

LoRA for Smart Cities, Dr. R.Vimalathithan, Senior Software Engineer, Bosch (ANCIT), Bangalore

Date : 24.04.2020, 3 PM

SRI KRISHNA COLLEGE OF TECHNOLOGY



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KOVAIPUDUR, COIMBATORE 641042



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

[Accredited by NBA under Tier-I]

Organizing a



LORA for Smart Cities

Guest

Dr. R. Vimalathithan

**Sr. Software Engineer
Bosch (ANCIT), Bengaluru**



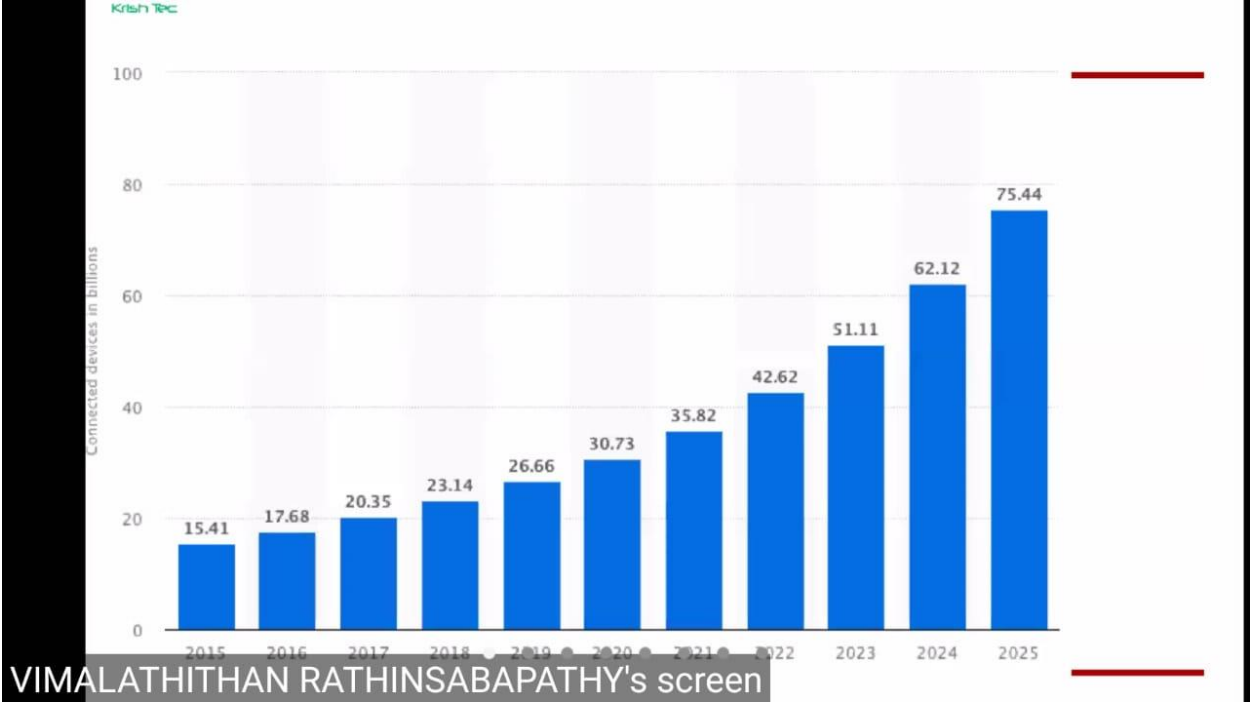
Event schedule

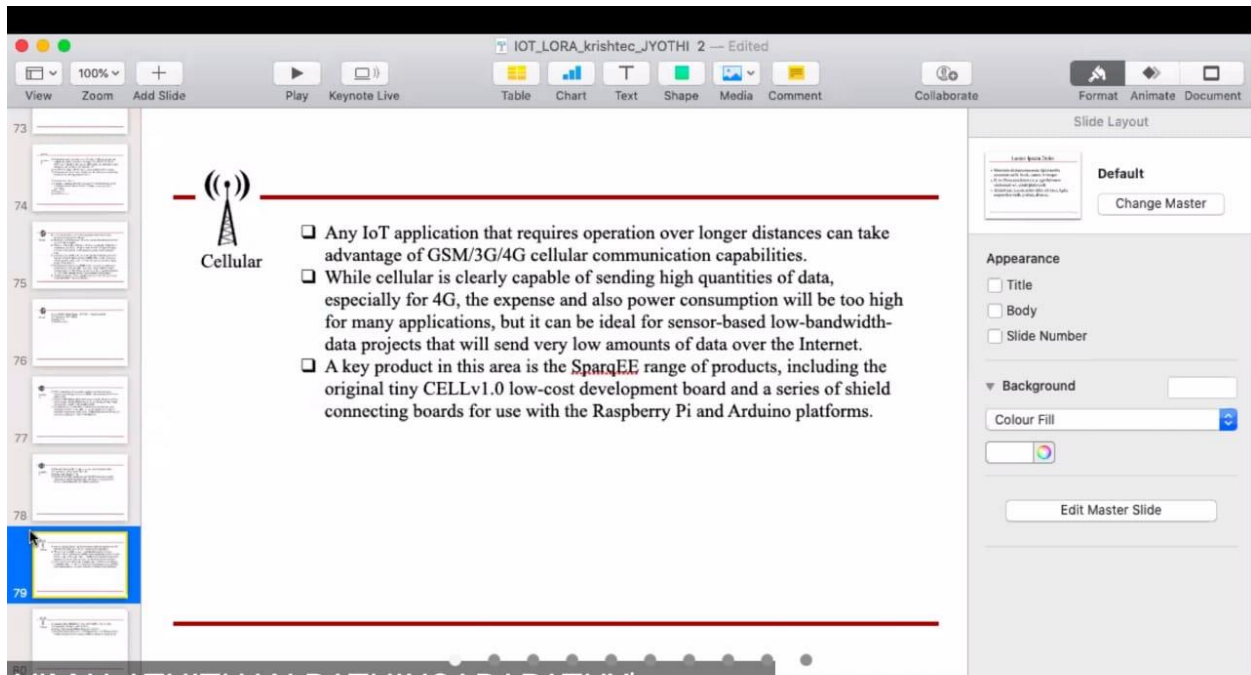


**24.4.2020 @ 3 pm
Meeting ID: 737 4911 7656**



Department of ECE organized a webinar on “LoRA for Smart Cities” by Dr.R.Vimalathithan, Senior Software Engineer, Bosch (ANCIT), Bangalore. He shared his views on basics of modulation and how to compute to bandwidth. He dealt the basics of LoRA and LoRAWAN. He demonstrated how a LoRA and device can be connected and method of forming LoRAWAN. Vending machine application was explained.





Cellular

- ❑ Any IoT application that requires operation over longer distances can take advantage of GSM/3G/4G cellular communication capabilities.
- ❑ While cellular is clearly capable of sending high quantities of data, especially for 4G, the expense and also power consumption will be too high for many applications, but it can be ideal for sensor-based low-bandwidth-data projects that will send very low amounts of data over the Internet.
- ❑ A key product in this area is the SparqEE range of products, including the original tiny CELLv1.0 low-cost development board and a series of shield connecting boards for use with the Raspberry Pi and Arduino platforms.

VIMALATHITHAN RATHINSABAPATHY's screen

IOT- LoRa /M2M

Dr.Vimalathithan Rathinasabapathy ME.,PhD,PDF



athivimal@gmail.com

VIMALATHITHAN RATHINSABAPATHY's screen



737-4911-7656

Leave

- Today's IoT is more about business impact and less about consumer usage
- IoT is creating business disruption opportunities outside of the Tech industry
- Adoption of IoT is a must if you want your business to survive
- Lack of education and unclear messaging are key obstacles for IoT adoption in business



Unmute

Start Video

Share

Participants 4

More



M2M SIM Cards



VIMALATHITHAN RATHINSABAPATHY's screen

KRISHTEC

View Zoom Add Slide Play Keynote Live Table Chart Text Shape Media Comment Collaborate

$Tx \text{ power level} = \text{System constant} - Rx \text{ power level}$

LoRa Mote a Faraway mobile Gateway Nearby mobile LoRa Mote b

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Find Devices

RN Module 0 [X]

LoRa WAN MAC Channels FCC Radio DFU

Module Features

Radio Parameters

Output Tx Power: 15 Gauss BT: 0.5

LoRa Bandwidth: 5... CRC Enable:

Rx Bandwidth: 2... Error Coding: 4/5

AFC Bandwidth: 2... Mod Mode: lora

Frequency: 868100000 Invert IQ Enable:

Frequency Deviation: 25000 WatchDog Timer: 15000

(G)FSK BitRate: 50000 Spreading Factor: sf12

Preamble Length: 8 Radio Sync Word: 0x34

Module Voltage: 3.368 Serial Noise Ratio (SNR): -128

GPIO Control

Transceiver Communication

Transmit

Issue Transmit: Send

Enter Data

Attempts: Attempts (Transmit)

Receive

Window Length: Rx Window

Begin Listen:

Note*: Infinite Window Holds till a Recv

Infinite Listen Receive Win

General Console

Clear Log

RN Module Console

Clear Log

```

15:34:46.420 > ok
15:34:46.451 > radio set rxbw 25
15:34:46.459 > ok
15:34:46.462 > radio set afc bw 41.7
15:34:46.501 > ok
15:34:46.502 > radio set bt 0.5
15:34:46.509 > ok
15:34:46.509 > radio set cr 4/5
15:34:46.516 > ok
15:34:46.517 > radio set mcd lora
15:34:46.525 > ok
15:34:46.525 > radio set sf sf12
15:34:46.532 > ok
15:34:55.843 > radio set pwr -3
15:34:55.850 > ok
15:34:58.896 > radio set pwr 15
15:34:58.904 > ok
15:35:09.566 > radio set pwr -3
15:35:09.574 > ok
15:35:12.779 > radio set pwr 15
15:35:12.786 > ok
15:37:16.211 > radio set bw 500
15:37:16.218 > ok
15:37:20.748 > radio set rxbw 250
15:37:20.755 > ok
15:37:22.064 > radio set afc bw 250
15:37:22.072 > ok
  
```

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