Description (Slide wise)

- **Slide 1**

Respected judges and my dear colleagues, Good morning.

We are team metropolis present here with our solution to smart energy supply chain using IoT and block chain technology.

We are grateful to Schneider electric for providing us this opportunity.

- **Slide 2**

At first I want to introduce a problem to you.

As you can see in the pic our institute IIT Varanasi every roof top are covered with solar panel makes it a clean energy producer.

But, during our vacation when entire Varanasi faces lack of energy, megawatts of energy produced in our institute get wasted. Because conventional Energy supply chain now is full of red tape maze and slow that doesn't allow energy saver like us to trade.

This inspired us to work in the same context.

- **Slide 3**

Challenges to energy supply chain are like,

-High operational cost and cyber threat problem.

-Theft and pilferage.

-lack of automated billing & red tape maze in power consumption.

-maintaining demand-supply equilibrium.

Hence, India being the 4^{th} largest energy manufacturer in the world 40% of energy lost before reaching the target consumer.

Our solution is with using.

-Iot enabled meter and Blokchain device.

-Blockchain application for automatic billing.

- **Slide 4**

Our solution.

-Monitor utility grid using IoT at node.

-Connect to Iot with your phone and join our supply chain.

-install our Decentralized app, connect your bank account to it.

-On energy use secure payment done through our Blockchain interface, makes billing simple.

- **Slide 5**

-Software backend functionality are powered or developed with ethereum power blockchain technology free to develop and gihgly cyber secure.

-Front end is the decentralised app developed using ethereum have an user interface that allow producer and consumer take part in the supply chain.

-comparison between conventional and our energy supply chain solution.

- **Slide 6**

Our Complete Solution

More opportunity to end Users.

-In parallel connect each users to microgrid as a distributed source.

-collect their saved and produced energy and pay them.

-Our blockchain interface+Iot monitor the transaction and allow them to trade.

Blockchain is fully cyber secured, automated and have low operational cost. So It allow us to open supply wherever required like across the road.

- **Slide 7**

Software solution for automation, Auditing Algorithm

-At instant cost of energy is partial function of various factor like cost of production, demand-supply graph, inter4mediaries charges, etc,.

-Our programmed App using Matlab as plugin to our software interface can solve the P.D.E and automatically audit the transaction.

- **SLIDE 8**

Our Predicting Algorithm

-Data generated from Iot node can detect the optimal cost of energy at instant using the demand and supply graph principle given by Sir Adam Smith for supply chain, this allow us to trade at equilibrium.

-we can see when there will be overuse of energy, optimal cost rises that will change the behaviour of consumer to be a distributed supplier to sell their saved energy at high cost, so supply again maintained.

-In our model, we aim to inculcate the behaviourial changes of consumer and reduce overuse, as they are equally responsible for cost of energy.

-This gives us a competitive benefits and sustainability in trading.

- **Slide 9**

User Interface.

- **Slide 10**

User interface.

- **Slide 11**

Work till Extended.

(1) We had built prototype Iot electric meter and automation device using Aurdino Microcontroller successfully and tested in my department.
(2) My teammate Kailash is a leading member of institute web development club. So he had proposed a request ton instituter to access our amazon server to run a test blockchain network for cost effective data management. So, if we get proper support from institute and energy specialist like Schneider we can contribute toward energy management.

- **Slide 12**

- We realize not just Varanasi face problem in energy management but it's a world wide issue we wish someday we get a complete solution to it.

- Our model is unique in such a way that ,we not just aim to available energy to all but inculcate their contribution toward energy management.

We believe,

"Energy is the Humans basic right, and they need to realize it".

- In addition our solution can eliminate the use of fossil fuel and can achieve the target of Going Green in the City.

We are thankful to our Mentor Anupama ma'am, mahendra sir and Devansh sir for guiding us all through the process.

Thank you!