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EDITORIAL

Digital revolution is the mantra of new age. Internet and mobile telephony have accelerated the technological revolution. Blockchain, Crypto economy, Artificial Intelligence, IoT and Fintech have further added the fuel to the fire. Advance technologies like Robotics and Voice recognition will introduce the efficiency into our lives by providing more seamless forms of engagement with technology in our daily lives.

All these technologies are data intensive. In 2014 IBM estimated that human beings were creating 2.5 Exabyte's data, every day. According to IBM team, this number meant that human being had created 90% of all data accumulated throughout history in just two days. The enormous data generation and its storage in cloud controlled by centralized servers raise a serious threat of data piracy. The data security and privacy thus becomes the issue posing serious concerns.

Decentralization via Blockchain platform could be but one possible solution. But for the optimum use of technologies for greater good of the society, there is a need for coordinated approach of all stakeholders. Effective and robust architecture inclusive opportunities, proper regulatory framework, global policies, planning and leadership initiative will be required at all level.

Education will play equally pivotal role for proper understanding of these cutting edge technologies and their impact on human life. A proper trained workforce will facilitate this technological revolution for greater socio-economic good.

ILTES is driven by its vision and commitment to create necessary educational opportunities in the domain of technology and law. We have designed the courses ranging from fundamental level to advance level in the areas of Blockchain, Crypto Assets, IoT and Artificial Intelligence. A spirited team of experts is supporting and guiding our mission.

ILTES invites Educational Institutions to take initiative and promote understanding of new age technologies with the support of ILTES programmes.

Prof. Dr. M.K. Bhandari
Chief Editor & CEO - ILTES

Announcements
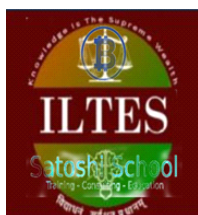
ILTES in collaboration with SATOSHI SCHOOL, VIENNA Is launching following Programs/ Courses: -

1.Workshops and Sensitization Program for Educational Institutions :

      A. Blockchain Technology, Crypto Assets and Regulatory Eco-system

      B. Artificial Intelligence, Blockchain & Internet of things

2.Introductory Courses: -

      A. Fundamentals of Blockchain Technology, Crypto Assets and Regulatory Framework

      B. Blockchain, IoT and Artificial Intelligence- Architecture & Policy

3.Certification Courses: -

      A. Functioning of Blockchain Technology and its emerging applications- Business and Legal issues

      B. Future of Crypto Assets, ICO's, Tokens and their social, economic and legal challenges.

For any further details or queries on the courses, kindly contact us on enquiry@iltes.in or call at 9100700480 & Visit http://www.iltes.in

CENTRE FOR GOOD GOVERNANCE
Knowledge • Technology • People

Rajendra Nimje, ex IAS
Director General

Message

CGG, since its inception in 2001 has embarked on a journey that only few institutions could emulate. While its initial formative years have been on identifying sectors and areas where transformation in governance was required to the home state, in later years it has become truly a national institute by providing knowledge and consultancy services on administrative reforms, governance and e-governance domains to several states as well as Government of India (GoI) departments.

Technology has been changing the world at an extremely fast pace - with new and unique disruptive ideas setting foot in each and every field of our lives. The world is at the brink of the Fourth Industrial revolution and everything is becoming increasingly hyper-connected and smart. Innovation is the key indicator of a country's growth and development. Governments across the world are paying close attention to it and making all required efforts to inculcate and adopt the emerging technologies.

Taking this momentum further, CGG is planning to set up a Centre for Block Chain Technology, Data Analytics, Artificial Intelligence and Internet of Things for incubation and adaptation of new technologies in Government domain. CGG is keen to partner with external agencies/NGOs/Start-ups who provide thing-thank for identification & enabling and promote new technology-based use cases/PoCs/ Applications and Services for quick and early take-off to tap unleashed potential of these new technologies.

CGG is honoured to be associated with ILTES, which is engaged in imparting education and training on these new age technologies and ventures; and look forward to collaborate and help set goal posts into the future.

Congratulations, Prof. Bhandari! It is quite an achievement for the hard work you have done over the years. Wish your efforts are recognized at National and International forums.

Rajendra Nimje, ex-IAS

News & Views

1. Blockchain Decree by Republic of San Marino

The Republic of San Mario is among the few countries that have compiled the formal document, providing a simple regulatory framework on Utility and Investment tokens. The Blockchain Decree released by The San Marino Innovation Institute aims to create an ecosystem that supports innovation. The Institute recognizes that there are two types of tokens but the decree covers different topics ranging from the Fiscal Discipline, Tax and Accounting Treatment, Anti- Money Laundering Regulations up to Transparency and Protection Systems.

(**Source- Blockchain Flash News. Com**)

2. Crypto Economy

Increasing trends in acceptance of Bitcoin and Cryptocurrencies in US Market

(A) Two pension plans in Fairfax County, Virginia, this month invested in a venture-capital fund for the blochchain and digital assets industry. Last year Yale University invested in a fund focused on early- stage projects focused on cryptocurrencies, new blockchains and exchanges. (**Source- Economic Times- Feb 19, 2019 at Pg.9)**

(B) Avnet has become the largest major enterprise to begin accepting payment in bitcoin and other cryptocurrency. On March 19th, 2019, the company announced that it will allow customers to pay for goods and services using bitcoin and bitcoin cash. Crypto payment processor Bitpay will facilitate the transactions. According to Sunny Trinh, the company's Vice President mentioned, "We recognized that cryptocurrency would help our customers overcome the competition and challenges they face every day in taking their ideas from design to production." Trinh said, "And we listened to our customers who said they would like the option to pay for our products and services with cryptocurrency." (**Source-** https://bitcoinmagazine.com/articles/bitcoin-accepted-payment-option-major-us-elctronics-company/**)**

3. Artificial Intelligence pioneers win Tech's Noble Prize

Yoshua Bengio, Geoffrey Hinton and Yann LeCun- the pioneers who have tapped into their own brain power to make possible for machines to learn like humans, a breakthrough now commonly known as Artificial Intelligence or AI, were rewarded on March 27th, 2019, the Turing Award, an equivalent to Noble Prize for Technology. The award marks the latest recognition of Instrumental role that AI will likely play in redefining the relationship between humanity and the technology in failure. (**Source- Times of India, Hyderabad- March 28th 2019 at Pg 13.)**

(From left) Yoshua Bengio, Geoffrey Hinton and Yann LeCun)

ILTES congratulates the great Trio!!!!

BLOCKCHAIN FOR DEVELOPING ECONOMIES
Nida Khan

Doctoral Researcher on Blockchain And Data Analytics,
University Of Luxembourg- Luxembourg

The spread of internet and lowering of the cost of digital technology has created novel means of subsistence making people living in remote regions a part of a global village. India is a country that sits at the forefront of utilizing the immense benefits that come with emerging technologies like artificial intelligence and blockchain. Countries that would excel in harnessing the power of the new technologies would also gain more economic, military and political power according to the World Economic Forum. India has a diverse, untapped pool of human resources that can contribute using technology to make India a superpower in technology and rival the US just as China worked on its scientific research base to become the global leader in artificial intelligence. India has an average internet speed of over 6 Mbps as compared to the 15-20 Mbps of the US and this can prove to be a bottleneck but considering that China progressed despite an average internet speed of 8 Mbps should be a source of inspiration for the governing bodies in India to create a legal system where the usage of new technologies becomes as seamless as using a smartphone.

Blockchain came into the limelight with the release of the Bitcoin platform and consists of a distributed database and a peer to peer network. Bitcoin was not the first peer to peer platform and it was preceded by Torrent, which is also a peer to peer file system but was declared a failure. The reason for the failure of Torrent was that there were no economic incentives for the participants to provide their computing resources to share files and it was based on an honor system. Blockchain revolutionized this and added an economic incentive to participate in the network by providing economic rewards in the form of the cryptocurrency, Bitcoin (BTC) to the participants in the Bitcoin network that helped to add data to the blockchain. The distributed database in blockchain is essentially a chain of blocks and hence the name. Each block carries information/ data regarding the transactions that take place through the blockchain network and other information vital to the functioning of the blockchain network. The information in a block of blockchain can be any other data like the hash (a mathematical function that takes in an arbitrary length of data to produce a fixed-length output that is difficult to reverse) of a file to prove its authenticity, data related to the origin of goods in a supply chain, digital signatures, biometric data, historical data as in genealogical databases and any other form of data of relevance. Thus, Bitcoin paved the way for a novel form of economics, namely cryptoeconomics based on the principles of incentives and cryptography to design and build new systems and applications amongst others. This can prove to be an alternative economic stream in India utilizing the power and skills of the unemployed to not just provide them with a source of employment but also engage them to make India progress both economically and technologically. India can have a national blockchain network where the participants that contribute to its running can receive wages equivalent to their effort as Bitcoin rewards the miners with BTC.

Blockchain as mentioned before is a decentralized database and as such the copy of the database is with all the network participants who volunteer to update the database like miners do by adding blocks in Bitcoin. Any attack to change the data amounts to tampering with the data at all the locations where a copy is kept with the participants, which is not an easy task. In a centralized database attacks to steal,

Modify or destroy the data can be successful very easily as only a central point needs to be gained access to, which controls the entire centralized database. An image of the difference between a centralized and a distributed database is given in Fig.1, where the blue circles represent the users, who can read the database but cannot make changes to it and the green circles represent the one's with the power to both read and write to the database. In a centralized database this power rests with the central authority whereas in a distributed database, this power lies with multiple people. Anybody can modify the database in a public blockchain platform like Bitcoin and Ethereum but the changes that are intended to be done need to have the agreement of the other participants in the network, who have the same power (miners in case of Bitcoin and Ethereum). Additionally the central authority in a centralized database can forbid any user from even reading the database as it's the controlling authority, which might lead to racial and other forms of discrimination. Public blockchain permits all users to read data leading to a just system. There will always be some data that is intended to be private and encryption means can be used to protect it or its storage can be in another location with the hash of that data being stored on the blockchain to ensure its authenticity.
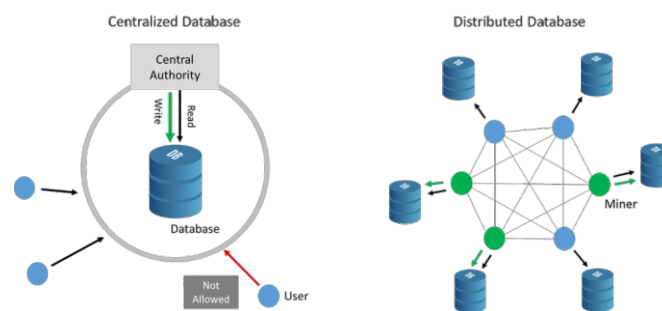

Fig. 1: Centralized vs Distributed Database

The Indian Constitution, which is *of the people, for the people and by the people*, provides a comprehensive framework to guide and govern the country. Blockchain stands as a technology that functions on similar principles in terms of vesting power in the hands of the people. A national blockchain network would be for the people of India with the participants modifying the blockchain network either as elected representatives of the people or an open platform like Bitcoin, depending upon the kind of blockchain platform desired. This will offer several benefits. A national payment network can be built on top of this blockchain platform doing away with the fees paid to the banks, credit card and payment companies. The government might charge minimal rates to help in paying the network participants maintaining the blockchain database by adding blocks. Business organizations can run a similar service making it free for their workers. The applications and methodologies can be many.

Consider the UIDAI is mandated to assign a 12-digit unique identification number, **Adhaar**, to the residents of India linked to the residents biometric and demographic data and which can be used with a host of other services like mobile sim cards, old age pensions and bank accounts to name a few. This feature of *Adhaar*, though revolutionary and highly beneficial can also pose a risk to data modification of the residents if an attack is planned on the data centre in Manesar. The protection of this data from being tampered with can be greatly enhanced by employing a blockchain to store the identification numbers with the relevant information, as the data would be in hundreds of copies nationwide. Blockchain can be a threat to security if the details of the residents can be accessible to all even though it cannot be modified and as such adequate cryptographic measures to encrypt and protect the data would be needed. Once the precautionary measures are in place, *Adhaar* can prove to be the digital identity that it was envisaged to be for the residents of India maintained in a database owned and controlled by the Indian residents in a transparent way. Blockchain would empower people in a way that they would no longer need to trust the government of India to keep their data for them. This would lay down the foundation of a sharing economy as seen in *Uber* and *Airbnb*, at the highest governing level.

Novel entrepreneurial ventures can usher the country into a new era of growth and development. Blockchain can contribute to it together with artificial intelligence. Indians have always excelled in diverse fields and can be seen making their mark globally in virtually every known place on Earth. Indian export business can enter a new period of progress with even residents in villages and remote areas contributing to the economy by selling their products internationally through a blockchain-powered supply chain ensuring the authenticity of the sold goods, reducing the fees of the middleman and making the original manufacturers the primary benefactors of the sale. Men and women would walk hand in hand to bring the dreams of a digital India flourishing on emerging technologies into realization. Education can be blockchain-based together with exams ensuring that experts teach from their home and get paid, opening up the doors to thousands of young children in the remote areas who might want to gain access to education and yet cannot. MOOC's have already revolutionized education and the incorporation of blockchain to it can add a layer of transparency, authenticity and verifiability to the credentials gained through such means for the students. Consider the case of a lost child. If a blockchain is maintained to store the *Adhaar* of all citizens in India, then a biometric identification of the child can be conducted by anybody to find the relevant match in the blockchain database leading to access of information related to the home of the lost child.

An immutable database that blockchain offers can speed up the bureaucratic, legal, judicial and many other time-consuming procedures in India by providing relevant data, that is guaranteed for its genuineness, in seconds to ensure swift action. The time is ripe for India to venture into blockchain by formulating laws to aid in its deployment and usage empowering the citizens of India to carve their future with their own hands. Artificial intelligence is the powerful tool that will help to use the data from blockchain and existing centralized databases to formulate strategies for enhanced growth and development while reworking on the past mistakes and failures.

CEO- Prof M. K Bhandari Conducting 26th Workshop On Blockchain & Crypto Assests At
KIIT- School Of Law - Bhubaneswar On 25th March 2019

Ms Divya Pancholiya Of ILTES Lighting Lamp At National
Symposium On Blockchain And AI Jointly Organized
By T.N DR. Ambedkar Law University- Chennai & ILTES on 2nd March-2019

ILTES Visiting Faculty Ms Anuradha Maheshwari Being
Felicitated At Chennai Symposium

Prof Bhandari Conducting Meeting Of NICBLT - The First Joint
Research Center On Blockchain Established By NLUJA & ILTES At Guwahati On 19th Feb 2019

Technology is outpacing the Law - **Barry Steinhardt**

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in association with

Infinity Law-Tech Educational Services

organizes

National Symposium

on

"Blockchain, Crypto Asset and Artificial Intelligence"

SYMPOSIUM REPORT
Divya Pancholiya
HR & Marketing Lead ILTES - INDIA

On March 2nd, 2019, The Tamil Nadu Dr. Ambedkar Law University in association with ILTES, organized a one-day National Symposium on *"Blockchain, Crypto Asset and Artificial Intelligence".*

The Symposium was inaugurated by the Vice Chancellor, Prof. TSN Sastry and the honored speakers and the Faculty members. The conference started with the Introduction and the Welcome of the invited speakers and dignitaries on the dais.

On behalf of ILTES, myself, Divya presented the Theme of the Symposium- "*"Blockchain, Crypto Asset and Artificial Intelligence".* She narrated a quick brief on how Blockchain has taken the Centre stage in the New era of technologies and how in the last 10 years, the use of Blockchain in finance, trade, supply chain, smart contracts have raised no. of issues and challenges. In the absence of proper regulatory framework, the Blockchain Technology and the Artificial Intelligence are susceptible to abuse or misuse. Similarly, there is no uniform regulatory norms about the cryptocurrencies.

The Symposium was further divided into Two Technical Sessions- Session 1- For the Invited Speakers and Session 2- For the Faculty and the Students of the University.

Both the sessions were a great success as in the Technical Session 1- Mrs. Anuradha Maheshwari, Expert in AI & Blockchain from Mumbai, gave a detailed presentation on how AI is drastically impacting the lives around in every domain and field. Adv. Mr. Rohan gave a great presentation on Artificial Intelligence and its legal implications in the technological world.

In the technical session Mr. Abhishek on behalf of ILTES presented the audience, a quick walk through on Blockchain, Crypto Assets and its regulatory framework and understanding. All the sessions were impactful and appreciated by the audience.

The second Technical Session was done by the Faculty and Students on various topics ranging from- Blockchain Advantages and Disadvantages to Use of Artificial Intelligence in Child Trafficking to The Impact of Robotics on Humans. All the sessions were very interactive and liked.

The Symposium ended with great energy and applaud. The participants appreciated the initiative jointly taken by Dr. Ambedkar Law University & ILTES and expressed the willingness to learn more about the theme.