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# Center of Excellence-IoT & AI

A MeitY Initiative with Govt. of Karnataka, Haryana, Gujarat & AP



## REPORT FOR JANUARY – MARCH 2019

Center of Excellence - IoT, Gurugram



Ministry of Electronics  
& Information Technology  
Government of India



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## RBS leadership team visited CoE Gurugram

**16th January 2019:** Senior leadership team of RBS visited the Gurgaon center with specific focus on engaging with companies in automation, credit risk decisioning, wallet and payments related areas.

This leadership team included –

- Les Matheson - CEO, Personal Banking
- Barry Connolly -MD, Everyday Banking
- Marcelino Castrillo - MD, Personal & Premier Distribution

They were the key decision makers in the RBS journey towards digitization and delivering innovation for the customers.



## Investor Hours with Unitus Ventures held at CoE Center

**25th January 2019:** NASSCOM Center of Excellence had invited the Investment Team of Unitus Ventures at Gurugram. The start-ups innovating in HealthTech, AgriTech, Edtech& Fintech were given an opportunity to share their start-ups story in an exclusive 1:1 pitching session with Mr Brent Zettel, Portfolio & Dealflow Manager, Unitus Ventures. The start-ups who pitched included Gesture Research, Oxen Farm Solutions, Capital Quant, TorchIT, Airveda, Kashware and DronaMaps.



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## One day joint workshop held by CoE & Intel

**30th January 2019:** NASSCOM Center of Excellence and Intel jointly organised a workshop focused on Edge based Computer Vision. The architecture and tool kits were developed and deployed using the deep learning-based models, Vision Processing Units, SBCs, FPGAs and Neural Compute Sticks. The hands-on workshop was focused on Use Cases in Healthcare, Manufacturing & Retail sectors and Live Demonstration.



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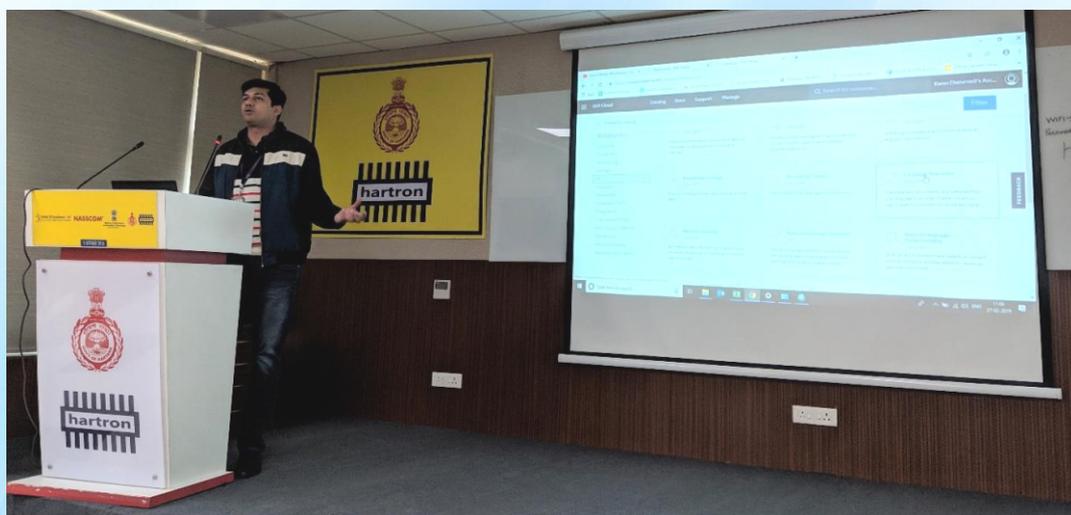
## IBM Watson based recommendation Engine

**27th February 2019:** NASSCOM Center of Excellence, Gurugram along with IBM organised a hands-on Session to build a Machine Learning based interactive recommendation engine using IBM Watson Studio, Watson Machine Learning, Apache Spark and PixieDust.

Most websites selling products online show you a list of items that you might be interested in. The better the recommendations the more likely that you will buy any of these, which will increase their sales. But how are these recommendations created was the topic for the session.

By the end of the session, attendees were able to understand how to build a model to provide product recommendations for customers based on their purchase history. They had created their own Jupyter notebook which included –

- Loading of historical shopping data into the system
- Structuring and viewing that data in a table that displays customer information, product categories, and shopping history details
- Using the k-means algorithm – this is useful for cluster analysis in data mining, to segment customers into clusters for the purpose of making an in-store purchase recommendation based on shopping history
- Deploying the model to the IBM Watson Machine Learning service in IBM Cloud to create your recommendation application



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## Mercedes Benz R&D India shortlists Veda Labs to co-develop ADAS & other Computer Vision based solutions

On 1st March, Startup Autobahn, co-creation initiative of Mercedes Benz India selected 11 Startups, on top of their game, in the space of Machine Learning from various industries that can complement MBRDI (Mercedes Benz Research & Development Institute) experts. It culminated into 40 intense deep dive sessions.

Veda Labs, incubated at NASSCOM Center of Excellence, Gurugram, is shortlisted to co-develop ADAS (Advanced Driver Assistance Systems) & other Computer Vision based solutions.

Start-up Autobahn is an innovation platform that moderates in-depth and curated collaboration between best-in-the-class start-ups and Daimler Group. After a successful scouting phase, the Start-up Autobahn India 'Selection Day' witnessed 11 emerging tech start-ups showcasing futuristic technologies that will shape the future of mobility. The shortlisted start-ups will further collaborate with MBRDI teams to develop Proof of Concepts, which is a 100-day program culminating into EXPO Day.

Veda Labs, co-founded by Vivek Singh & Veer Mishra, CoE Gurugram incubatee, is focused on Computer Vision based Intelligence for Retail, Automotive, Manufacturing, Smart Cities etc to bring the physical world to life through the technology. They have on-premise, cloud & edge-based deployments. Their current deployment capabilities include general object detection, facial recognition, MAG (Mood, Age & Gender) classification, Customer footfall analysis, SKU detection, CHMS (Camera Health Management System) etc.



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**AGSMARTIC Founder(s):** Rashi Verma & Abhishek Sinha

Agsmartic have developed a Cloud-based autonomous irrigation system, which can help in saving electricity by 30%, and similarly, reducing water usage by 20-25%. This system can also help in reducing the leaching of fertilizers in the villages and the same has been tested in Knamariya Nimawar, Tehsil Sultanpur, Raisen district, MP.

**Duration:** Mar 2019 – Present

**Pilot Details:**

**Product Feasibility test at Gurgaon, Hararyana (Deployed)**

- Tests were successful for a range of 1.5 kms reliable LoRa communication. The motor pumps were remotely tested through gateway communication and initial tests on battery life showed a life of 6 months. There are improvements which have been made to increase the battery life to 2 years.
- These tests were done on open land without any crops, just to test and improve the initial hardware prototype and basic communication between LoRa sensors and gateway. The only possible threat it can cause is of flood irrigation

**Irrigation Scheduling test at IARI, New Delhi (Deployed)**

- Evapotranspiration was included as a parameter in deciding the irrigation scheduling. The system didn't use any of the IoT Sensors here and an App-based motor control was also successfully tested.
- Overall system matured and its reliability improved. The communication delay in controlling the pump was reduced from almost 1 minute to under 5 seconds. This pilot threw up the issue of motor power. IARI uses heavy-duty high power motors and their system wasn't equipped to handle it. Their system had to be upgraded to include the heavy-duty pumps too.

**Ongoing pilot at Mukhteshwar, UP**

- This was also a technical pilot to make the system more intelligent and it was the first pilot in Poly farm setting. Air temperature and humidity was also added to the scheduling algorithm and tested at this location.
- A simple drip irrigation system was deployed here which was controlled by a single pump. The automation was tested successfully and the single-phase motor was also being controlled properly.



**Ongoing pilot at Sultanpur, MP**

- This pilot is to understand the efficacy of the overall Croplytics ecosystem (Autonomous irrigation and Health Analyzer app).
- This is a 6 month's pilot project started in April 2019 and will cover 5 acres of land, and 7 crops including tomatoes, chillies, gourds, musk-melon, watermelon and eggplant.
- Soil Moisture sensors, 2 Valves and 1 Gateway-Controller are deployed. Randomized Control Trial will be done with one crop to get an initial quantification of the impact.

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**TORCHIT Founder(s):** Mohit Chelani & Hunny Bhagchandani

Torchit has built an accurate yet simplistic affordable SONAR-based assistive device, called Saarthi, to help the visually impaired navigate in any kind of setup from a closed room to crowded pavements. Users can toggle between three range sets — low (2 feet distance), medium (4 feet distance) and max (8 feet distance). Saarthi has a 99.7% accuracy level and has been tested on more than 1,200 users. The device has gained accreditation from the National Association of Blind, and Blind People Association for being an innovative and impactful product. The device is being used by more than 8,000 visually impaired individuals in Gujarat, Rajasthan, Mumbai and Delhi.

Jyoti, the more tech-centric device using computer vision at the core through the features like Offline Image Processing, Audio Video calling through connecting with your mobile device to allow anyone and anywhere in the world to help a blind person in need and also the features SOS button which will help send a message to nearest blind school/institute and the police station to rescue the blind person.

TakeNote, is a product that they're developing in association with IIT Madras which is an affordable device to take notes from anywhere, and then have them transferred into any computing device for editing or publishing. This provides a digital notebook to every blind person to safely store their notes and have them edited from connecting to any device. This allows the visually impaired to also use braille enabled keyboard.

## **Pilot Details / Orders Executed:**

- CSR Project with HDFC Gruh Udyog & Oil India: TorchIt along with HDFC Gruh Udyog recently did a CSR Project in Bhopal for distribution of 1,000 of Saarthi devices to blind & visually impaired people. They have also received a CSR Project collaboration with Oil India for distribution of 2,000 more of Saarthi devices.
- Torchit has set up an assembly center at Ahmedabad in association with the Blind Peoples Association, where differently abled people are empowered by providing a livelihood to them, which is followed by a strict quality check. The center has been able to produce about 2500 devices.

Torchit have tied up with multiple organisations in Not for Profits and other organisations including Kenyan Society for the Blind, Hope Tech + and Safaricom in Africa and have executed 700 device orders, so far.



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