सत्यमेव जयते

One Day Workshop on Blockchain

For Government of West Bengal

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ABOUT PROGRAMME

Program Description:

The blockchain is the next generation of the internet as we know it. It is a technology that has many applications and holds vast promise for every business, society and individual. This disruptive revolution is expected to transform the entire value chains by leveraging state-of-the-art digital technologies. Blockchain can be used as a great enabler in improving the productivity of government departments. ***While the subject of blockchain in the literature, seminars and workshops has been primarily discussed in a very technical manner, ISB is researching to convert this discipline for common consumption and appreciation.***

Background of Blockchain

Traditionally commerce used to be direct & in person. Today commerce is mostly conducted on-line requiring intermediaries like:

a) Banks, Governments, other central authorities to verify the identity of each party and establish the needed trust between them

b) Intermediaries cause inefficiencies-decreased speed, increased cost, potential fraud, threat to privacy, centralized repository of information can be vulnerable to attacks

In the Internet of information, we must rely on powerful intermediaries to establish trust. Banks, governments, and even social media companies. They help us transfer value and settle transactions.

Current paradigm

- We use centralized servers, which can be hacked. Intermediaries take a fee for their services.
- Intermediaries capture our data, not just preventing us from monetizing it, but often undermining our privacy.
- Intermediaries are sometimes unreliable and often slow. They exclude two billion people who do not have enough money to justify a bank account. In sum, they capture a lopsided share of the benefits of the digital economy.

How transactions happen today?

Currently, most people use a trusted intermediary such as a bank to make a transaction. However, blockchain allows consumers and suppliers to connect directly, removing the need for a third party.

What is a blockchain?

Using cryptography to keep exchanges secure, blockchain provides a decentralized database, or “digital ledger”, of transactions that everyone on the network can see. This network is essentially a chain of computers that must all approve an exchange before it can be verified and recorded.

Why blockchain is so revolutionary?

- The technology can work for almost every type of transaction involving value, including money, goods and property. Its potential uses are almost limitless: from collecting taxes to enabling migrants to send money back to family in countries where banking is difficult.
- In theory, if blockchain goes mainstream, anyone with access to the internet would be able to use it to make transactions.

Public blockchain

The most typically cited type of blockchain is a public blockchain; this type of network has four core characteristics:

- The network is open. The implication is that anyone can join the network and participate, regardless of identity.
- The data is shared. Anyone on the network has access to all data contained in the network.
- The network is decentralized.
- There is no central point of control or authority in charge of the data.
- The data is trusted and secure. Participants in the network collectively agree on the data (this process is called consensus), and that data is immutable once it has been agreed upon.
- Participants must reach consensus before data is considered trusted.

Benefits of Blockchain

Some of the benefits of blockchain are as below:

- Distributed and sustainable (finality)
- Secure and indelible (immutability)
- Transparent and auditable (provenance)
    - Licenses, proofs of records, transactions, processes, events
    - Did this event take place?
    - Was this service performed on this piece of equipment?
    - Does this person have the right permit?
- Consensus-based and transactional (consensus)
- Flexible and orchestrated (smart contract)

Use of Blockchain by Different Governments: Some Examples

In this section, we sum up a few use cases of application of blockchain the government sector in different countries (*William Mougaya)*

Blockchain initiative in Singapore

In Singapore, the government has turned to blockchain to prevent traders from defrauding banks. The action was driven by an incident where Standard Chartered lost nearly $200 million from a fraud in China's Qingdao port two years ago. Fraudulent companies used duplicate invoices for the same goods to get hundreds of millions of dollars from banks, so the Singapore government developed a system with the local banks focused on preventing invoice fraud. By having the blockchain create a unique cryptographic hash (a unique fingerprint) of every invoice. The banks share then, this unique key, rather than the raw data. If another bank tries to register an invoice with the same details, the system will be alerted.

Blockchain initiative in Sweden

Sweden is planning to place real estate transactions on the blockchain. Once a buyer and seller agree on a deal, a contract is made. From there, all parties involved in the transactions — banks, government, brokers, buyers, and sellers — can track the progress of the agreement once it is completed, enabling instantaneous confirmation of valid transactions with the utmost levels of security and integrity.

Blockchain initiative in Estonia

Estonia has a healthcare initiative where medical records are tracked, and as a patient, one knows who looked at the personal record and when, so one is in control of one 's data, and there is transparency about the medical care one is getting.

Blockchain initiative in Georgia & Ghana

The Republic of Georgia is developing a blockchain land registry, spearheaded by their National Agency of Public Registry. They want to show that Georgia is corruption free, modern and transparent government. Another land registry application is taking shape in **Ghana, West Africa**, where, Ghana is implementing it in 28 communities, to enable tamper-resistant property ownerships. Again, the driving element was to make a statement against the perception that the country had corrupt practices, and this initiative is used as a signal to attract foreign investors.

Government to Citizens:

Blockchain tends to displace existing intermediary institutions, meaning that government – which is often one of those intermediary institutions – could find its unique position as a service provider diminishing across a range of functions. The secure platform provided by blockchain could also provide the government with a transaction layer upon which the service functions are executed and recorded. Such a platform would help the government officials to spend more time in doing innovation in delivering a higher quality service to citizens.

Government to Government:

Since blockchain enables a shared ledger with minimal transaction latency, it could allow agencies to reconcile transactions and budgets faster than ever before – without having to change their traditional service model. In cases where government agencies maintain silos of information, blockchain could make information sharing easier by serving as the common transaction layer for agencies communicate.

Government to Vendors

In some cases, the government can use its leverage with vendors to encourage compliance. That means the government could not only solicit work and distribute funds via blockchain-based applications; it could also drive vendor compliance by offering access to the platform as an incentive for promoting transparency in governance.

About the workshop

ISB has designed this one-day workshop for the officials of Government of West Bengal. The program focusses on providing an overview of the blockchain technology and the various aspects of governance that can benefit by adopting this technology. We shall lay special emphasis on explaining the concept of blockchain and its implementation in government services like land records, public distribution systems and medicines.

Total Hours: Eight hours of classroom engagement

Program Takeaways

- Demystifying blockchain
- General understanding of blockchains as distributed ledgers
- A broad understanding of the use of blockchains for eGovernance
- Use cases taught by industry experts
- Broad understanding of a variety of issues across domains, such as in the case of beneficiary management of welfare schemes, tracing the chain of custody of agricultural/ horticultural/forest for better quality and price for farmers, Identity Ownership Management for data privacy and real-time record maintenance for land records and taxation.

Who can attend

Any West Bengal government official, performing senior management roles.

Course 1: Blockchain as a distributed ledger

Instructor: Chowdhury, Chandan, **Associate Dean & Professor, Indian School of Business**

Affiliation: ISB

Number of Sessions: 1 **Session Duration: 2hours**

Session Objective

This session will provide a broad overview of distributed ledger technology and highlight its advantages, drawbacks and potential uses.

Distributed ledgers (DL) use independent computers -- referred to as nodes -- to record, share and synchronize transactions in their respective electronic ledgers, instead of keeping data centralized as in a traditional ledger. The blockchain is one type of a distributed ledger.

Blockchain and distributed ledgers are the building block of “internet of value” that enable economic interactions and transfer “value” peer-to-peer, without a need for a centrally coordinating entity. “Value” refers to any record of ownership of asset – money, securities, land titles, among others.

This session would demystify the subject of blockchain and introduce its salient features through examples and use cases.

Course 2: Leveraging Blockchain for Government to Citizen Initiatives

Instructor:

Mr Rajesh Dhuddu, Global Practice Leader, Blockchain, Tech Mahindra

Nasscom Blockchain SIG Chair

Number of Sessions: 1 **Session Duration: 2hours**

Session Objective

This session will cover the possible uses of the blockchain technology in government services and suggest right applications for the technology.

Blockchain-based solutions have the potential to make government operations more efficient and improve the delivery of public services, while simultaneously increasing trust in the public sector. Several progressive Governments are now seriously considering leveraging Blockchain to not only bring in much-required transparency but also enhance it, especially in various Government to Citizen (G2C) initiatives. A few examples are:

- The government of Andhra Pradesh is leveraging Blockchain to transform land titles and registry
- The government of Karnataka is planning to utilize Blockchain in bring in much-required transparency in First Information Report filed at various police stations

- The government of Rajasthan has completed utilizing Blockchain in benefits distribution especially those including Government grants for meritorious students
- The government of United Arab Emirates is currently in the process of driving large-scale Blockchain implementations in the areas of Healthcare, Insurance, Cybersecurity to realize their dream of making Dubai a Blockchain powered city by 2020
- A few governments are considering using the blockchain in medicine distribution, redistribution and recycling to bring in efficiency and reduce costs

Course 3: Use Cases in Smart Contracts, Medicine distribution and Land Records

Instructors:

Mr Kumar Gaurav, Founder and CEO, Cashaa,

Chairman, Auxesis Group, Blockchain Influencer and Speaker

Number of Sessions: 2 **Session Duration: 2hours**

Session Objective

The session will cover use cases for governance and showcase applications using blockchain technology

Applications for eGovernance:

Electronic Health Record system built over Blockchain is one application which would widely solve many healthcare records related issues. Every node in Blockchain EHR system would send updates about medications, problems, and allergy lists to an open-source, community-wide trusted ledger, so additions and subtractions to the medical record were well understood and audit-able across organizations. Instead of just displaying data from a single database, the EHR could display data from every database referenced in the ledger. The result would be perfectly reconciled community-wide information about all their citizens, with guaranteed integrity from the point of data generation to the point of use, without manual human intervention.

Benefit distribution system: It is proposed to utilize a **b**lockchain enabled benefit distribution system against the regular system of distributing funds. The system will generate crypto-tokens and pass on from the issuer to the scheme organizing departments to beneficiaries which beneficiaries be able to redeem to different vendors in the same ecosystem.

Blockchain for Land Records: Land records, like any other registry in India, are centralized and maintained in the office of the sub-registrar. It is possible that the contents of these papers could be altered or tampered. If land documents are stored on a distributed ledger, it will be impossible to tamper with them.

While the Indian government has renewed its interest in digitizing land records through the Digital India Land Records Modernization Program (DILRMP), the implementation of a distributed ledger first to digitize existing land records and set a precedent for future transactions ensures a legitimate, government-approved record of transactions. The future of property transactions lies in smart contracts, which are automated and don't require an intermediary

Program Schedule:

09:00-11:00	Course 1 Blockchain as a distributed ledger **Instructor:** Chowdhury, Chandan, Associate Dean & Professor, Indian School of Business **Affiliation: ISB**
11:00-11:30	Tea Break
11:30-13:30	Course 2 Leveraging Blockchain for Government to Citizen Initiatives **Instructor:** Mr Rajesh Dhuddu, Global Practice Leader, Blockchain Tech Mahindra
13:30-14:30	Lunch Break
14:30-16:30	Course 3: Use Cases in Smart Contracts, Medicine distribution and Land Records **Instructor:** **Mr Kumar Gaurav,** Founder and CEO, Cashaa, Chairman, Auxesis Group, Blockchain Influencer and Speaker
16:30-17:00	Tea Break
17:00-19:00	Course 3 continued

Some references

1) Blockchain Revolution, 11 Jul 2016 by Don Tapscott (Author), Alex Tapscott
2) Morley, Jonathan B. That Book on Blockchain: A One-Hour Intro.
3) Blockchain: Blueprint for a New Economy, 3 Aug 2015, by Melanie Swan
4) Building Blockchain Projects: Building decentralized Blockchain applications with Ethereum and Solidity Kindle Edition by Narayan Prusty.
5) Blockchain For Beginners: The Complete Step By Step Guide To Understanding Blockchain Technology (Blockchain, dummies, blueprint, business, bitcoin) by Mark Watney.
6) Blockchain Technology Explained: The Ultimate Beginner's Guide About Blockchain Wallet, Mining, Bitcoin, Ethereum, Litecoin, Zcash, Monero, Ripple, Dash, IOTA and Smart Contracts Kindle Edition by Alan T. Norman.
7) Building Blockchain Projects, 28 Feb 2017 by Narayan Prusty.
8) Blockchain: Blueprint for a New Economy Paperback – 3 Aug 2015 by Melanie Swan.
9) Blockchain: Trust Companies: Every Company Is at Risk of Being Disrupted by a Trusted Version of Itself, 9 August 2017 by Richie Etwaru.
10) The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology Hardcover – 17 Jun 2016 by William Mougayar, Vitalik Buterin**.**
11) https://www.weforum.org/agenda/2016/06/blockchain-explained-simply/ (What is blochain?)
12) Blockchain for Government – A point of View, Version 2.0, Alan Thurlow, Richard Nash, Global Government Centre of Competence

ABOUT ISB

The Indian School of Business was established in 2001 with an aspiration to put India on the global map of management education and has campuses in Hyderabad and Mohali. Over the years, ISB has successfully pioneered several new trends in management education in India and has firmly established itself as one among the top global B-Schools. ISB also has the distinction of becoming the first South Asian B-School to receive the AACSB accreditation.

Research

ISB has always been at the forefront of knowledge creation. A strong pool of research-oriented resident and international faculty from reputed B-schools has been a key factor that has helped the School emerge as one of the leading B-Schools, with its cutting-edge research in the emerging areas of Business and Management.

Programmes

ISB offers following programmes:

- Post Graduate Program in Management (PGP)
- Post Graduate Programme in Management for Working Professionals
- Post Graduate Programme in Management for Senior Executives
- Executive Fellow Programme in Management
- Fellow Programme in Management
- Post Graduate Programme in Management for Family Business

Institutes and Centers

ISB has differentiated itself with a strong focus on research since its inception. The Centers of Excellence have played an important role in this. Several members of the faculty have published their research in top-ranked international journals and have been recognized in India and abroad for their path-breaking work.

- Center for Analytical Finance
- Centre for Innovation and Entrepreneurship
- Centre for Learning and Management Practice
- Srini Raju Center for IT and the Networked Economy
- Thomas Schmidheiny Center for Family Enterprise

The four institutes at ISB, through their unique engagement model with the industry, academia and governments in India and abroad, are involved in research and building management capacity in the four sectors that they address, through specialized programs and initiatives.

- Bharti Institute of Public Policy
- Max Institute of Healthcare Management
- Munjal Institute for Global Manufacturing
- Punj Lloyd Institute of Infrastructure Management

ABOUT MUNJAL INSTITUTE FOR GLOBAL MANUFACTURING

A robust manufacturing base is a pre-requisite for India to have a vigorous economy. Accordingly, the Indian government has put forth the National Manufacturing Policy to enable strong growth of the manufacturing sector. Similar efforts have been made recently in developed economies like the UK and the US as both developing and developed countries see manufacturing growth as key to job creation and economic improvement.

The vision of the Munjal Institute for Global Manufacturing (MIGM) is to be the premiere academic institution for operational excellence and innovation in the manufacturing ecosystem in India and beyond. To realize this vision, our mission is to engender synergistic engagement between industry, academia and the government in India and beyond through thought leadership, facilitating knowledge sharing with industry, informing government policy and grooming future leaders.

MIGM is actively involved in promoting digital technologies in both corporate and government sectors and conducting research in areas such as blockchain, Industry 4.0, employability, SMEs and unorganized sector.

The MIGM has an affiliation with MIT Sloan School of Management to achieve a global footprint.

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