means that multiple chains are going to talk to each other.

The people leading this charge are the small startups that are in the back alleys of the world today, that are doing cutting-edge stuff in how this technology is going to develop. That's the ecosystem that we are supporting.

The biggest value add that we're doing at Dell is bringing these people together, and that's going to change the world as far as development of this technology goes. We're interested in bringing together the ecosystem, so that we can work with the people that are leading that charge.



Mr. Xavier Kuriyan, Director - Solutions and Alliances, Global Compute and Network addressing the audience

➤ **Mr. Prashant Mali, Cyber Law Expert, Bombay High Court :**

To understand smart contracts, first understand what is a normal contract. Normal contract, according to Indian Contract Act, requires 5 things - a valid offer, valid acceptance, lawful object, valid consent, and consideration of the money, which is to be paid. When it comes to smart contracts, we don't have what is called as valid consent, because consent gets approved, according to IT Act, by digital signature. And when it is blockchain, the signature is of its own – the hash code which is being generated. So if we need this



blockchain journey to go further, we need certain regulations to change. In India we don't have the regulation as of date.

The Foreign Exchange Management Act of 1999 has no mention of any cryptocurrency; and it says: as may be notified by Reserve Bank. So Reserve Bank has not notified any cryptocurrency as of date. On 1st Feb, the govt said they'll take all measures to eliminate use of crypto assets in finance and making it a financing illegitimate activity as a part of payment systems.

What are the risks here? Digital currencies being an electronic format, will always be prone to risk of hacking. Then there are umpteen amounts of frauds which are going on. So we need a legal framework to arrest this fraud. There has to be awareness about crypto currencies.



Mr. Prashant Mali, Cyber Law Expert, Bombay High Court gracing the occasion

There is lack of any authorized central agencies to regulate the payment or redress grievances –people who are invested in Bitcoins have no place to go, because we don't have legal frameworks.

Coming to illegal trading... terrorists being financed... so that becomes an issue. So what is the law's stand? Are Bitcoins goods? The Sale of Goods Act says that the transfer of the property in goods is for price, it's not for barter; right now Bitcoins can be used as barter, so Sale of Goods Act doesn't act.

SEBI said, you make it as commodity, we'll take it under control; but govt has not declared it as commodity.

One advantage of blockchain discussed was privacy. No sovereign power wants to give you privacy. If there is too much privacy, govt is never going to be approving of it. So you need to give some carrot to the govt.

Two – cryptocurrencies has, as of date, no power in the hands of govt. That's its beauty... but govt is not going to approve unless govt has some tie in it. So some organized bodies have to pressurize from lobby groups, advise Govt of India to bring some legislation which governs this whole framework around blockchain, smart



contracts. No company is going to invest in future until and unless it is legally safe – there is no legal risk getting involved.

➤ **Mr. Leslie D'Monte, Technology Editor, Mint:**

In 1994, Bill Gates said that banking would be needed, but the banks themselves would not. Amitabh Kant at a recent conference said that you will see the death of physical banks, because the costs are enormous. Using smartphones, each of us will be a walking ATM by 2020.

The fintech sector is experiencing a revolution because the new entrants and the disruptors are not traditional players– Google, Apple, Facebook, Amazon, Microsoft, Netflix. Today, for eg, you have Google Tez, Apple Pay, Samsung Pay, Paypal, BHIMetc. You have banks that are using AI, automation, robotics, chatbots, augmented reality and virtual reality.

Hemant, you say that you're working towards making Nainital Bank a digital-only bank. But where exactly are you when we talk about these newer terms like AI, blockchain... the whole AI suite of technologies?



During the CIOs' Forum: Blockchain and AI transforming BFSI (L-R): Mr Jimeet Modi, CEO & Founder, SAMCO Securities & StockNote ; Mr. Leslie D'Monte, Technology Editor, Mint ; Mr Hemant Adarkar, CTO Digital Venture, The Nainital Bank Ltd & Mr Suresh A Shan, Global CIO, Mahindra & Mahindra Financial Services Limited



➤ **Mr Hemant Adarkar, CTO Digital Venture, The Nainital Bank Ltd:**

A bank cannot look at technologies for the sake of technologies –the technologies must be used for solving a problem. I’m solving the problems of trying to make this cashless and digital economy, which our govt keeps talking about. Big data, AI... there are very clear-cut use cases in banking financial services and insurance sectors, but we haven’t yet really got serious use cases in the blockchain. With AI, ML, DL you can see in some of these areas that there’s going to be a positive ROI. But we are still at a worldwide experimental level.

➤ **Mr. Leslie D'Monte, Technology Editor, Mint:**

When we are talking about big data, there are 3 drivers of AI. One is the presence of sophisticated algorithms... huge amounts of data on which these algorithms can be trained upon; and third is the computing power, whether it is GPUs, TPUs or FPLGs. These are different technologies that are furthering the whole AI ecosystem.

Suresh, give us some idea of what are you doing with these newer technologies.

➤ **Mr Suresh A Shan, Global CIO, Mahindra & Mahindra Financial Services Limited:**

Mahindra & Mahindra has tied up with the suppliers - generally that takes 2-3 months where we have to verify all the records. Today the 3-4 months needed for verification has come down to 5-6 days, and still we are trying to work upon how to make it more authentic and secure, so that the data can be used effectively across other things.

When we do business bonding, the same ledgers and data are available for ICICI Bank and other banks, and NDFCs... so when they try to use it as much as an information, it is trying to enable us to get it faster, second reliable, and security side, we are having an information which is already authenticated by a bank or a reputed finance fraternity, so we have something else which is already re-used.

When we try to interact with the customer also, he doesn’t need to produce that information every time; time and effort is taken out.

➤ **Mr. Leslie D'Monte, Technology Editor, Mint:**

Jimeet, you come in the space of the stock markets; and you’re using a lot of AI and ML and DL, because you have humongous amounts of data to deal with. Give us an idea of what exactly you’re doing now.

➤ **Mr Jimeet Modi, CEO & Founder, SAMCO Securities & StockNote:**

Data is the fuel for any AI system to operate efficiently. In the stock market we have huge data sets available in the stock markets for years, and we’ve integrated deep AI technology for pattern recognition - identifying buying patterns, selling patterns, trends in the market set; and therefore having an efficient entry or exit point of time in line with how the trends of the market are operating.



We are using the AI technology to churn the vast ocean of data that exists in the stock market and then present them as simple trading investment ideas that are presented to investors and customers across India by a simple mobile app distribution platform.

➤ **Mr. Leslie D'Monte, Technology Editor, Mint:**

Hemant, what are the newer technologies and how is it helping the customer?

➤ **Mr Hemant Adarkar, CTO Digital Venture, The Nainital Bank Ltd:**

Digital banking provides 3 things to the customer – internet banking, mobile banking, and maybe a tab banking. But internally, the bank as an organization also should get digitized, in terms of its own internal processes.

In addition, can I have a unified communication platform where even an 'OK' said over a phone by a senior manager, is digitally signed, that he's held responsible for the decision. Otherwise the junior office suffers for all this.

Also using the modern UI UX to actually give a customer a proper journey. Digital journey is not only at account opening, but it's through the entire life cycle of a customer interacting with the bank.

➤ **Mr. Leslie D'Monte, Technology Editor, Mint**

Suresh, how have you enhanced the efficacy of financial products?

➤ **Mr. Suresh A Shan, Global CIO, Mahindra & Mahindra Financial Services Limited:**

To start with, business should have that demand. When we started financing for customers who don't have even the residence address properly, there we started plotting data using geo special, which will have an online-offline of the customer address, which is kept in our system. So keeping rural as a target where the customer doesn't have a home, where the address was not given properly or authenticated by a regulated system, we were able to create using geo special, and we were able to connect the customer using the geo special information.

With AI, first we should have a demand statement - sometimes untapped information will guide you to get more information. AI, big data ... everything is a big jargon if you're using as a technology, but create a demand statement... like what business requires, what information you want. If rural, what are the failures today? To get a KYC, what are the information required from supporting- can we create through blockchain... can we create that information so that customer gets the enjoyment?

- Today if you see in the finance world, one side customers, the other side regulators, intermediary system is dealers, brokers, agents – they decide the technology. So this kind of startups, new



innovation technology will remove that unwanted big system, so the customer can directly connect to financial using the regulators rule defined, and they are able to get the wow factor.

➤ **Mr. Leslie D'Monte, Technology Editor, Mint:**

Hemant, could you also give us specific examples of how this is benefitting consumers?

➤ **Mr. Hemant Adarkar, CTO Digital Venture, The Nainital Bank Ltd:**

We don't think that these things are reaching us... of course, in terms of the elite salaried upper-middle class, they can use the chatbots made available by many private sector banks. So chatbot is one area... but they will not really take off in this country. Unless there is some kind of localization of these technologies, it'll not really reach the consumer. We are trying to create a digital bank mainly towards SMEs and rural India, and looking at fintechswchich are trying to help the customer journey through regional language bots.

➤ **Mr. Leslie D'Monte, Technology Editor, Mint:**

Jimeet – stock markets... what is happening in that... a couple of examples, the specifics on how it is helping customers.

➤ **Mr Jimeet Modi, CEO & Founder, SAMCO Securities & StockNote:**

The core thought is simplification of the life of the customer. In the stock markets, there is tons of data available, tons of trends and patterns available, and there are say, 100 thousand contracts that are being traded in the markets on a daily basis. Now as a customer, you want one simple idea that you can work with and put your money in. The AI technology stack can allow you to look at the entire market and give you ideas in a fairly simple fashion.

Going forward, the entire asset management industry is going to change significantly because of the integration of these technologies in the decision-making process. Even the wealth management industries as far as how a variety of options that are available for investors to invest and save their money so that they can get a better return. Those options will be found better by machines rather than humans, because they will have the capability to look and spot trends that humans will never be able to.

➤ **Mr. Leslie D'Monte, Technology Editor, Mint:**

The challenges now - when we speak about the AI landscape, 3 words that come to mind are security, privacy, and inter-operability. When you talk about blockchains, and some of the earlier speakers have already pointed out that the transaction time of a blockchain is 7-8 seconds per transaction, which is very slow, so you can't use it for very high frequencied works. But now there are blockchains that take minors out of the equations, and they can actually create thousands of transactions per second.



How do you distinguish between Bitcoin and blockchain? Can you have a blockchain without a token, without a cryptocurrency? How can you dissociate these 2 terms? And if you do so, then won't your blockchain just be a glorified database and database innovation?

Hemant, you have been toying with these ideas on blockchains a lot; you have been doing a lot of challenges. How do you evaluate these newer technologies?

➤ **Mr. Hemant Adarkar, CTO Digital Venture, The Nainital Bank Ltd:**

Technology never stays in the same form that people envisage it, but some of the basic principles of blockchain will remain. And therefore I feel there are some existing technologies that actually do most of the jobs apart from the fact that the proof of work, and the security aspects... blockchain seems to be one of the safest databases ever. Many financial writers believe that Bitcoin is the real use case for blockchain. So this is a dilemma, but I feel there is something very interesting will come out of it.

➤ **Mr. Suresh A Shan, Global CIO, Mahindra & Mahindra Financial Services Limited:**

See, generally you should see the opportunity, but surely it should be supported by the business. Take the live case. In our case, when we said the same way, whether information is going to play a major role, or really cost is going to play a major role. Today if you see in all financial systems, information only plays a major role... because we do have core systems to get the information faster through the central system to control it.

Analytics gives you more information where even though tougher times it enables you to sustain in your model, try to continue and go. Especially in rural model, we say, e-business, less of electronics, more of emotions. Majority of the rural cases, generally a worksheet is filled by some 3rd party. But today the chatbot is allowing us to have a local multilingual conversation, where he tells, I want money for this purpose, I can do this, and if I get these profits, I'll share with you. So this is nothing but earn-to-pay model. So Mahindra Finance came out with a system where within 2 days, they'll get the disbursement if they are able to narrate what they want using a chatbot, in the local language.

So see the opportunities, use the technology as much as which enables and empowers to sustain the current, and try to create that opportunity. But keep customer so that the system should be simple, and try to use as much as multilingual and try to connect it. Today's challenge in rural India –connectivity issues, electricity issues, resource availability issues. If you're having alternate solutions where technology can work on online and offline solutions, create resource availability, create awareness about finance, use digital as much as that empowers you a lot.

➤ **Mr. Leslie D'Monte, Technology Editor, Mint:**

Jimeet, what is the way forward when you're looking at the full HFTs etc, the algo trading, lot of AI, you're using a lot of machine learning and deep learning to search through your databases, make sense of that data... what is the way forward?



➤ **Mr Jimeet Modi, CEO & Founder, SAMCO Securities & StockNote:**

From a way forward perspective, wealth management is the first bucket where this technology will have a deep impact. The manner in which we trade is going to change significantly. Also we will see an emergence of AI-based mutual funds as well, where mutual fund managers will be significantly assisted by AI machines for decision-making processes ...we believe that such asset managers or mutual funds will tend to do better than a normal human asset manager.

From a technology standpoint, we also believe that the lending bucket is also significantly going to change, in the sense, the technology allows you to have a better profiling of a customer, the credit appraisal system, you can have a predictable analysis on whether a customer could default, not default, etc. So I think every business in the next 5 years, will need to adopt to the technology benefits of AI and ML.

➤ **Mr. Suresh A Shan, Global CIO, Mahindra & Mahindra Financial Services Limited:**

Use the known epics to define unknown ethics – let us talk banking in their language instead of trying to impress and confusing the full system.

Secondly, if you see the prospect in terms of customers looking a lot more from the financial services, especially digital everything is going to matter a lot when technology is going to talk their language, multilingual, let it be in the local language; let us talk really what they require, the earn-to-pay model; and try to connect as much how we can try to take it up so they reach the level they want.

Try to select a technology which is a good partner.

➤ **Mr. Soichi Umeki, Director, JETRO (Japan External Trade Organization) (under Ministry of Economy, Trade & Industry, Government of Japan):**

Japanese investment volume accounted for \$5.7 billion in 2016, and the number of Japanese affiliated companies operating in India is 1369 with 4838 locations. Japan is placed 3rd in terms of investment accumulation from 2000 onwards, towards India. In terms of foreign direct investment to India, Japan holds the top position.

Japan is giving its highest priority to India in terms of business. Factors like high economic growth rate and regulatory reforms make it easier for foreign companies to do business in India. However the distribution of Japanese investment in India is concentrated to automobile, machinery, engineering. Our endeavor at JETRO is to promote more bilateral and trilateral trade in investments and to increase the investment volume in a mutual manner.

Japanese investment in India is unevenly distributed. We must explore new investment avenues to diversify Japanese investments to a wide range of industries in India. We are focusing at sectors like IT, and also



working towards increasing the presence of Japanese SMEs, including startups, in India. This year, we are planning to exchange high-level business delegations in the areas of service and IT.

Although Japan is the world's second largest financial market, when it comes to investing in IT, our major financial institutions have confined their investments to back office operations. Japanese financial institutions have just started to put investments into fintech. Demand in the fintech market is increasing as online stocking grows, ecommerce expands, and the increase in card favoring foreign tourists spurs on the spread of credit cards. In Japan, the leading sub-market of fintech is payments. However other sub-categories have also been swiftly gaining traction in the past few years.

There has been a sharp spike in the interest towards blockchains as fintech technology.



Opening Remarks of the Afternoon Session by Mr. Soichi Umeki, Director, JETRO (Japan External Trade Organization) (under Ministry of Economy, Trade & Industry, Government of Japan) on Business Collaboration with Japan on cutting edge Fintech

Indian IT companies have become more competitive, and are playing a pivotal role in the field of high-end innovations. Japanese companies have started recognizing the potential of Indian companies. I am expecting more Japanese companies to set up their R&D centres in India for developing their product and services, and leveraging the IT technologies possessed by the Indian companies.

I hope that the Indian IT players will consider expanding their businesses in Japan. For Indian IT/fintech companies to expand globally, I believe there are clear benefits by collaborating with Japanese companies. At present, there are around 70 Indian companies operating in Japan.

- India is a highly competitive and price-sensitive market; due to constant increase of price it takes a long time to reach the break-even point for the companies. Secondly, further simplification of



administrative procedures is required. Thirdly, complicated tax systems and procedures. The Govt of India as well as the state authorities has been addressing these concerns and taking appropriate actions, which is represented by the introduction of the GST.

➤ **Ms Indrani Saha, AVP, Cognizant Technology Solutions India Limited:**

In Cognizant, when we started our journey, it was from the financial services set of customers with a lot of inquisitiveness. Soon it spread to insurance, then retail, manufacturing, logistics, healthcare, life science, etc.

The 4 basic concepts of blockchain - distributed ledger, smart contracts, cryptography security part of it, and consensus. There are 2 categories of networks - one is public permission-less networks, where Bitcoin is the pioneer... so here we said that it is anonymous transactions.

But think about the enterprises. No one is willing to share data indiscriminately. So that's where the play of a private permission blockchain is ... the demand and frameworks that's coming up to support a private permission blockchain. We heard that Indian Govt is saying they are open to explore blockchain, but not the cryptocurrency, Bitcoin etc. So when people are talking about making blockchain real, most of the enterprises' focus is on the private permission network.

So private permission model, the participants in the network are known to each other, creating a more connected business network. The primary challenge, in today's business environments, every enterprise is operating in a very silo-ed way. So blockchain is enabling you to connect them all together in a very seamless way.

One widely talked about use case in blockchain from Day 1 is the cross border payment, and Ripple is a leading solution provider in this space, who is fully focused on cross border payment. Today the solution they are giving is not an open source solution, it's a commercial solution called Ripple Gateway. So this is a great example, it is live and the transactions are happening.

JPMC is trying to address a smaller part of the problem, they said that they are setting up inter-bank information exchange network. Typically in a cross border payment chain, there are a lot of processes happening in the payment sanction checks, and this is a time-consuming process. So instead of jumping to the full payment, what JPMC is trying to address is, during the sanction hit, if there is a query, can I have a connected network where I'll be able to get that requested information seamlessly and quickly.

So industry is taking a measured approach. There had been lot of hype, initially a lot of testing. Now enterprises have also taken that fail-first strategy with small experiments.

If you have to look at blockchain kind of scenarios, how ready the technology is, is point no. 1. Then what is the business problem you are trying to solve? When you are trying to solve a business problem, do you have your partners with you? Do you have that ecosystem, that collaboration that is required from the partner?



Because often it seems that the technology is there, every problem will be solved. But our experience says, the way the industry is designed today, there's no standardization of process.

So let's take a measured approach, let's take one block at a time and try to solve it, instead of thinking very big. If you have already solved a small problem, you have made a lot of progress, because you have already created the ecosystem.



Mr. Sanjoy Sen, Co- Chairperson, IT Committee, The Bengal Chamber (at the podium) moderating the Session 'Blockchain in Fintech creating Innovations and Disruptions' (L-R): Mr. Soichi Umeki, Director, JETRO (Japan External Trade Organization) (under Ministry of Economy, Trade & Industry, Government of Japan); Mr. Subash Shanmugam, Associate Director – IT Consulting, Protiviti; Ms Indrani Saha, AVP, Cognizant Technology Solutions India Limited; Mr. Kaustubh S Oak, Executive IT Architect, IBM; Mr. Pankaj Mittal, Digital Enabler AI, IoT, Co Founder Pune Angels, Member CIO Angel Network, Board Adviser Global Block Chain Foundatio & Mr. Sumit Misra, General Manager, RS Software (India) Ltd.

➤ **Mr. Kaustubh S Oak, Executive IT Architect, IBM:**

I would call blockchain a paradigm shift. It's going to impact the processes, the way the companies work together, the way the businesses are done moving forward, the way people are utilized in the businesses, and of course, the technology.

If I have to equate the internet evolution with what we are seeing in the blockchain era, I would say blockchain is like internet of value; it is a flow of assets across business network, each making money and adding their bit. If I have to expand that beyond a finite number of enterprises, you would see an internet of



blockchain networks. So you would have lot of companies connected to each other through some network, not directly.

My other point –there is a great element of fear that blockchain is going to replace my existing system. The key thing is, you are going to take advantage of all the systems which are out there. Blockchain is going to span across people process technology... and each of them would have some limitations. Blockchain is going to help you overcome limitations in each of those areas and act as a glue joining different enterprises, providing the trust part.

Business networks are going to continue to grow. You don't know who you would partner with few months down the line. Now when you do partnerships, you do not want to set those point to point connections again – you need something which could be latched on to very easily. And distributed ledger will help all these scenarios where new businesses are going to join other ones.

The other important misconception people have is, all the data I have in my enterprise would land in distributed ledger. The answer is no. We are talking about a subset of data, a common data, for all the enterprises which are part of the business network – only that extent of data needs to go on the ledger.

Smart contract is an evolving term. In the blockchain domain, it is a way to automate certain manual processing, which may otherwise be happening in an enterprise. Smart contracts provide you an opportunity to embed some of the rules which can be checked during the transaction itself, and not as a result of some kind of dispute.

Blockchain is also doing disintermediation, or getting rid of the middleman; for eg. in the case of cross border payments, there are processes, people, all these middlemen who are there just for the sake of it, they have been there for years together; something like blockchain, distributed permission ledger concept is going to help you decide whether you need these guys or not.

Now the other side effect of this status quo – when it comes to payment systems, blockchain movement has gotten them thinking. They need to innovate, make their services better. You would hear SWIFT is also adopting blockchain in their fabric, SAP too.

Talking about the adoption patterns, in 2017, in IBM, we did about 400-plus proof of concepts worldwide on blockchain and in various domains. There you would typically have an anchor company... but the proof of concepts was limited to single enterprise, but when you look at the critical ingredients for blockchain you need multiple players... and you would not easily get multiple players when you are talking about a POC.

In 2018, we see a change. In 2017, predominantly the pattern was of an internal ledger. Now we are talking about a consortium... a group of like-minded companies coming together, because they have a common problem to solve, common use case, and they are looking for a solution. And for some of the use cases, blockchain is one of the appropriate solutions. So they are forming consortiums, and then IBM is helping set



up a platform which could start with X number of partners and then there would be on boarding of other set of partners on a continuous basis. So this is the second level.

Third level is the information hub... a setup which could be enabled in blockchain, where you are carrying information which will be controlled... you will have consent-based mechanism, who can access what. So that's the third pattern.

Fourth pattern is Nirvana pattern. We talk about multiple companies, several players coming into the picture, which ultimately lends itself to a network of blockchain networks.

IBM was the originator of what is named as hyper ledger fabric today. IBM started working on this 3 years ago, and then donated it to open source community...so there are a number of companies who are now involved in maintaining this hyper ledger fabric.

IBM is also trying to build an abstraction layer above hyper ledger fabric. For bare bone technology, you need to invest in downloading, configuring and using it properly. IBM is building an offering called IBM Blockchain Platform... it's a cloud-based offering which will have hyper ledger fabric at the core of it, and then you would have well-managed platform. IBM is trying to focus on making technology simple, build tooling, build offerings around that so more and more people can use it.

IOT and AI are complementary to blockchain. When you talk about IOT, it is going to help realize a particular scenario lot better in combination with blockchain; and ditto with AI and micro services. AI is going to come into picture when you have critical mass of data available in ledger; in my opinion, these are still early days.

We need to keep an eye on the advancements in quantum computing. Quantum computing is going to help you crack into complex cryptography algorithms quicker.

➤ **Mr. Pankaj Mittal, Digital Enabler AI, IoT, Co Founder Pune Angels, Member CIO Angel Network, Board Adviser Global Block Chain Foundation:**

Do you know that there is no proper blockchain education available? Bitcoin is a by-product of blockchain as a technology. What is blockchain is completely capable of? Fintech is one supply chain we talked about. But do we know what is the value on what we put on a blockchain? Happens on a protocol layer. Now if we can fork a protocol in blockchain world, these are the people who are going to be the next millionaires, who will decide on the next course of action, what will happen in the blockchain world.

Now in blockchain, IBM signed a deal with a company called Maersk. They are trying to create a consortium, whereby they are talking about large shipping companies all across the globe forming up a blockchain alliance, and they can keep tracking it.



Now at Global Blockchain Foundation, we primarily work with industry, startups... we're trying to set up multiple centers of excellence all across India and outside India; on democratizing what blockchain is all about.

Immutability, consensus, provenance-these are certain things which are important for a blockchain to be successful. So you have to have consensus between multiple parties, there is immutability, which is the trust factor we talked about; there is a provenance that whatever you have written on the block is not going to be tampered – once it is done, it is written for ever. So it is tamper-proof.

Diamonds are being traded on blockchain... gold exchanges are coming on blockchain... for the matter of authenticity, trust, accountability, transparency on blockchain. So blockchain as a technology is being accepted and adopted all across, but it is also seen as the next potential disruption in the industry today, after internet.

3 large platforms I am aware about –Ethereum, IBM hyper ledger or hyperledger fabric, and R3 Corda. But today industry is mostly using hyper ledger. We also see banking insurance using lot of blockchain projects. 26 banks have taken participation about what is going to happen in e-KYCs.

I work with Central and state govts where we have been contemplating about the use of Aadhar or creating digital identities on blockchain. China has put lot of data on AI and blockchain, and they are ranking and rating the entire population of China in a decentralized database which is on blockchain.

I'm extremely optimistic about blockchain use, and increasingly seeing blockchain acceptance globally on multiple use cases.

➤ **Mr. Sumit Misra, General Manager, RS Software (India) Ltd.:**

Electronic payments is providing a revenue estimated to about \$2.3 trillion worldwide, and about 43-plus percentage of that is coming to the banks that is going to fuel the entire part of the blockchain in the near future.

A lot of transactions will be happening through the blockchain... but that is not very easy, because of the permissions etc that is there, the data and information is restricted. We are trying to work with someone in order to build a mining system on the blockchain-based payment transactions that are happening. The difficulty is, this being a permissioned type of environment, you need to have mechanisms to protect the data. At the same time, for the mining purpose you are trying to find a pattern, and that becomes very difficult unless you have the permission to look at all the data all the time, whether you want to figure out whether it is coming from the same source, going to the same source.

In India, lots of wallets have evolved. It is estimated that about \$4.4 billion of money will be blocked in Indian wallets very soon, the digital transactions in India are increasing dramatically and will become almost tenfold in a few years.



We have a new regulation called inter-operability of wallets. How to fuel that? Probably the best way is to create a permissioned blockchain which is shared by various wallets, and using that you can transfer money, and do that inter-operability. Now that brings up a new perspective, that for similar type of services across the world, can there be a permissioned blockchain created, and the trusted beings, those vendors who provide those particular software, and then it becomes a mechanism to interface with each of these, and value can be transferred using the blockchain, across various applications.

There are challenges there because it's not very easy for application transactional systems to interface with blockchain type of structures, because right now the speed of operations or the throughput which is typically rated as transactions per second, that is not the speed at which blockchains are operating at this point in time. So we have a long way to go.

➤ **Mr. Subash Shanmugam, Associate Director – IT Consulting, Protiviti:**

About 20-24 months back, when we were exploring what this technology could potentially mean, I found it very difficult to explain the concept. We don't even have a standard ISO definition of what blockchain or DLT is. So trying to explain what provenance is, or what cryptography is to the board of directors was very difficult. And that's when a couple of companies came to my help – McDonalds and Lacnor, both claiming the excellence of their food sources.

Here blockchain helped... I could at least sell to the F&B sector and to my internal board, saying that we can prove if this is fresh or not with a concept called provenance. And that's how it started off... that we could trace the origin of a product, and provenance does help. So that's one key factor that we harped on when we started looking at this technology.

From our perspective, we see 3 changing patterns –first, the source of the drive. Maybe a couple of quarters back, we had the private entities really being gung-ho about DLP, blockchain. The govt entities remained silent.

But the last quarter, we've witnessed a lot of initiative taken by govts, central banks, because they've started seeing the value in that. So there's an impetus given by govts now, in terms of what blockchain can do... and they're all in an exploratory mode. The same is happening across sectors.

The second is in terms of relooking at governance on the platform. Essentially the challenge has been not just about identifying the use cases, but how those use cases are going to work on the platform. Today, the biggies like Western Union, Money Gram, Ria, in the payment market, they're looking at blockchain because they're forced to have a look at what this technology can do. So we see this shift happening in terms of adoption where people have to rethink about the process before they look at adoption.

One more element - it's also very heartening to see commercial and govt entities relooking at their role on the platform. So for eg, as a central bank, you don't need to own wallets... you don't need to have wallets for retail



investors... but today, central banks are looking at that possibility. There are commercial banks that are re-looking at their portfolio of services.

We have a huge underbanked population – our payments systems, payment strategies should ensure that the underbanked are also appropriately banked. So there is a KPI, a metrics around that. But with blockchain, you probably don't need a bank. All you need is a wallet, which is governed with certain rules, and maybe the units within the wallets are also governed.

The third trend we see is in terms of cash. Cash has been prevalent since its initiation. People have tried to replace or reduce the amount of cash. A few of the reasons are –one, the cost involved in safekeeping cash. Second – in terms of the float... it takes time for cash to get to your bank. Third –in terms of the insurance premium you pay on cash.

However, cash has still remained in the economy. So central banks of the region are looking at a central bank-issued digital currency.

Apart from that, the challenges that we see... the governance, how it will be managed on the platform, and what is the cost per transaction or subscription – there's no clarity on that, because all the work we're doing today is with regards to the pilot projects. So going forward, how IOT and AI could be complementary on the platform. There's a big scope for that... it gives a lot of comfort for the client in terms of data not being entered.

So these are the 3 trends we're monitoring right now, and we see a lot more changes happening in the future.

Fintech - Riding on BLOCKCHAIN

THANK YOU !



DEPARTMENT OF INFORMATION TECHNOLOGY & ELECTRONICS
GOVERNMENT OF WEST BENGAL



Trademarks: Dell, EMC and Dell EMC are trademarks of Dell Inc. or its subsidiaries. Intel and the Intel logo are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries.