

Report on National Faculty Development Programme On Smart City: Opportunities and Developments Held on 22.03.2021 – 26.03.2021

Date of Event	22.03.2021 – 26.03.2021
Name and Type of Event	National Faculty Development Programme On Smart City: Opportunities and Developments
Conducted by	Ashwini kumar and Dr. Binod Choudhary
No. Of Participant	100

National Faculty Development Programme On Smart City: Opportunities and Developments

Five Day National Faculty Development Programme on "Smart City: Opportunities and Developments was organized by the Department of Engineering, School of Engineering & IT, ARKA JAIN University, Jamshedpur from 22nd March-26th March 2021. The FDP aims to provide opportunities to faculty members and Young researchers to enrich their academic and research skill in the field of Smart City & its development and highlighted the opportunities in the different dimensions of smart city projects. Participants were learned about those various challenges and solutions faced while developing, operating, and living in a smart city. The Programme also intends to develop the knowledge of participants to generate and to adopt new methodology and advance solutions.

The FDP was attended by more than 100 participants that include faculty members and research scholars of different Universities as well as Institutions across India.

Smart City: Opportunities and Developments

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Date: 22nd March 2021

Day 1: Inaugural Session

The Inaugural session was begun with the welcome of Dignitaries and Participants by Ms. Prena Rai, Assistant Professor, Department of Engineering, ARKA JAINUniversity. FDP was inaugurated with Lighting the lamp by Dr SS Razi, Vice Chancellor, ARKA JAINUniversity, Amit Srivasta Director, ARKA JAINUniversity along with Mr. Jasbir Dhanjal Registrar, Dr Anagad Tiwari Director Campus, Dr Arvind Pandey Dean , School of Engineering and IT and Mr Ashwini Kumar, Asst Dean, School of Engineering and IT. The programme proceeded further with Saraswati Bandana. Convener of FDP, Mr.Ashwini Kumar addressed the Dignitaries and Participants of FDP. He highlighted with a brief idea about FDP, how the Role of IoT, Artificial Intelligence and Smart technology is need of time. How this advance Technologies would help in research and development. He talked about how beneficial this FDP would be. Dr SS Razi, Vice Chancellor gave an oration outlining the brief of ARKA JAIN University and Importance of Smart City. With the examples of Major Cities of India,he elaborated how we moved forward towards Smart City and Why there is need of Development. He praised the FDP committee for organizing this National FDP Program. Introduction to the theme of FDP was given by Co-ordinator of the FDP, Dr Binod Kumar Choudhary. He talked about Why the specific topic, Smart City was finalised. He talked about what is smart city, how

fast its growing? He explained the main goals of a smart city are to improve policy efficiency, reduce waste and inconvenience, improve social and economic quality, and maximize social inclusion. Therefore, Smart city: opportunities and development has been recognized as theme for National Faculty Development Programme. The session came to an end with the thanks notes by Dr Anupam Kumari, Assistant Professor, Department of Engineering, ARKA JAIN University.

Date: 22nd March 2021

Day 1: Session 2

Topic: The future is Smart City: Urban City adapting the Smart City Concept

Resource Person: **Dr CHANDRAPRABHA SAHU**, Assistant Professor, Department of Engineering, ARKA JAIN University

Session started with the brief introduction of speaker by Dr Anupam Kumari, Assistant Professor, ARKA JAIN University. Dr ChandraPrabha Sahu focused her talk on how Urban development adopting Smart City ideas and concept. She talked about how the urban population increases day by day. So, by the addition of advance technology to our living system helps to develop Smart City and solves many problems. She suggested using of Public transport system, Electric cars, bicycles to cope up with emissions issues. Smart Governance, Public participations and Public decisions are important components for adopting Smart City Culture. She suggested to move from horizontal farming to vertical farming so that one can utilize more area and to utilize agricultural waste as a resource. She told about how education is important for the development. Using of innovative teaching system, use of Smart classes, use of advance technology in research and practical made pathway easy to move towards Smart City. She ended her talk by saying happy life, healthy life depends upon individuals, how they adapt themselves according to need and change of smart city. Session proceeded with Questions and answers between Speaker and participants and Ended with thanks note by Dr Anupam Kumari.

Date 22nd March,2021

Day 1: Session 3

Topic: Availability and fluctuation of Groundwater and its possible way of contamination in Indian Urban Environment and Life in context of Smart Cities

Resource Person: DR NISHIKANT, Assistant Professor, Department of Biotechnology, ARKA JAIN University

Mr. Syed Rashid Anwar started the session with Welcome note and brief Introduction of Dr Nishikant. She started her talk with how groundwater getting contaminated day by day and how these affects hydrological cycles. She used pictorial diagrams so that one can easily understand the concept. She discussed how the contamination of water affects aquifers and water table. She talked about water resources from where people used to drink water like rivers, springs, well etc. She explained about Speleothems, that forms due to water seeps through cracks in the rock rich in mineral deposits. She told that change in the land use patterns resulting in contamination of water as well as exhausting the water resources. She discussed the data of drinking water and irrigation water and compared it with Standard data, how much contamination is taking place in present era. She had suggested numbers of methods to enhance ground water recharging and smart use of water for future. Session ended with Questions and Answers between resource person and participants.

Date: 23rd March 2021

Day 2: Session 1

Topic : Effect of land use Land Cover Change Pattern on soil and Human Health

Resource Person: **DR RAM KRISHNA MISHRA**, Professor and Dean Administration, Bhilai Institute of Technology, Raipur, Chhattisgarh

First session of Day 2 started with welcome notes and brief Introduction of Speaker by Ms. Shatbhisha Sinha, Assistant Professor, Department of Engineering. Dr Ram Krishna Mishra talked about land area, population and land use data of India. He had explained how human related with different land use patterns. He had discussed Land Use Land Cover (LULC) concept. With the help of case studies, he explained about how changing land pattern use changes the health of human and soil. He highlighted about 10 important, key climatic indicators that

resulting in landuse change pattern. He suggested different measures to adopt for proper management of Land and land resources. He elaborately explained the topic of session with tabes,data, pictorial representation, Flow charts so that one can learn easily. He had ended his session with nice quote "If we disturb the nature by damaging its natural outfits, The nature will certainly disturb our outfits". At the end of session, questions and answers between Speaker and active participants taken place.

Date: 23rd March,2021

Day 2: Session 2

Topic: Energy Management

Resource Person: DR. KAMAL NASIR, Deputy director NPTI, Durgapur

Session begun with the welcome notes and brief introduction of Speaker by Dr Kreeti Rai, Assistant Professor, Department of Engineering, ARKA JAIN University. Mr. Kamal Nasir begun his talk with how the urban population increases putting the load on energy management. He talked about extension energy using areas which consumed more than half of energy generation and highlighted Grid loading disturbance. He had talked about Load frequency relationships and Jurisdiction of Load Dispatch Center. He also explained how stakeholders are important tool for energy management. With the example of energy management in Uzbekistan, he had explained how smart technology is need of time. He had suggested Use of Smart technology and smart meters, one can manage energy. With Questions and Answers among speaker and participants led the end of session.

Date: 23rd March,2021

Day 2: Session 3

Topic: Role of different stakeholders, as well as policy and standards in Smart Cities

Resource Person: DR NAMESH KILLEMSETTY, University of Massachusetts, Boston;

Consultant, Imaginity Labs.; Editor, TheScientificFactor

Welcome note given by Dr Chandra Prabha Sahu, Assistant Professor, Department of Engineering, ARKA JAIN University. Dr Namesh Killemestty has begun his keynote talk with Urban Policy. He explained about stake holders in smart city, how they are essential in the decision making process for development of the smart city. He categorized Stake holders in

different groups namely Citizens, Public Interest Groups, Government agencies, Industry and bureaucrats. He talked about how these groups of stakeholders are interrelated to each other and how they are individually working for the maintain standards in smart cities. He mapped out the interest of different stakeholders. He explained Smart city Domains that includes Health, Economy and Environment. He discuss technical standards like ISO,IEC and ITU that follows for smart city development and Challenges in Policy making at National and Local level. Session end with Questions and answers between Resource Person and Participants.

Date: 24th March, 2021

Day 3: Session 1

Topic: Need of Smart Materials in Development of Smart city

Resource Person: DR. BINOD KUMAR CHOUDHARY, Assistant Professor, Department of Engineering, ARKA JAIN University

The session started with the welcome notes and brief introduction of speaker by Ms. D.Vally, Assistant Professor, Department of Engineering, ARKA JAIN University. Dr. Binod began his talk with the introduction of smart city and why material need for smart city smart. He had highlighted how the urban population growing and moving towards cities so that need of smart materials is requirement of Present time. He explained specific properties not smart materials to achieved specific goals and talked about smart structures for smart Materials. He had discussed about types of smart materials, their characteristics and their use in the development of smart city. He had suggested adoption of various smart techniques like Smart Window, Smart Roof, Smart Shade for smart structures in smart city. He elaborated with various examples like Solar Path, Hydromembrane, Breathe bricks etc are used for development and also highlighted the use of smart materials in daily life. He discussed about Biomimetic Facades and Green building technology needed for Smart City. He concluded his talk by focusing smart Materials are needed for enhancing lifetime efficiency and improved reliability. The session ended with the interaction of speaker with participants.

Date: 24th March, 2021

Day 3: Session 2

Topic: Impact of Artificial intelligence on urban labor development

Resource Person: MS SHREYA ROY, Founder of ECO-FUN-OMICS (Research Scholar,

IIFT, New Delhi)

Session started with welcome notes and brief introduction of speaker by Mr Kumar Shubham, Assistant Professor, ARKA JAIN University. Ms.Shreya Roy started her talk with the Introduction of Artificial Intelligence. She discussed how the use of Artificial Intelligence affects the labors ultimately employment. As companies using AI technology, requires less manual labour, that affects the Standard of living. Though, AI system have high cost but it works more efficiently than manual system. She explained the theory with different models on how Urban labor development would affect the development of smart city. She told that AI is still an important tool to achieved in third world countries and a long way to go to adopt AI. Session came to end with questions and answers among speaker and participants.

Date: 24th March, 2021

Day 3: Session 3

Topic: Traffic Management &Infrastructure Development in context of Smart Cities

Resource Person: Dr VIDHI BHARTI, Data Scientist, Co-founder Imaginity Labs, Australia

The session begun with welcome notes and brief introduction of speaker by Ms.Kamalika Das, Assistant Professor, Department of Engineering, ARKA JAIN University. Dr Vidhi Bharti started her talk by explaining what smartness is in term of smart technology for smart city. She explained why there is need of Smart Traffic management needed for Smart City development. She talked about components of Smart traffic management. She suggested various methods to reduce emission, reduction of fuel and number of techniques to manage traffic like ICT based smart speed limit control system, smart parking system, smart detection systems. She suggested micromobility concept i.e. Use of e- bikes and e-scooters. She also discussed about Mobility as a

Service (MaaS) and affect on mobility during Pandemic COVID19 time. She had told by adapting smart behaviour and smart technology, Smart Traffic can be managed easily and wisely. Session came to end with the interaction between Speaker and Participants through Questions and Answers.

Date: 25th March,2021

Day 4: Session 1

Topic: Use of multi camera CCTV for smart surveillance system

Resource Person: **MR. SYED RASHID ANWAR**, Assistant Professor, Department of Engineering, ARKA JAIN University

First session of Day 4 started with welcome notes and brief introduction of speaker by Ms. D.Vally, Assistant Professor, Department of Engineering, ARKA JAIN University. Mr.Syed Rashid begun his talk with the Introduction of CCTV, What is it and Why it is needed? He explained about current standard of CCTV. He talked about different aspects and components of surveillance system needed in smart city. He discussed different approach to enhance the quality of smart surveillance system required for smart city. He explained advanced communication systems 5G and it's beyond, importance of 5G, how it would beneficial for users. He explained with the example of FASTAG, how smart technology and smart surveillance is need of time. He also suggested uplifting standards through Smart CCTVs that incorporated IOT, surveillance and 5G. With block diagrams and flowchart, he highlighted the points how the smart surveillance system with AI and IoT needed for development of Smart City and what are opportunities to develop better surveillance system. Interactions between Speaker and Participants led the end of session.

Date: 25th March,2021

Day 4: Session 2

Topic: Smart farming Implementation in Agriculture Industry in context of smart city

Resource Person: **DR ARUN MARANDI**, Assistant Professor, Department of Computer Science, ARKA JAIN University

Session started with welcome notes and brief introduction of speaker by Dr ChandraPrabha Sahu, Assistant Professor, Department of Engineering, ARKA JAIN University. Dr Arun Marandi started his talk by highlighting the definition of exactly what is smart farming? He explained the use of IoT in Smart farming, how IoT enabled farming system helps to cope with other problems. He talked about Environmental problems like water irrigation system, use of water, humidity, climatic conditions that affects farming. He suggested measures to adopt smart farming and it's components to solve Environmental stress. With the helps of pictorial representation and short videos, he explained how the world moving towards smart farming and how smart farming efficiently work for the development of Smart City. He told as system is IoT based, one can easily check any issues like plant growth and survival from a distance without going in field and solved the issue as earliest. He talked about how smart farming is need for the development of smart city as urbam population growing day by day, put pressure on agriculture production. Therefore, with smart farming the requirements can be achieved easily than manual methods. Session came to end with questions and answers between Speaker and Participants.

Date: 25th March,2021

Day 4: Session 3

Topic : Renewable Energy Utilization Techniques

Resource Person: DR. SHIVAM MISHRA, Departmental Research & development Co-ordinator, Associate professor GLBITM, Greater Noida

Last session of Day fourth started with welcome notes and brief introduction of Speaker by Dr Anupam Kumari, Assistant Professor, Department of Engineering, ARKA JAIN University. Dr Shivam Mishra begun his talk with the Introduction of Human Ecology. How the energy utilization came in notice. He talked about different forms of energy. He explained why there is need of renewable energy and how the demand of renewable energy increased. He talked about different forms of renewable energy source, generation and utilizing sector. He focused on how renewable energy stored. He highlighted how under National Clean Energy Fund(NCEF), Ministry of New and Renewable Energy prompting Wind Energy generation. He talked about different aspects of Solar Energy, Wind Energy, Tidal Energy, Hydroengergy, Geothermal Energy and their status in India. He discussed challenges and solutions for achieving Renewable energy needs. He suggested different methodology to utilize renewable energy for the development of smart city and reduce the energy emission. Session ends with the thanks note by Dr Anupam Kumari.

Date: 26th March, 2021

Day 5: Session 1

Topic: Challenges and Solutions in Smart Cities in context to Sustainable Environment

Resource Person: **Dr NEETU SINGH**, Project Head, National Carbon Management Association, India, Sonbhadra Branch, UP

The session started with Welcome Note by Ms. Prena Rai, Assistant Professor, Department of Engineering, ARKA JAIN University. Dr Neetu Singh has begun her talk by explaining how Sustainable introduced in reference to Environment and how concept of Sustainable Smart cities is an important Sustainable Development Goal(SDG). She discussed the topic with flow charts, pictorial representation and tables to make it easy to learn. Also explained three pillars of Sustainable development i.e. Environmental, Social and Economical and Relation between them. She told about major challenges like Air pollution, Waste mangement, Urban heat island, Water stress and water scarcity, Energy mangement, Carbon footprints and carbon neutral. She explained number of solutions to tackle the challenges like Use of Green Roof ,Use of Sustainable Materials, Integrated solid water management associated with ICT, Implementation of Smart Water system with ICT. She elaborate about U4SSC (United For Sustainable Smart Cities) and how by adopting smart technology, we can develop smart sustainable cities. Session end with thanks note by Ms.Prena Rai, Assistant Professor.

Date: 26th March, 2021

Day 5: Session 2

Topic: Application of AI, ML, CV and IOT in business development and smart city planning

Resource Person: MR. SACHCHIDANAND KUMAR, Senior manager, TATA Steel Ltd.

Ms. Shatbhisha Sinha, Assistant Professor, Department of Engineering, ARKA JAIN University started the session with welcome note and introduction of resource person. Mr. Sachchidanand Kumar begun his talk with definitions of basics of AI. He talked about Genesis of Machine learning. He had differentiated between Machine learning and Traditional Modelling. He elaborated about working principles and technologies used for AI and IoT. He suggested how the

use of AI,ML and IoT makes the city smart and developed and also explained how the Artificial Intelligence uses widely in daily life, water system, transport system etc. He discussed about

Block Chain technology, Application of Machine learning in day to day life. He had told that by adapting the application of AI,MI and IoT, a smart city can be developed properly. Session came to end with thanks notes given by Ms.Shatbhisha Sinha.

Date: 26th March,2021

Day 5: Session 3

VALEDICTORY SESSION

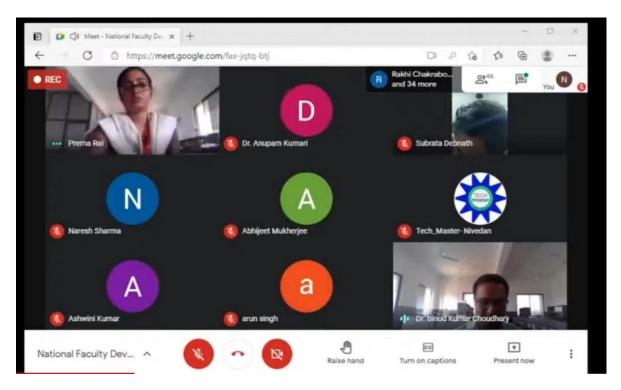
The valedictory session was concluded with a vote of thanks given by FDP Co-ordinator Dr Binod Kumar Choudhary, Assistant Professor, Department of Engineering, ARKA JAIN University, in which he has been paid his gratitude towards all the dignitaries, Resource Person who has spared their time and share their expertise with the participants. He paid his thankful notes to Convener, Mr.Ashwini Kumar and Members of Organizing committee who made this programme successful. He has given thanks to teaching and Non-Teaching Staff of Department of Engineering, ARKA JAIN University. I appreciated the hard work of every individual during this National faculty development programme.

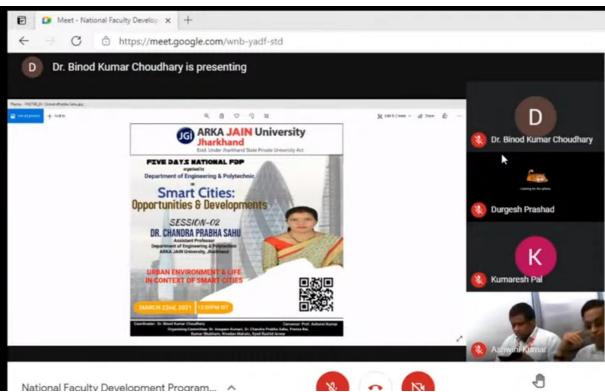
The feedback of the participants was very positive and motivational for the organizers. All the participants appreciated all the resource persons and the knowledge imparted by them was very useful in their forthcoming academic endeavors.

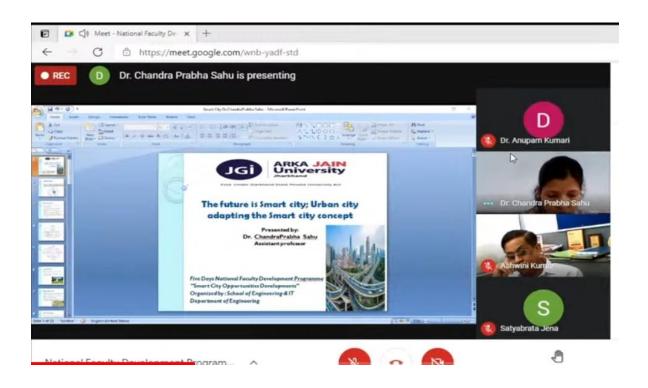
Poster of the event

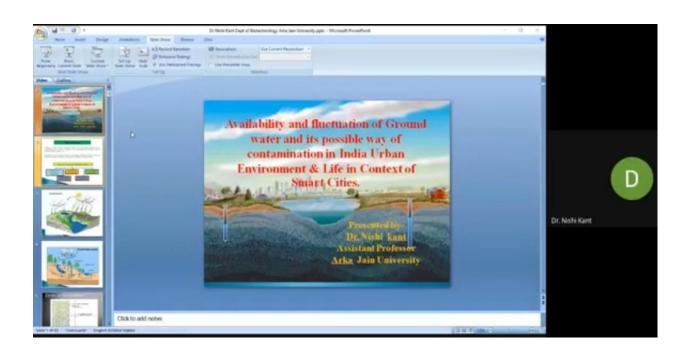


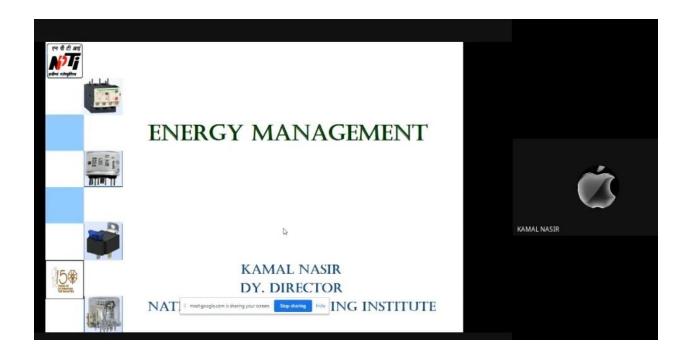
Photos of the Event



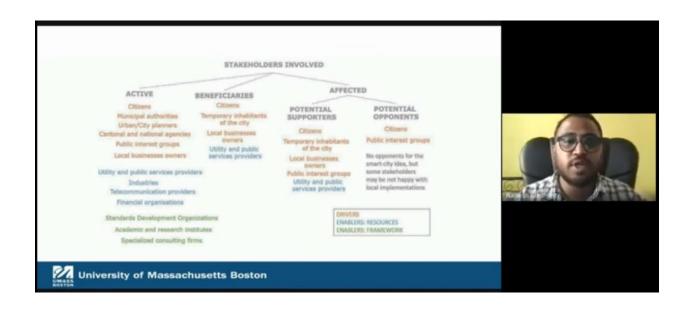


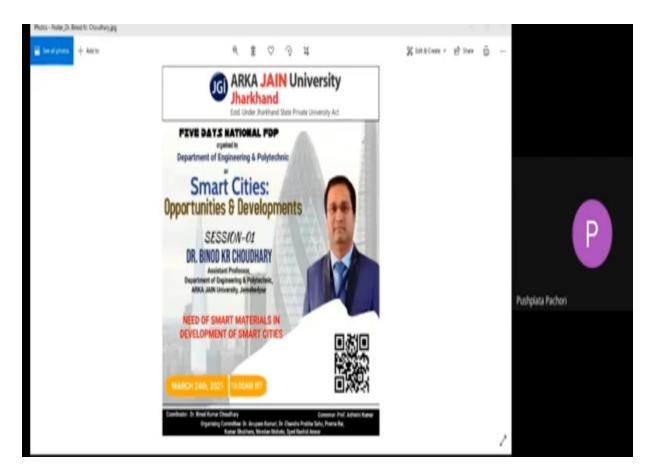


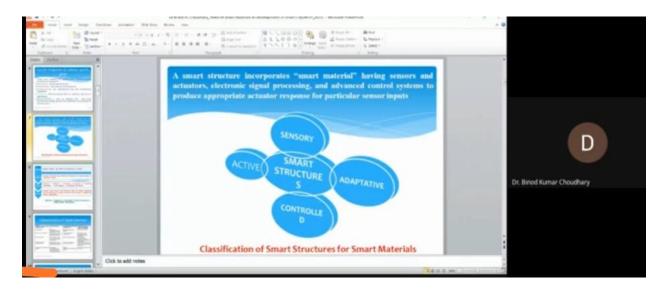


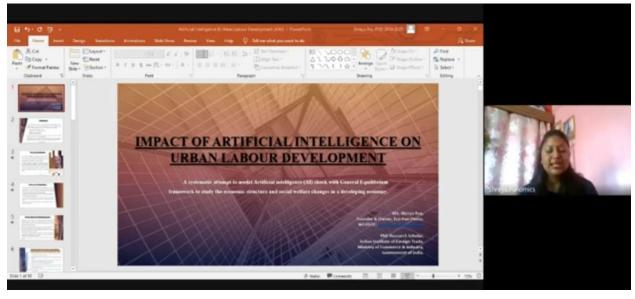


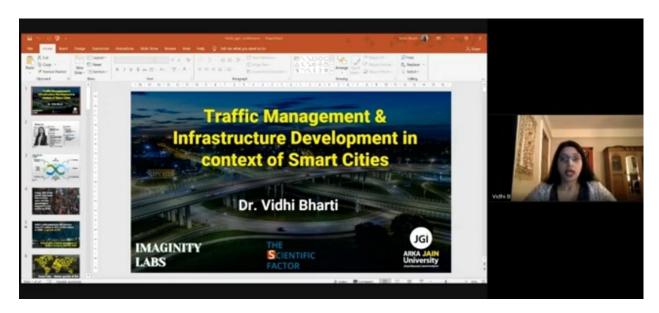






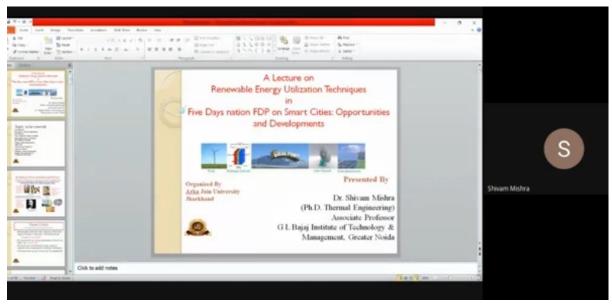


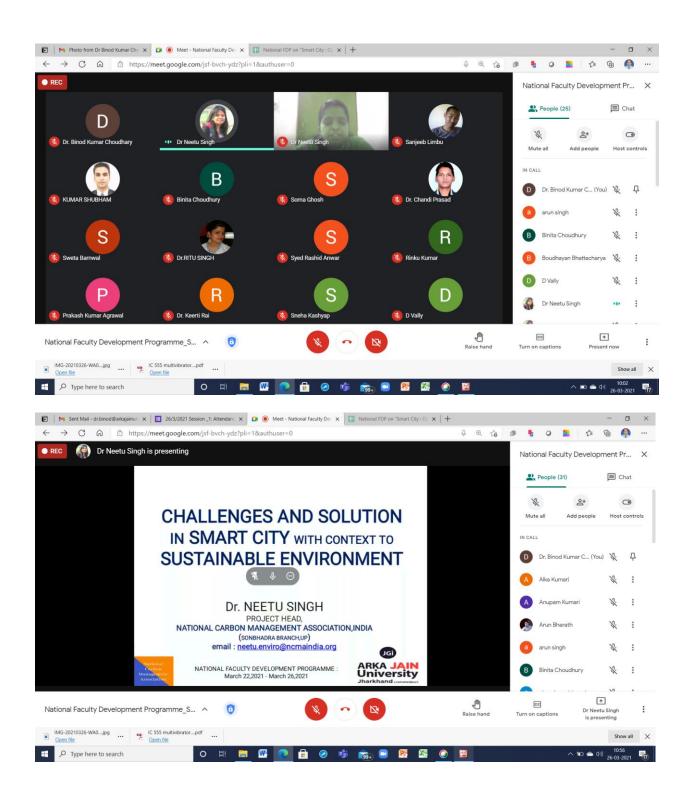












Overview and brief History of BlockChain:

- · Blockchain appeared in 2008 as the basis of the Bitcoin protocol.
- Bitcoin's combination of cryptography and distributed systems enables value to be transferred as quickly as the internet transfers data.
- While this was initially limited to facilitating immediate "spot" transactions, new
 protocols such as Corda and Ethereum eventually enabled users to set terms
 under which they would transfer value at a future point in time.
- It was then that enterprises particularly in the financial services industry began to take notice.





