



# **REPORT**

# **BLOCKCHAIN**

**Date: 23<sup>rd</sup> November – 27<sup>th</sup> November 2020,  
Swami Keshvanand Institute of Technology Management & Gramothan, Jaipur**

**AICTE TRAINING AND LEARNING ACADEMY, PUNE**

	<p><b>Department of Computer Science &amp; Engineering</b> (NBA Accredited)</p> <p>AICTE Training and Learning (ATAL) Academy Sponsored Online Faculty Development Programme (FDP) on <b><i>“Blockchain Technologies and its Applications”</i></b> (23<sup>rd</sup> November – 27<sup>th</sup> November, 2020)</p>	
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## Completion Report

AICTE Training and Learning (ATAL) Academy Sponsored Online Faculty Development Programme (FDP) on **“Blockchain Technologies and its Applications”** was successfully organized by Department of Computer Science & Engineering in the Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur from 23<sup>rd</sup> November, 2020 to 27<sup>th</sup> November, 2020. The programme had the primary objective to provide the state of the art trends and advancements of Blockchain Technologies and its Applications to the faculty members of different organizations. Some other specific objectives which were targeted in this FDP are:

- ✓ To provide exposure to IoT Tools and Techniques to enhance the teaching and research skills.
- ✓ Blockchain Technologies and Application
- ✓ Bitcoin and Crypto Currencies
- ✓ Electronic payments v/s Crypto Currencies
- ✓ Blockchain and FinTech
- ✓ Cryptographic tools for blockchains-I
- ✓ Consensus, mining and smart contracts
- ✓ Blockchain and supply chain
- ✓ Security related issues in Blockchain
- ✓ Blockchain and IoT
- ✓ Hands-on HyperLedger

## Programme Highlights

- ✓ **Number of participants:** In all 103 participants attended the FDP Programme. There were participants from all parts of the country namely Mumbai, Delhi, Punjab, Haryana, Maharashtra, Uttar Pradesh, Gujarat, Hyderabad Telangana, Gurugram, Puducherry, Andhra Pradesh, Tamil Nadu and Rajasthan.
- ✓ **Resource Persons:** The various sessions of faculty development programme were taken by academicians and industry experts.

Sr. No.	Expert/ Resource Person	Designation/ Profile
1	Dr. Mukesh Mohania	Professor (CSE), Indraprastha Institute of Information Technology (IIIT), Delhi
2	Dr. Mani Madhukar	Global University Programs, IBM Research
3	Dr. Anand Nayyar	EiC, (IJSVST); Lecturer, Researcher and Scientist-Graduate School, Duy Tan University, Da Nang, Viet Nam
4	Prof. (Dr.) Shekhar Verma	Professor, Indian Institute of Information Technology (IIIT), Allahabad
5	Dr. S. Venkatesan	Associate Professor, Department of Information Technology, Indian Institute of Information Technology (IIIT), Allahabad
6	Dr. Debasis Das	Assistant Professor, Department of Computer Science and Engineering, Indian Institute of Technology (IIT) Jodhpur
7	Mr. Jeeven Saini	Co-Founder & CEO, Sofocle Innovation Labs Pvt. Ltd., Stellar IT Park, Tower B, 5th Floor, Sector 62, Noida-201309, India Delivery Center
8	Dr. Sumit Kalra	Assistant Professor, Dept. of Computer Science and Engineering, Indian Institute of Technology (IIT) Jodhpur
9	Dr. Ravi Chamria	Co-founder & CEO, Sofocle Innovation Labs Pvt. Ltd., Stellar IT Park, Tower B, 5th Floor, Sector 62, Noida-201309, India Delivery Center
10	Dr. Ajay Khunteta	Professor, Department of Computer Science and Engineering, Poornima University, Jaipur
11	Mr. Narahari Dasa	Akshaya-Patra Jaipur, Life Coach   Alumni, NIT Jaipur.



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Mukesh Mohania received his Ph.D. in Computer Science & Engineering from Indian Institute of Technology - Bombay, India in 1995. He was a faculty member in University of South Australia and Western Michigan University from 1995-2001, and then worked at IBM Research (India and Australia) for 18+ years till October 2019 as Distinguished Engineer.

His research interests are on Information (structured and unstructured data) integration, master data management, AI based entity analytics, big data analytics and applications, and blockchain data management. His work in these areas has led to the development of new products and also influenced several existing IBM products. He has received several awards within IBM, such as "Best of IBM", "Outstanding Innovation Award", "Outstanding Technical Achievement Award", and many more. He has published more than 120 Research papers in reputed International Conferences and Journals and has more than 50 granted patents. He has held several visible positions in academia and professional activities, like Adjunct Professor at Australian National University and University of Melbourne, VLDB 2016 Conference Organising Chair, ACM India Vice-President (2015-2017), ACM Distinguished Service Award Committee Chair (2017-18), Distinguished Speaker Program Chair (2015-17), and editorial board member in several journals and transactions. He is an ACM Distinguished Scientist, a recipient of ACM Outstanding Service Award, and an IEEE Meritorious Award. He was a member of IBM Academy of Technology, and IBM Master Inventor.

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**Research Interests:**

Information Integration, Master Data Management, AI based entity analytics, Big data analytics and applications, and Blockchain data management



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He is a part of Global University Program team under IBM Research. Passionate about learning and sharing knowledge, my work area includes Academic Program Management, Cloud Pre-sales, Cloud Application Development, Electronic Content Management, Competency Development, Mentoring Startups, Curriculum Design, Project Management.

In his previous roles at IBM worked across different technologies including Cloud, Blockchain, Internet of Things, Data Science, DevOps and IBM Watson, contributed to Ecosystem development with stake holders from ISVs, Startups and Academia. He represent IBM in various forums as technical expert /panelist on various technology areas, advisor to few incubation centers and startups and an expert on curriculum design and part of many Academic councils/Board of Studies at various academic bodies/universities including AICTE, NITTTR and many more. Mentor to online community on Blockchain and Cloud, supporting sessions on IBM Blockchain/Hyperledger, IBM Cloud.

<https://www.meetup.com/Exploring-Blockchain-Bangalore-Meetup/>

<https://www.meetup.com/Bangalore-Softlayer-Meetup/>

Dr. Anand Nayyar, Professor (CSE), EiC, (IJSVST); Lecturer, Researcher and Scientist- Graduate School, Duy Tan University, Da Nang, Viet Nam



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**Dr. Debasis Das** joined as Assistant Professor in the Department of Computer Science and Engineering(CSE) at the Indian Institute of Technology (IIT) Jodhpur, Rajasthan, India, in 2019. Before joining IIT Jodhpur, he was working as an Assistant Professor at Birla Institute of Technology and Science, Pilani (BITS Pilani), K. K. Birla Goa Campus, Goa, India and NIIT University, Rajasthan, India. His research interests include Communication and Networking, VANETs, Smart Cities, Machine Learning, Internet of Vehicles (IoV), Blockchain, and Network Security. Dr. Das has published 90 research papers in top international journals (Like *IEEE Transactions on Dependable and Secure Computing (TDSC)*, *IEEE Transactions on Vehicular Technology (TVT)*, *IEEE Systems Journal*, *Journal of Parallel and Distributed Computing (JPDC)*-Elsevier, *Journal of Network and Computer Applications (JNCA)*-Elsevier, *Pervasive and Mobile Computing (PMC)*-Elsevier and *Wireless Networks*-Springer, etc.) and top Conferences (like UBICOMP, RTSS, IFIP Networking, LCN, ICDCN, AINA, SMC, APCC, IWCMC, and UIC, etc.). Earlier, he had been involved in the Ministry of Electronics and Information Technology (MeitY), Govt. of India, a research funded project where he had actively participated in developing the Centralized and Distributed Algorithm for Vehicular Sensor and Mesh Networks based Future ITS. He has been awarded an Early Career Research (ECR) Award from Science & Engineering Research Board (SERB), Department of Science & Technology, Govt. of India for Sponsored Research Project title Secure Vehicular Communication and Routing in Future Intelligent Transportation Systems (ITS).

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The schedule of the workshop was as below-

AICTE Training and Learning (ATAL) Academy Sponsored						
Online FDP on "Blockchain Technologies and its Applications"						
23-27 November, 2020						
Organised by Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur						
Day 1 →	Session Time	9:30 am -11:00 am	11:00 am -12:00 Noon	12:00 Noon – 12:30 pm	12:30 pm - 2:00 pm	02:00 pm - 03:30pm
Day-1 23 Nov. Monday	Topic	Blockchain Basics	COMMON INAUGURAL FUNCTION BY: ATAL ACADEMY	Lunch Break	Blockchain Applications in Education and Micro-Insurance	Blockchain for Enterprise: Blockchain Technologies and Application
	Resource Person	Dr. Mukesh Mohania Professor (CSE), Indraprastha Institute of Information Technology (IIIT), Delhi			Dr. Mukesh Mohania Professor (CSE), Indraprastha Institute of Information Technology (IIIT), Delhi	Dr. Mani Madhukar Global University Programs, IBM Research
Day 2 onwards →			10:30 am -12:00 Noon	12:00 Noon – 12:30 pm	12:30 pm - 2:00 pm	02:00 pm - 03:30pm
Day-2 24 Nov. Tuesday	Topic	Blockchains, Bitcoins and What Next	Dr. Anand Nayyar EiC, (IJSVST); Lecturer, Researcher and Scientist- Graduate School, Duy Tan University, Da Nang, Viet Nam	Lunch Break	Cryptographic Tools for Blockchains	Public, Private & Distributed ledgers
	Resource Person				Prof. (Dr.) Shekhar Verma Professor Indian Institute of Information Technology (IIIT), Allahabad	Dr. S. Venkatesan Associate Professor Department of Information Technology, Indian Institute of Information Technology (IIIT), Allahabad
Day-3 25 Nov. Wednesday	Topic	Blockchain for 5G and Beyond Networks	Dr. Debasis Das Assistant Professor, Department of Computer Science and Engineering, Indian Institute of Technology (IIT) Jodhpur	Lunch Break	IoT security issues using Blockchain and smart contracts	Blockchain T&D domain
	Resource Person				Dr. Debasis Das Assistant Professor, Department of Computer Science and Engineering, Indian Institute of Technology (IIT) Jodhpur	Mr. Jeeven Saini, Co-Founder & CEO, Sofocle Innovation Labs Pvt. Ltd Stellar IT Park, Tower B, 5th Floor, Sector 62, Noida- 201309, India Delivery Center
Day-4 26 Nov. Thursday	Topic	Blockchain & IoT, Blockchain Technologies and Applications	Dr. Sumit Kalra, Assistant Professor, Dept. of Computer Science and Engineering Indian Institute of Technology (IIT) Jodhpur	Lunch Break	Bitcoin and Cryptocurrency, Electronic Payments V/s Cryptocurrency	Tokenization of Assets with Blockchain
	Resource Person				Dr. Sumit Kalra, Assistant Professor, Dept. of Computer Science and Engineering Indian Institute of Technology (IIT) Jodhpur	Dr. Ravi Chamria Co-founder & CEO, Sofocle Innovation Labs Pvt. Ltd Stellar IT Park, Tower B, 5th Floor, Sector 62, Noida- 201309, India Delivery Center
Day-5 27 Nov. Friday	Topic	Crypto currencies & Use Cases	Dr. Ajay Khunteta Poornima University khutetaajay@poornima.org 9828596101	Lunch Break	Mental Health and Stress Management	Online Test & Feedback Valedictory Session
	Resource Person				Narahari Dasa, Akshaya-Patra Jaipur Life Coach   Alumni, NIT Jaipur nrhd@hkm-group.org 7357010770	<b>Participants Closure &amp; Thanks</b>

**The list of participants was:-**

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89	Mrs. TEJAL HIREKHAN	Swaminarayan Siddhanta Institute of Technology, Nagpur	8446748575	tejalhirekhan.nuva@gmail.com

90	Miss Tejaswini Shinde	Pimpri Chinchwad Polytechnic	9049334477	tejalshinde5@gmail.com
91	Miss JYOTI TOTLA	Mewar	7014146499	totlajyoti@gmail.com
92	Dr. Usha Badhera	Jaipuria Institute of Management	9414455499	usha.badhera@gmail.com
93	Mrs. Vandana Rawat	GEU, Dehradun	7017159951	vandanatomar24@gmail.com
94	Mrs. Poonam Varshney	SKIT	9413238729	varshney.poonam@gmail.com
95	Dr. M. Vasumathy	The American college	9626598330	vasumathymohan@yahoo.co.in
96	Dr. Veenita Singh	Department of Business Studies in the Discipline of Commerce, Rajiv Gandhi South Campus, Banaras Hindu University	9532111088	veenitasingh1990@gmail.com
97	Dr. C.Vijai	st.peters institute of Higher Education and Research	9600582848	vijaialvar@gmail.com
98	Dr. Vikas Khullar	Chitkara University Institute of Engineering and Technology	9646060500	vikas.khullar@gmail.com
99	Mr. VINESH KUMAR JAIN	Engineering College Ajmer	9462738575	vineshjain@ecajmer.ac.in
100	Dr. V.KUMARESAN	Knowledge Institute of Technology	8524927456	vkmba@kiot.ac.in
101	Dr. Jyoti Yashavant Yadav	Savitribai Phule Pune University	9881252910	yadav.jyo@gmail.com
102	Mr. Mahesh Kothuru	GITAM	7382695554	mkothuru@gitam.edu
103	Mr. Nellore Sudha	Keshav Memorial Institute of Technology	9676636310	sdkr.nlr@gmail.com

### Day 1:

**Date: 23 November, 2020**

**Session 1: (9:30-11:00)**

- First session was taken by **Dr. Mukesh Mohania, Professor & Dean, Indraprastha Institute of Information Technology, Delhi.**
- The session was about various concepts of blockchain. He started the session with basics of blockchain. He covered various important topics like ledger and different data structures used for blockchain with nice examples.
- He explained all phases of blockchain using an example of “sample transaction”.



- He explained research scope in the field of blockchain as well as various challenges in the same field like scalability, privacy, interoperability, governance etc.
- He also discussed various applications of blockchain too.
- At the end a very healthy question answer session were also taken place. Various questions were asked by the participants related to scalability, future of blockchain in Indian governance, blockchain implementation in Indian judiciary etc.

Cisco Webex Events

Viewing Mukesh Mohani...

### Outline

- Blockchain Basics
- Research Problems
- AI enabled Blockchain Applications
  - Digital Identity
  - Shared KYC
  - Micro-insurance
  - Decentralized Education
  - Distributed AI for learning

### What is a Blockchain?

- A decentralized **computation and information sharing platform** that enables **multiple authoritative domains, who do, not trust each other, to cooperate, coordinate and collaborate in a rational decision making process**

Participant A's records, Participant B's records, Bank records, Insurer records, Regulator records, Auditor records

Blockchain

... with consensus, provenance, immutability and finality

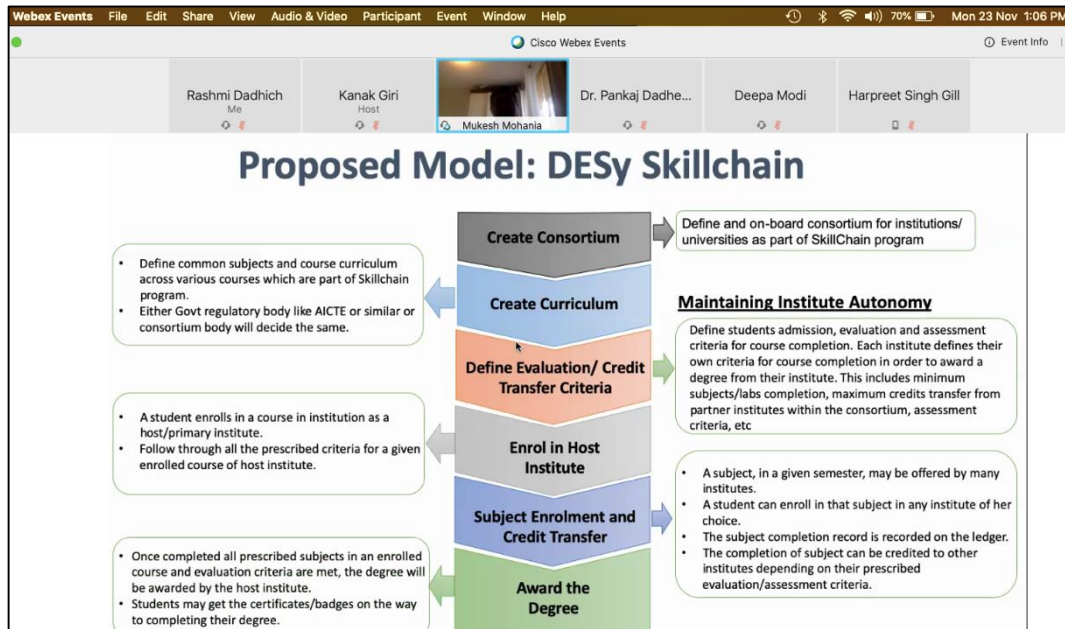
#### Inaugural of FDP (11:00-12:00)

- Inaugural session of FDP was commonly organised by ATAL Academy for 46 FDP's at 11 AM and link for the same was, [www.youtube.com/MediaAicte](http://www.youtube.com/MediaAicte).

#### Session 2: (12:30-02:00)

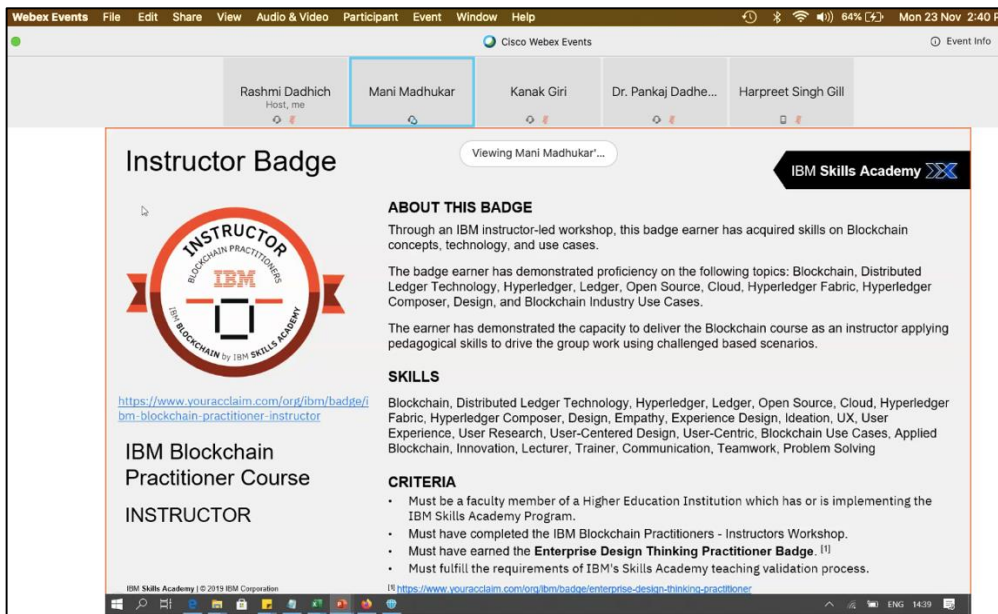
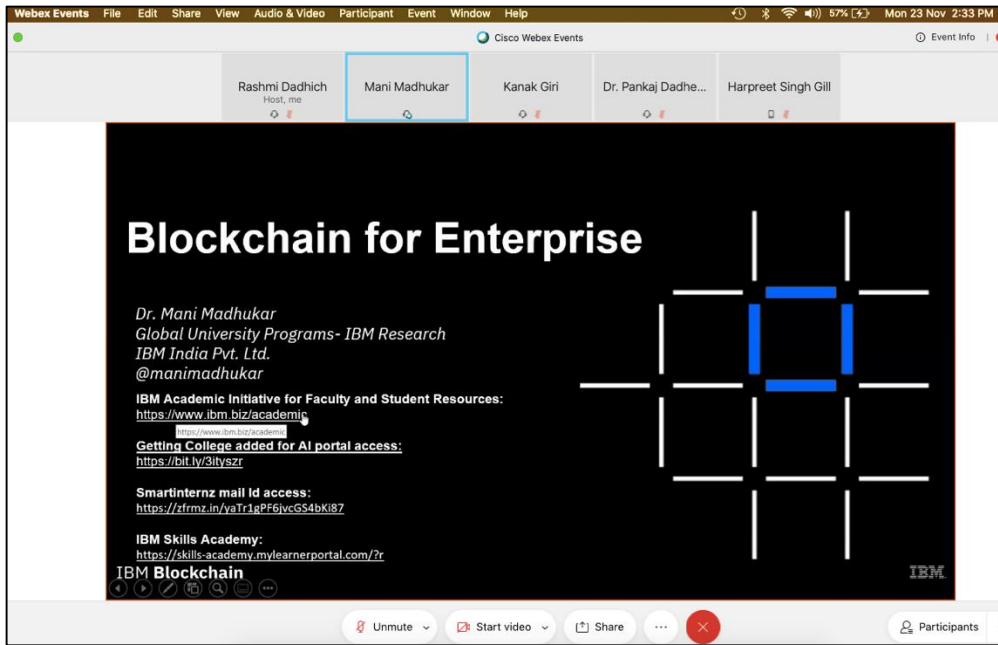
- The second session was continued by the same speaker on different applications of blockchain.
- First he takes the example of Pizza delivery system for explaining blockchain application in education system.
- Sir presented a new education system which provides flexibility to students to choose subjects from other institutes also. This system also provides the job creation and other opportunities to all equally.

- He also discussed another application of blockchain in the field of “Micro Insurance”.



### Session 3: (02:00-3:30)

- **The third session was taken by Dr. Mani Madhukar, Program Manager, Global University Programs, IBM Research.**
- The topic for this session was “Blockchain for Enterprise: Blockchain Technologies and Application”.
- Importance of IBM Academic Initiative, which is helpful in accessing various resources, courseware, batches discussed.
- IBM Skill development that is beneficial for faculties, was discussed upon as it a free platform to learn and become an instructor.
- A simple supply chain example was discussed which described material flow and information flow.
- Various examples for Blockchain implementation were discussed like Financial, Public Sector, Retail, Insurance, Manufacturing etc.
- The Golden Rules for Blockchain were Emphasised - A business problem to solve, an identifiable business network, and a requirement for trust in the network.



## Day 2:

Date: 24 November, 2020

Session 1: (10:30-12:00)

- First session was taken by **Dr. Anand Nayyar**, EIC (IJSVST), Lecturer, Researcher and scientist-Graduate School, DTU, Viet Nam.

- The session was about **“Blockchains, Bitcoins and What Next”**. He started the session with top crypto currencies and its market capitalization. He discussed about the basics of blocks and Blockchain technology.
- He compared modern era and postmodern era, how the technology changed over the time.
- He told the stories behind B-money, Bit-Gold, hashCash and bitcoin etc. He explained problem with digital cash and various challenges in the same field like scalability, privacy, interoperability, governance etc.
- He also discussed various applications of blockchain like healthcare system. A simple supply chain for container shipping MAERSK was discussed. He told research scope in the field of blockchain as well as how we can use this technology in different field like voting system ,virtual digital passport etc.
- He discussed different block-chain tool and languages that is used for bitcoin. He told different websites for crypto currency trading on demand of audience.
- At the end a very healthy question answer session also took place. Different questions were asked by the participants related to mining, transaction etc.

The screenshot shows a Cisco Webex meeting interface. At the top, there is a menu bar with options like 'File', 'Edit', 'Share', 'View', 'Audio & Video', 'Participant', 'Event', and 'Help'. Below the menu, there are five participant thumbnails: Rubal Gill (Me), Mukesh Gupta (Host), Anand Nayyar (active), Dr. Pankaj Dadheech, and Harpreet Singh Gill. The main content area displays a slide with the following text:

## Summary

- **Who sends? → David Chaum, eventually Digicash, starting 1981**
- **What do I send? → Wei Dai, b-money, but also Hal Finney RPOW and Nick Szabo Bit Gold. Proposed in the period 1997 (hashcash) – 2005.**
- **When do I send? → Satoshi Nakamoto, Bitcoin. Solves the way coin supply cannot be inflated as well as PoW being reused by adding blocks and roles in the network.**

At the bottom of the meeting window, there are controls for 'Unmute', 'Start video', 'Share', and 'Participants'. The Windows taskbar at the very bottom shows the date and time as 11:00 AM on 24/11/2020.

Cisco Webex Events | Event Info | Hide menu bar ^

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Connected

Rubal Gill Me  
Mukesh Gupta Host  
Anand Nayyar  
Dr. Pankaj Dadheech  
Harpreet Singh Gill

## Evolution of Blockchain Technology

- 1<sup>st</sup> generation: Store and transfer of value (e.g. Bitcoin, Ripple, Dash)
- 2<sup>nd</sup> generation: Programmable via smart contracts (E.g. Ethereum)
- 3<sup>rd</sup> generation: Enterprise blockchains (E.g. Hyperledger, R3 Corda & Ethereum Quorum)
- Next gen: Highly scalable with high concurrency (E.g. RChain)

Unmute Start video Share

Participants Chat

11:02 AM 24/11/2020

### Session 2: (12:30-02:00)

- The second session was taken by **Prof. (Dr.) Shekhar Verma, Professor, Indian Institute of Information Technology, Allahabad.**
- The topic for the session was "**Cryptographic tools for Blockchain**". He discussed the importance of cryptography techniques as well as hash function in blockchain. He also discussed the basic Blockchain structure.
- He discussed consensus mechanisms that is based on randomized leader process and how it is difficult to generate proof of work but easy to verify. Then he discussed different cryptographic tools, hashcash protocol.
- He discussed attack like netsplit attack, routing attack, Distributed Denial of services attack, Also, discussed that these are the new research area in the field and how to work on these.
- Layered architecture of block chain was discussed with respect to confidentiality, integrity, privacy and availability etc.
- He discussed the problem with network in blockchain and plug-in are required for untraceability and unlink ability. Zero coin and zero cash is used for untraceability and unlinkability.
- He told that how blockchain used signature scheme for privacy, anonymity and unlinkability. Signing and verifying process of blockchain signed transaction and also discussed multi-signature, blind signature, threshold signature, ring signature are useful in different scenario.

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Rubal Gill Me | Mukesh Gupta Host | Dr. Pankaj Dadheech | shekhar verma | Harpreet Singh Gill

## Basic blockchain structure

Block n                      Block n+1                      Block n+2

Unmute Start video Share

Participants Chat

1:01 PM 24/11/2020

Chat

What is the process of handling 51% attack from Anand Nayyar to everyone: 11:56 AM

anandnayyar@gmail.com from Anand Nayyar to everyone: 11:56 AM

anandnayyar@duytan.edu.vn from Anand Nayyar to everyone: 11:57 AM

WhatsApp: +91-9878327635 from Anand Nayyar to everyone: 11:57 AM

Google: anand nayyar from Anand Nayyar to everyone: 11:57 AM

Instagram: Anand Nayyar from Dr. R. K. Selvi to all panelists: 12:00 PM

thank you sir from Anand Nayyar to everyone: 12:02 PM

pdfdrive.net---FREE EBOOKS from Dr. R. K. Selvi to all panelists: 12:02 PM

no sir from Mukesh Gupta to everyone: 12:29 PM

Starting in few minutes from Bhuvan Chandra to all panelists: 12:41 PM

Not audible from Rubal Gill to Bhuvan Chandra (privately): 12:45 PM

i think problem is resolved now from Ashish Taneja to all panelists: 12:49 PM

Is the voice inconsistent?

To: Bhuvan Chandra

Enter chat message here

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File Edit Share View Audio & Video Participant Event Help

Rubal Gill Me | Mukesh Gupta Host | shekhar verma | Dr. Pankaj Dadheech | Harpreet Singh Gill

## Layered architecture of blockchain

	Confidentiality	Integrity	Availability	Data Privacy	Anonymity
Smart Contract	Encryption	MAC	-	Data Privacy Preserving Computation	Identity Privacy Preserving Computation
Transaction	-	Signature Scheme	Access Structure of Transactions	Zero-Knowledge Proofs, Mixing Techniques	Zero-Knowledge Proofs
Consensus	-		Consensus	Access Control	Blind or Ring Signature
Network	Encryption	MAC	Protocols e.g. Gossip	-	IP Anonymity e.g. TOR
Database			Access Control	Access Control	-

Unmute Start video Share

Participants Chat

1:24 PM 24/11/2020

### Session 3: (02:00-3:30)

- The third and final session of the day was taken by **Dr. S. Venkatesan, Associate Prof., Department of Information of Technology, Indian Institute of Information Technology, Allahabad.**
- The topic for this session was “distributed ledger” and session started with regular distributed database v/s blockchain.
- He discussed properties of Blockchain and its representation with markle tree and state machine replication with machine fault.

- He shared own table for Hash Generation with respect to proof of work and discussed problem with proof of work.
- Permission block chained is discussed and also Byzantine consensus's working is discussed and how it is not scalable.
- He shared the websites to check the different crypto-currency, block size and check the different time taken for mining etc.
- Block chain classification and permission-less blockchain and public permissioned blockchain, private blockchain.

The image shows two screenshots from a Cisco Webex meeting. The top screenshot displays a slide titled "Blockchain with stale blocks" from the Indian Institute of Information Technology, Allahabad. The slide features a diagram of a blockchain with a fork. The main chain consists of blocks labeled "Genesis Block 0", "Block 1", "Block 2", "Block 3", "Block 4", and "Block 5". From "Block 3", a fork occurs, leading to two parallel chains: one with "Block 3" and "Block 4", and another with "Block 4", "Block 5", "Block 6", and "Block 7". The caption below the diagram reads "Figure: Blockchain with forks".

The bottom screenshot shows a slide titled "Byzantine Consensus" from the same institution. It illustrates the Byzantine Fault Tolerance process with a diagram. The diagram shows a "Client" and a "Leader" at the top, and three "Replica" nodes below. The process is divided into five stages: "REQUEST", "PRE-PREPARE", "PREPARE", "COMMIT", and "REPLY". Arrows indicate the flow of messages between the Client, Leader, and Replicas across these stages. The caption below the diagram reads "Figure: Byzantine Fault Tolerance".

### Day 3:

Date: 25 November, 2020

Session 1: (10:30-12:00)

- First session was taken by **Dr. Debasis Das**, Assistant Professor, department of Computer Science and Engineering, **Indian Institute of Technology (IIT) Jodhpur**.
- The session was about "**Blockchain for 5G and Beyond Networks**". He started the session with Smart transportation. He discussed about the **basics Blockchain technology and concept of blockchain operation and characteristics of blockchain**.
- He explain **Intelligent transport System (ITS)**.
- He also discussed **Vehicular Ad-Hoc Networks (VANETs)** and Universal VANETs. Also **use of Universal VANETs**.
- He talks about Security-Performance Trade-off.
- He present main **component of blockchain networks** that is **Data Block, Distributed ledger (database), Consensus algorithm, Smart contracts**.
- He also discussed about **Potential applications to 5G networks and services**.
- He also shows **the execution time of different Cryptographic functions**.
- At the end a very healthy question answer session also took place. Different questions were asked by the participants related to blockchain technology etc.

The screenshot shows a Cisco Webex meeting interface. At the top, there's a menu bar with 'Cisco Webex Events', 'Event Info', and 'Hide menu bar'. Below that, a toolbar contains 'File', 'Edit', 'Share', 'View', 'Audio & Video', 'Participant', 'Event', and 'Help'. A row of participant thumbnails is visible, including Anjana Sangwan (Host), Mukesh Gupta, Debasis Das (active), Dr. Pankaj Dadheech, Harpreet Singh Gill, and Sushant Kumar. The main content area displays a slide titled 'Intelligent Transport System (ITS)' with the following bullet points:

- Advanced vehicles and associated transportation infrastructures that use IT&C technology to make driving safer, efficient and comfortable
- Operation of vehicles, manage vehicle traffic, assist drivers with safety and other information, provisioning of convenience applications for passengers
- ITS
  - high interest for companies, operators, government, academia, research; many countries have public and private sector bodies working on ITS
  - Important technologies - implementing many applications related to vehicles, vehicle traffic, drivers, passengers and pedestrians
- **Typical use cases and services/applications**
  - **Active road safety** applications
    - Warnings, notifications, assistance
  - **Traffic efficiency** and management applications
  - **Infotainment** applications

At the bottom of the slide, there are controls for 'Unmute', 'Start video', 'Share', and a red 'X' button. The bottom of the screenshot shows the Windows taskbar with the search bar and system tray displaying the time as 11:07 AM on 11/25/2020.



Cisco Webex Events | Event Info | Hide menu bar ^

File Edit Share View Audio & Video Participant Event Help

Anjana Sangwan Host, me | Mukesh Gupta | Debasis Das | Dr. Pankaj Dadheech | Harpreet Singh Gill | Sushant Kumar

## Blockchain for 5G

The fifth generation (5G) wireless networks are on the way to be deployed around the world.

- The **5G technologies** target to support diverse vertical applications by **connecting heterogeneous devices** and machines with drastic improvements in terms of **high quality of service, increased network capacity** and **enhanced system throughput**.
- Despite all these advantages that 5G will bring about, there are still major challenges to be addressed, including **decentralization, transparency, risks of data interoperability, network privacy and security vulnerabilities**.
- Blockchain, an emerging disruptive technology, **can offer innovative solutions to effectively solve the challenges in 5G networks**

Unmute | Start video | Share | Participants | Chat

Search the web and Windows | 11:38 AM 11/25/2020

Cisco Webex Events | Event Info | Hide menu bar ^

File Edit Share View Audio & Video Participant Event Help

Anjana Sangwan Host, me | Mukesh Gupta | Debasis Das | Dr. Pankaj Dadheech | Harpreet Singh Gill | Sushant Kumar

## Conclusion

We have then explored and analysed in detail the potential of blockchain for enabling key 5G technologies, such as cloud computing, edge computing, Software Defined Networks, and D2D communication.

- A comprehensive discussion on the use of blockchain in a wide range of popular 5G services has been provided, with a prime focus on data sharing, resource management, interference management, federated learning, privacy and security services.
- Our survey has also covered a holistic investigation on the applications of blockchain in 5G IoT networks and reviews the latest developments of the cooperated blockchain-5G IoT services in various significant use-case domains, ranging from smart healthcare, smart city, smart transportation to smart grid and UAVs.
- Through the comprehensive survey on the related articles, we have summarized the main findings derived from the integrations of blockchain in 5G networks and services.
- Finally, we have pointed out several research challenges and outlined potential research directions toward 6G networks

Unmute | Start video | Share | Participants | Chat

Search the web and Windows | 11:48 AM 11/25/2020

### Session 2: (12:30-02:00)

- Second session was also taken by **Dr. Debasis Das**, Assistant Professor, department of Computer Science and Engineering, **Indian Institute of Technology (IIT) Jodhpur**.
- The session was about "**IoT security issues using Blockchain and smart contracts**". He started with **important areas of research for IoT**.

- He discussed **Security requirements for IoT devices, security issues for IoT devices** in detail.
- He discussed **role of cryptography in Blockchain.**
- He discussed the **four elements characterize blockchain (Replicated ledger, cryptography, consensus, business logic).**
- He told that **how blockchain simplifies complex** in areas like financial assists, property records logistics and discussed about blockchain scenario features.
- He discussed **is blockchain directly applicable in IoT? What can we do?**
- Also give idea towards the next generation of Blockchain using Bitcoin-NG for Internet of Things(IoT).
- He compare different blockchain Protocols and algorithms.
- At the end a very healthy question answer session also took place. Different questions were asked by the participants.

The screenshot shows a Cisco Webex meeting interface. At the top, there are participant names: Sushant Kumar, Anjana Sangwan, Anjana Sangwan, Debasish Das (active), Dr. Pankaj Dadheech, and Harpreet Singh Gill. The main content is a presentation slide titled "Blockchain Technology".

**Blockchain Technology**

A Blockchain is an append-only distributed ledger that stores a time-ordered set of facts, aka transactions. Transactions are grouped into "blocks" and form a cryptographic hash-chain, hence the name Blockchain.

**Role of Cryptography in Blockchain !!!!**

- Integrity of ledger (Cryptographic hash function)
- Authenticity of transactions (Elliptic Curve Digital Signature Alg.)
- Privacy of transactions (Pseudonymity through crypto tools)
- Identity of participants (Cryptographic signatures)
- Auditability and Transparency (Cryptographic hash chain)

**Exploit advanced cryptographic techniques, trust in Blockchain is shifted to Technology (not in participants or nodes)**

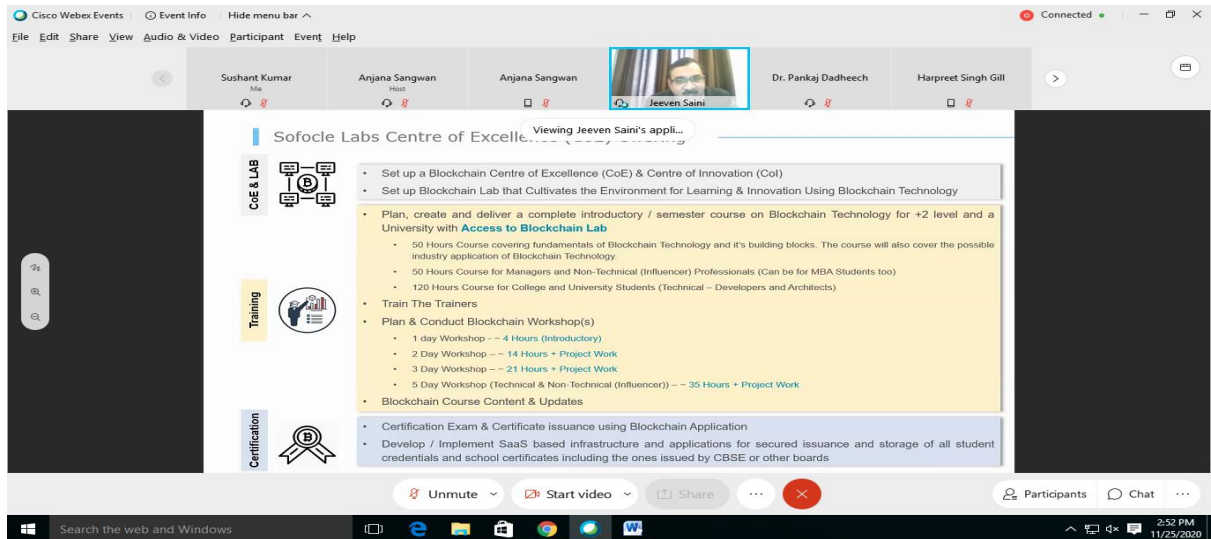
The meeting interface includes controls for Unmute, Start video, Share, and a red 'X' button. The bottom of the screen shows the Windows taskbar with the date 11/25/2020 and time 1:05 PM.

The image displays two screenshots of a Cisco Webex meeting. The top screenshot shows a slide titled "Is Blockchain Directly Applicable in IoT?". The slide lists "Desirable Properties" (Distributed protocol with verifiable transaction history, Dynamic membership multi-party signatures) and "Undesirable Properties" (Requires proof of "work", Requires PKI, Size of the Ledger an issue for "small" devices, Anonymous (unverifiable) Join/Leave operations). The bottom screenshot shows a slide titled "Towards the Next Generation of Blockchain using Bitcoin-NG for Internet of Things(IoT)". This slide lists three points: Cryptocurrencies like Bitcoin have shown promise as infrastructure for pseudonymous online payments, Bank-to-bank settlements, cheap remittance, trustless digital asset exchange, Device-to-device payments, and smart contracts; However, Bitcoin derived blockchain protocols have inherent scalability limits that trade-off between throughput and latency, which withhold the realization of this potential; Bitcoin-NG (Next Generation), a new blockchain protocol designed to scale. The meeting interface shows participants: Sushant Kumar, Anjana Sangwan, Anjana Sangwan, Debasis Das (highlighted), Dr. Pankaj Dadheech, and Harpreet Singh Gill. The system tray shows the time as 1:10 PM and 1:15 PM on 11/25/2020.

### Session 3: (02:00-3:30)

- The third and final session of the day was taken by Mr. Jeeven Saini, Co-Founder & CEO, Sofocle Innovation Labs Pvt. Ltd.
- The topic for this session was "Blockchain T & D domain" and session started with importance of the technology in today's scenario according to industry.
- He discussed about growth Trajectory with respect to investment, business value add, CBDC, World Economic Survey etc.
- Also detailed discussion about scope, Impact & industry.

- He told that blockchain skills are needed on Technical sides as well as business side. So discuss about acquiring blockchain skills in step by step and detail manner.
- Give information about holistic approach to blockchain Education.
- At the end a very healthy question answer session also took place. Different questions were asked by the participants.



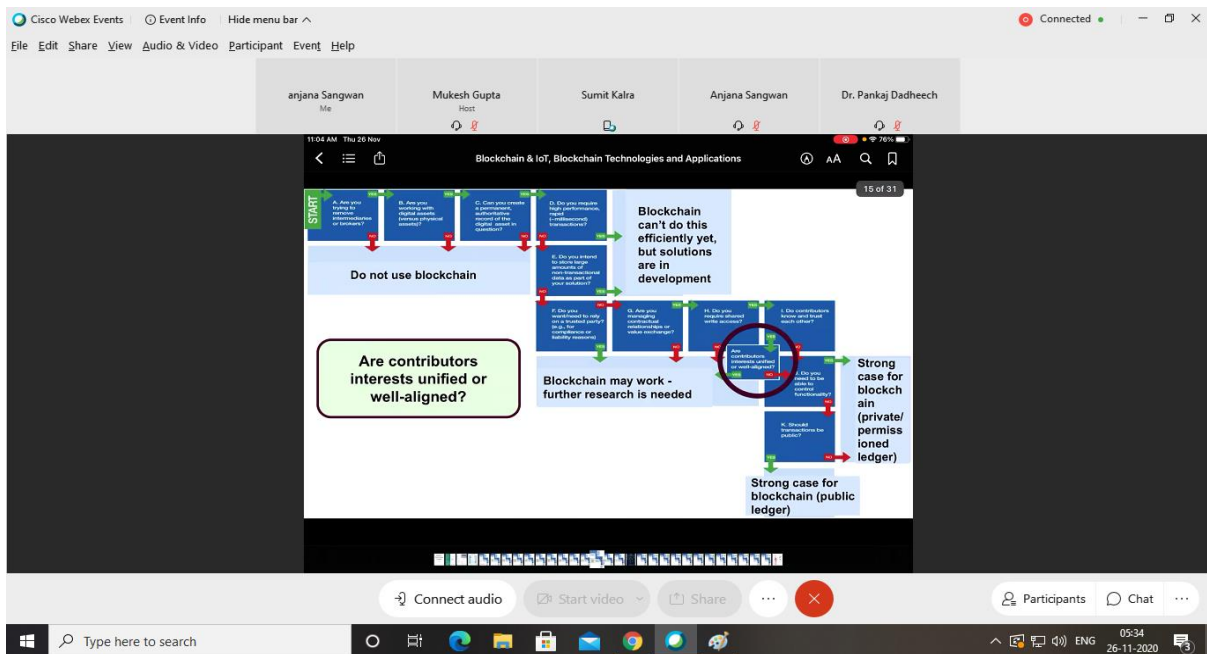
#### Day 4:

**Date: 26 November, 2020**

**Session 1: (10:30-12:00)**

- First session was taken by **Dr. Sumit Kalra**, Assistant Professor, Dept. of Computer science and Engineering, Indian Institute of Technology (IIT) Jodhpur.

- The session was about "**Blockchains, & IoT, Blockchain Technologies and Application**". He started the session with the basics of Blockchain technology and its uses.
- He explains the topics in step by step manner using flow of questions.
- He explains **when you need to go for blockchain or when you need not to go for it**.
- He discusses the basic step for processing the blockchain in real time.
- He discusses why we need **shared access, security issues and trust issues in blockchain**.
- He also talked about **contributor's processing and securities**. Why blockchain is secure. He explains how to control functionality.
- He gives detailed explanation about **transaction** and how it is performed in blockchain.
- At the end a very healthy question answer session also took place. Different questions were asked by the participants related to blockchain, how to use it etc.



11:52 AM Thu 26 Nov

Blockchain & IoT, Blockchain Technologies and Applications

Do not use blockchain

Blockchain can't do this efficiently yet, but solutions are in development

Do you intend to store large amounts of non-transactional data as part of solution?

Blockchain may work - further research is needed

Strong case for blockchain (private/permissioned ledger)

Strong case for blockchain (public ledger)

Large-scale store?  
-> expensive storage facility  
15GB Quota -> pay

Participants: anjana Sangwan, Mukesh Gupta, Sumit Kalra, Anjana Sangwan, Dr. Pankaj Dadheech

11:58 AM Thu 26 Nov

Blockchain & IoT, Blockchain Technologies and Applications

Do not use blockchain

Blockchain can't do this efficiently yet, but solutions are in development

Are you managing contractual relationships or value exchange?

Blockchain may work - further research is needed

Strong case for blockchain (private/permissioned ledger)

Strong case for blockchain (public ledger)

Participants: anjana Sangwan, Mukesh Gupta, Sumit Kalra, Anjana Sangwan, Dr. Pankaj Dadheech

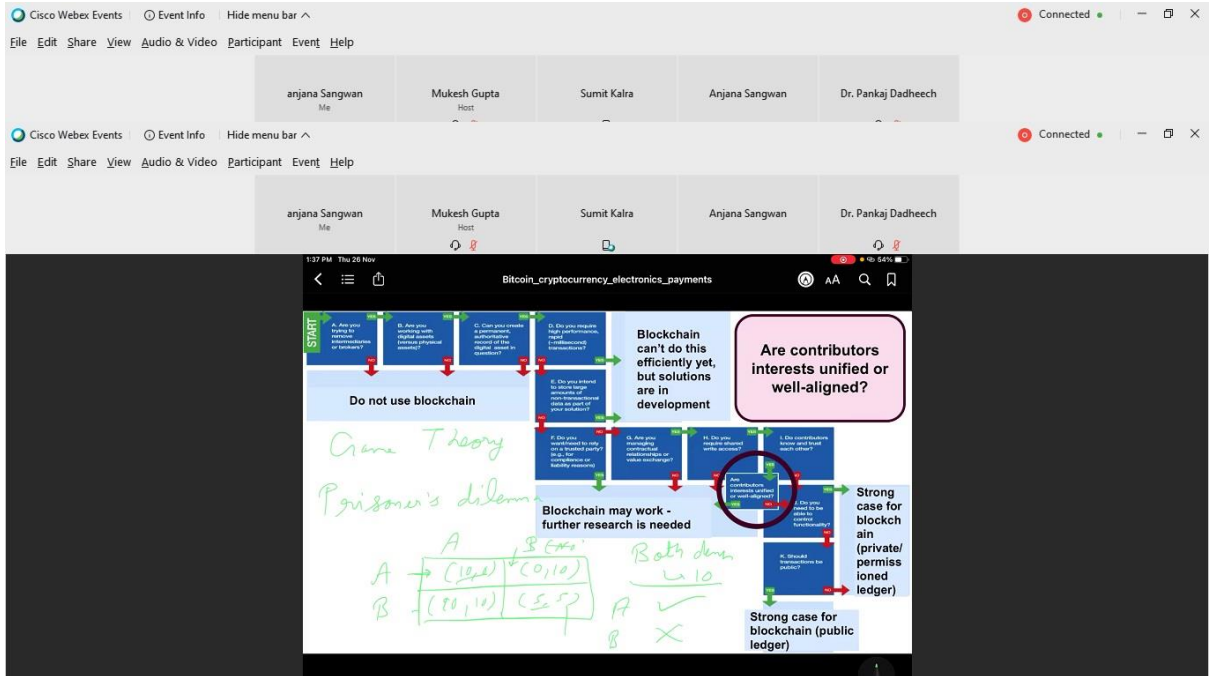
## Session 2: (12:30-02:00)

- The second session was taken by **Dr. Sumit Kalra**, Assistant Professor, Dept. of Computer science and Engineering, Indian Institute of Technology (IIT) Jodhpur.
- The topic for the session was "**Bitcoin and Cryptocurrency, Electronic payments V/s Cryptocurrency**". He started with the basics of Bitcoin and Cryptography and payment.
- He discussed about **bit coin payment process** in detail with the help of examples and charts.

- He explains **UPI architecture** in a well manner.
- He discussed about **brokers** and how to handle/remove them. Also he talks about **digital assets** and their use. Also how to record digital assets.
- At the end a very healthy question answer session also took place. Different questions were asked by the participants related to bitcoin, transaction etc.

The screenshot shows a Cisco Webex meeting interface. At the top, the meeting title is "Bitcoin\_cryptocurrency\_electronics\_payments". The participants list includes anjana Sangwan (Me), Mukesh Gupta (Host), Sumit Kalra, Anjana Sangwan, and Dr. Pankaj Dadheech. The main content is a diagram of the Bitcoin Core architecture. The diagram is a flowchart showing the interaction between various components: P2P Network, Peer Discovery, Connection Manager, Peers, Tx, Blocks, Mempool, Miner, Validation Engine, Storage Engine, Wallet, RPC, App, Headers, Blocks, and Coins. Handwritten red notes are present: "App" is circled, and "Mobile App Banking / UPI Payment Apps" is written next to it. The source URL "https://www.pinterest.com/pin/551128073142441517/" is visible at the bottom of the diagram.

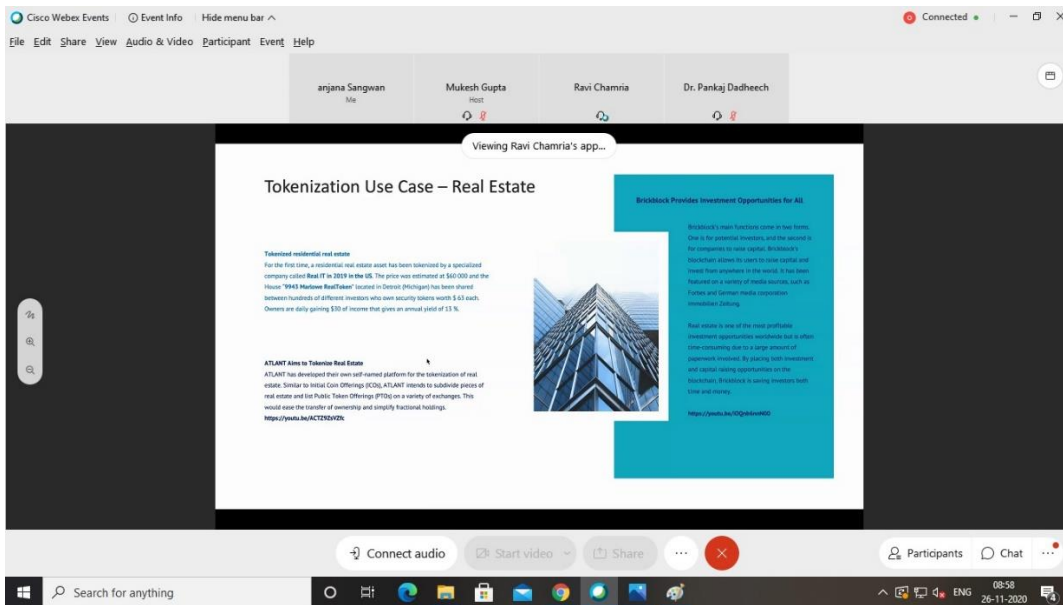
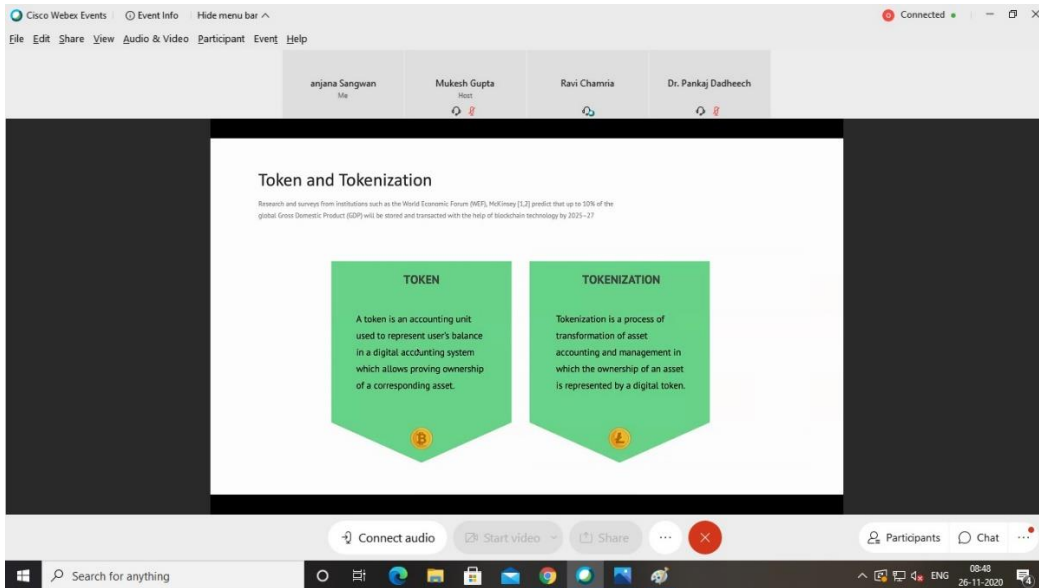
This screenshot shows the same Cisco Webex meeting interface as above. The diagram of the Bitcoin Core architecture is now annotated with more handwritten notes in red and green. "Banking" is written at the top, and "Bank Account" is written next to the "App" box. "Broker" is written at the bottom. The "App" box is circled in red, and an arrow points from it to "Bank Account". The "Banking" and "Broker" labels are also circled in red. The source URL "https://www.pinterest.com/pin/551128073142441517/" is visible at the bottom of the diagram.



### Session 3: (02:00-3:30)

- The third and final session of the day was taken by **Dr. Ravi Chamria, Co-Founder & CEO, Sofocle Innovation Labs Pvt. Ltd.**
- The topic for this session was **"Tokenization of Assets with Blockchain"** and session started with importance of the technology in today's scenario according to industry.
- He discussed about **Asset and ownership, Asset accounting and Trading systems and their limitations.**
- Also detailed discussion about **Token, Tokenization and how their transaction takes place with the help of Blockchain technology.**
- He discussed the benefits of **Tokenization for investors.**
- He discussed the Tokenization use case in **Real state, Art work and in Securities.**





**Day 5:**

**Date: 27 November, 2020**

**Session 1: (10:30-12:00)**

- First session was taken by **Dr. Ajay Khunteta**, Poornima University Jaipur.
- He started the session with the basics of Blockchain technology and its uses.
- He explains the topics and give Blockchain demos using tools.superdatascience.com.
- He explains **Etherum Platform and how to set up an Ethereum node**.
- He discuss Types of Consensus Algorithm along with advantages and disadvantages of POW.
- He also talked about Smart Contract and Process to create it.
- He also give demo to create smart contract on etherum.

- At the end a very healthy question answer session also took place. Different questions were asked by the participants related to blockchain, how to use it etc.

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Mukesh Gupta Me | Priyanka Trikha Host | Dr. Ajay khunteta | Dr. Pankaj Dadheech | Nidhi Shrivastav

**BLOCKCHAIN PLATFORMS**

- Bitcoin
- Ethereum
- IBM Blockchain
- Multichain
- Ripple
- R3 Corda
- BigChainDB
- Many more

Unmute | Start video | Share | Participants | Chat

Type here to search | 76% | ENG INTL 10:46 AM 11/27/2020

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Mukesh Gupta Me | Priyanka Trikha Host | Nidhi Shrivastav | Dr. Pankaj Dadheech

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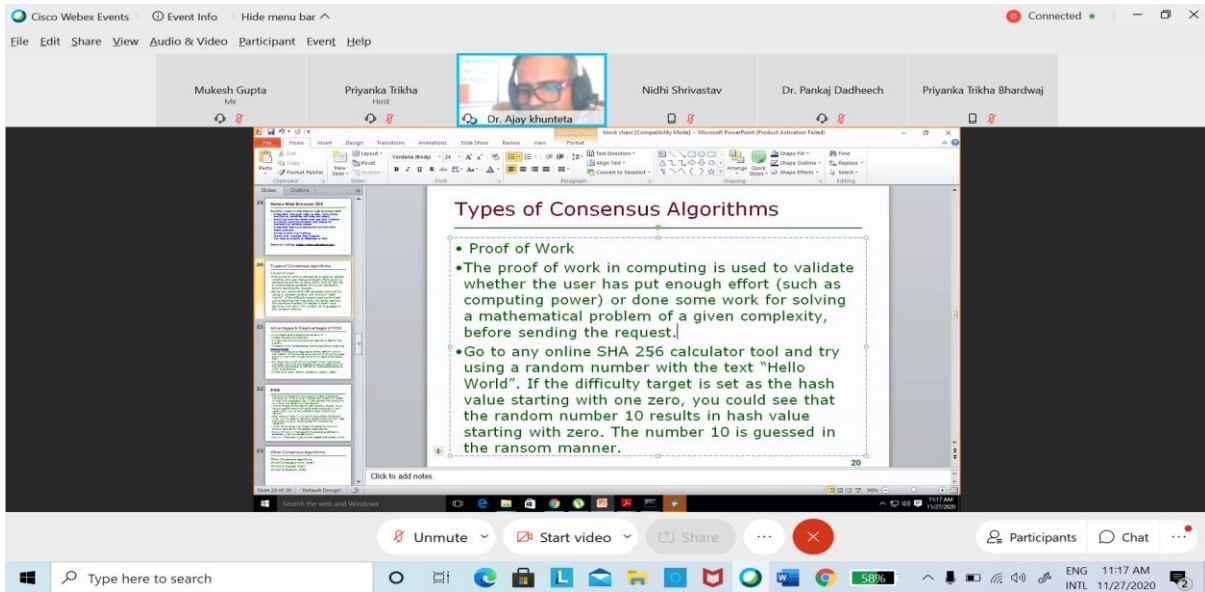
These are the develop snapshots of go-ethereum, updated automatically when a new commit is pushed into our GitHub repository.

Release	Commit	Kind	Arch	Size	Published	Signature	Checksum(MD5)
Geth 1.9.25	429c7141..	Installer	32-bit	64.09 MB	Yesterday at 2:57 AM	Signature	0b75d884ab78557339613581c1076b
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Geth & Tools 1.9.25	429c7141..	Archive	32-bit	88 MB	Yesterday at 2:54 AM	Signature	2a4c3089608582f78f3f421d59a02a11e
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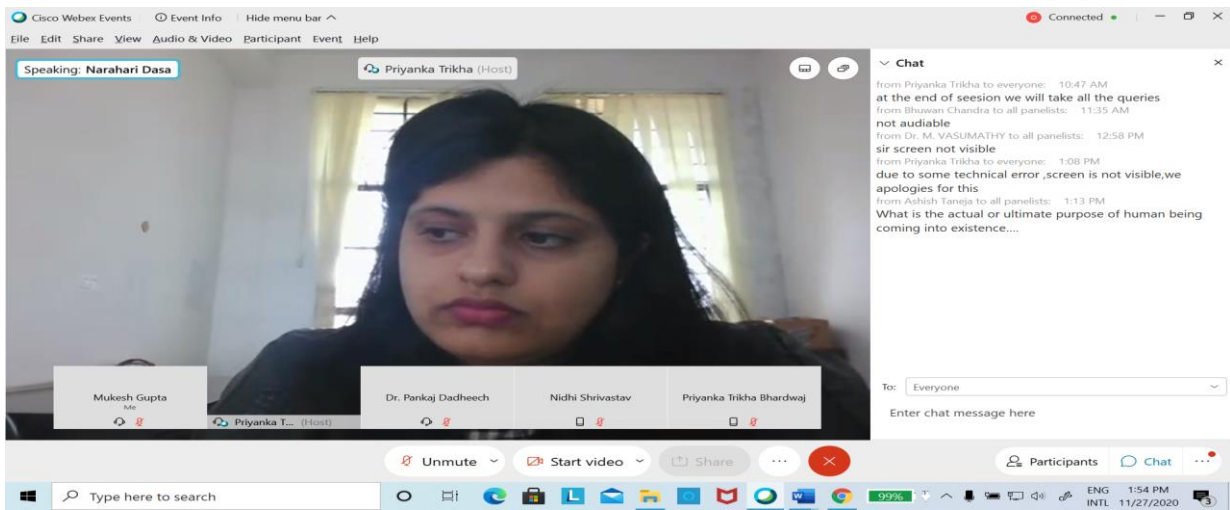
Type here to search | 73% | ENG INTL 10:51 AM 11/27/2020





## Session 2: (12:30-02:00)

- The second session was taken by **Mr Narhari Dasa, Life Coach, Akshay Patra Jaipur.**
- The topic for the session was "**Mental Health and Stress Management**".
- He discussed the difference between Machine, Human and Animal.
- He touches important topics of life like Hunger, Pain, Perfection and many more.
- He also discuss the true and false ego of a human and emphasize to be attached with the ground reality of being human.
- He discuss not to take stress of the materialistic issues and do believe in "Vasudev Kutumbkum"
- He talked about the importance of enchanting the name of God.
- At the end a very healthy question answer session also took place. Different questions were asked by the participants like Existence of Human, Karma theory etc.



## ब्लॉकचैन और इसके अनुप्रयोग पर अटल एफडीपी सम्पन्न

जयपुर । AICTE ट्रेनिंग एंड लर्निंग (ATAL) अकादमी तकनीकी शिक्षा के नवीनतम उद्देश्यों के लिए विभिन्न कार्यक्रमों का आयोजन कर रही है , जो कि संस्थानों में तकनीकी शिक्षा की गुणवत्ता को ऊर्ध्वगामी बना रही है । इस उद्देश्य के साथ ही ऐसे ही कार्यक्रम का संचालन स्वामी केशवानंद इंस्टीट्यूट ऑफ टेक्नोलॉजी, मैनेजमेंट और ग्रामोथम, रामनगरिया, जगतपुरा के कंप्यूटर साइंस एंड इंजीनियरिंग विभाग,के द्वारा ATAL अकादमी के सहयोग से ब्लॉकचैन टेक्नोलॉजीज एंड इट्स एप्लीकेशंस ( 23-27 नवंबर, 2020 ) पर 5 दिनों के हेतु आयोजित ऑनलाइन एफडीपी का समापन हुआ। यह कार्यक्रम विभिन्न उद्योग विशेषज्ञों और आईआईटी प्रोफेसरों द्वारा संघनित किया गया था। उद्योग विशेषज्ञ डॉ मणि मधुकर (ग्लोबल यूनिवर्सिटी प्रोग्राम्स, आईबीएम रिसर्च), डॉ मुकेश मोहनिया (प्रोफेसर CSE, इंद्रप्रस्थ सूचना प्रौद्योगिकी संस्थान (IIT), दिल्ली), डॉ आनंद नैय्यर (EiC, (IJSVST) व्याख्याता, शोधकर्ता और वैज्ञानिक- ग्रेजुएट स्कूल, Du4 टैन विश्वविद्यालय), डा नांग (वियतनाम), प्रो डॉ शेखर वर्मा (प्रोफेसर भारतीय सूचना प्रौद्योगिकी संस्थान (आईआईआईटी), इलाहाबाद,) डॉ देबासीस दास (सहायक प्रोफेसर, कंप्यूटर विज्ञान और इंजीनियरिंग विभाग, भारतीय प्रौद्योगिकी संस्थान (IIT) जोधपुर), श्री जीवन सैनी, (सह-संस्थापक और सीईओ, सोफोकल इनोवेशन लैब्स प्राइवेट लिमिटेड), डॉ सुमित कालरा,(सहायक प्रोफेसर, कंप्यूटर विज्ञान और इंजीनियरिंग विभाग भारतीय प्रौद्योगिकी संस्थान (IIT) जोधपुर), डॉ रवि चमरिया (सह-संस्थापक और सीईओ, सोफोकल इनोवेशन लैब्स प्राइवेट लिमिटेड), डॉ अजय खूटेटा (पूर्णमा विश्वविद्यालय, जयपुर ) आदि ने नई तकनीकों के बारे में संकाय सदस्यों को शिक्षित किया एवं हैंड्स ऑन लर्निंग द्वारा शोध संपन्न किया। संस्थान के डॉ रमेश प्राचार (प्रधानाचार्य), डॉ मुकेश कुमार गुप्ता (विभागाध्यक्ष कंप्यूटर विज्ञान,कार्यशाला सयोजक ), ने विशेषज्ञों को धन्यवाद ज्ञापित किया और संकाय सदस्यों को इस कार्यक्रम में प्राप्त ज्ञान के बारे में जानने के लिए प्रोत्साहित किया। इस कार्यक्रम में, संकाय के सदस्यों ने कई कार्यों को पूर्ण किया और उद्योग विशेषज्ञों ने वर्तमान प्रौद्योगिकी पर काम करने के लिए संकायों को सिखाया। इस कार्यक्रम में मानसिक स्वास्थ्य और तनाव प्रबंधन पर संक्षेप मे श्री हरी दास (जीवन कोच,अक्षय-पात्र जयपुर , पूर्व छात्र, एनआईटी जयपुर) द्वारा उदबोधित किया गया । इस कार्यशाला के सयोजक डॉ पंकज दाधीच (कंप्यूटर विज्ञान विभाग), श्री कैलाश सोनी (कंप्यूटर विज्ञान विभाग), ने कार्यशाला का सफलता पूर्वक निष्पादन किया ।

# ‘ब्लॉकचैन और इसके अनुप्रयोग’ पर अटल एफडीपी सम्पन्न

जयपुर। AICTE ट्रेनिंग एंड लर्निंग (ATAL) अकादमी तकनीकी शिक्षा के नवीनतम उद्देश्यों के लिए विभिन्न कार्यक्रमों का आयोजन कर रही है ए जो कि संस्थानों में तकनीकी शिक्षा की गुणवत्ता को ऊर्ध्वगामी बना रही है । इस उद्देश्य के साथ ही ऐसे ही कार्यक्रम का संचालन स्वामी केशवानंद इंस्टीट्यूट ऑफ टेक्नोलॉजीए मैनेजमेंट और ग्रामोथमए रामनगरियाए जगतपुरा के कंप्यूटर साइंस एंड इंजीनियरिंग विभागएके दवारा ATAL अकादमी के सहयोग से ब्लॉकचैन टेक्नोलॉजीज एंड इट्स एप्लीकेशंसष् ;23.27 नवंबरए 2020द्ध पर 5 दिनों के हेतु आयोजित ऑनलाइन एफडीपी का समापन हुआ। यह कार्यक्रम विभिन्न उद्योग विशेषज्ञों और आईआईटी प्रोफेसरों द्वारा संघनित किया गया था। उद्योग विशेषज्ञ डॉ. मणि मधुकर, ग्लोबल यूनिवर्सिटी प्रोग्राम्स, आईबीएम रिसर्च, डॉ मुकेश मोहनिया, प्रोफेसर CSE, इंद्रप्रस्थ सूचना प्रौद्योगिकी संस्थान (IIT), दिल्ली, डॉ आनंद नैय्यर, (EiC, (IJSVST) व्याख्याताए शोधकर्ता और वैज्ञानिक. ग्रेजुएट स्कूल, Duy

टैन विश्वविद्यालय, डा नांग (वियतनाम), प्रो डॉ शेखर वर्मा, प्रोफेसर भारतीय सूचना प्रौद्योगिकी संस्थान (आईआईआईटी), इलाहाबाद, डॉ देबासीस दास, सहायक प्रोफेसर, कंप्यूटर विज्ञान और इंजीनियरिंग विभाग, भारतीय प्रौद्योगिकी संस्थान (IIT) जोधपुर, श्री जीवन सैनी,सह.संस्थापक और सीईओए सोफोकल इनोवेशन लैब्स प्राइवेट लिमिटेड, डॉ सुमित कालराष्;सहायक प्रोफेसर, कंप्यूटर विज्ञान और इंजीनियरिंग विभाग भारतीय प्रौद्योगिकी संस्थान (IIT) जोधपुर, डॉ रवि चमरिया, सह.संस्थापक और सीईओए सोफोकल इनोवेशन लैब्स प्राइवेट लिमिटेड, डॉ अजय खूटेटा, पूर्णिमा विश्वविद्यालय, जयपुर आदि ने नई तकनीकों के बारे में संकाय सदस्यों को शिक्षित किया एवं हैंड्स ऑन लर्निंग द्वारा शोध संपन्न किया। संस्थान के डॉ रमेश प्राचार (प्रधानाचार्य) डॉ. मुकेश कुमार गुप्ता (विभागाध्यक्ष कंप्यूटर विज्ञान, कार्यशाला सयोजक), ने विशेषज्ञों को धन्यवाद ज्ञापित किया और संकाय सदस्यों को इस कार्यक्रम में प्राप्त ज्ञान के बारे में जानने के लिए प्रोत्साहित किया।

-THANK YOU-