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THE NERVE CENTRE FOR SMART CITIES

Central Command Centres will be at the core for realizing the full potential of smart cities and provide timely services to citizens

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A template for smart cities

India's Smart Cities Mission is progressing at a hectic pace. A total of 90 cities have been selected so far and over 3,000 projects are in place at various stages of implementation. That said, many smart city projects are suffering from fragmentation and collaboration among key stakeholders. Learnings from one smart city project are seldom available for other stakeholders in other cities. What if smart city solutions could be deployed that are scalable, sustainable and more importantly, replicable?

A possible solution that is already being deployed by many states is the setting up of Central Command and Control Centers (CCC) using the cloud as the medium. For instance, Command and Control Centers are under completion or under various stages of implementation in 11 cities: Pune, Nagpur, Ahmedabad, Surat, Vadodara, Jaipur, Raipur, Naya Raipur, Bhubaneswar, Visakhapatnam and Kakinada (Andhra Pradesh). These centers have already become partly operational in many cities. The goal is to provide a single transparent view of all major activities and function as the eyes and ears of cities.

> The advantages of going in for a cloud-based central command center are huge. A pay-as-you-grow model enables cities to gradually build their infrastructure vis-à-vis building their own captive data center

The advantages of going in for a cloud-based central command center are huge. A pay-as-you-grow model enables cities to gradually build their infrastructure vis-à-vis building their own captive data center. Advanced and emerging technologies or solutions can be quickly integrated and deployed. If a new city has to be onboarded, then there are no delays, as compared to setting up a data center which can easily take more than 10 months. Analysts expect a minimum cost reduction of 40-50 per cent reduction in TCO over a period of five years, due to standardization and efficiencies of scale. City specific data can be easily be integrated and solutions customized for evolving smart city cases.

Similar to a managed services provider, a central command and control center can provide a centralized view of every public service that are provided to citizens. This can include monitoring of garbage collection using GPS, street light monitoring or intelligent management of traffic. In cases of disasters, emergency services can be quickly activated and multiple agencies (fire, traffic services, drainage, healthcare institutions) can coordinate in a better way using a centralized medium. For example, in a city like Vadodara, which is flood-prone, a central command center can be used to deploy advanced warnings in response to changing weather conditions. Further, cloud-based models can be used to quickly analyze sensor data in the case of natural disasters such as floods. Due to the availability of real-time information at a single place, decision making can be faster, and key stakeholders can deliver effective governance by aggregating various data feeds from different sensors across the cities.

As these command centers evolve and gather more data, stakeholders can use data analytics tools to efficiently take out intelligent insights. Similarly, sharing of best practices will enable constant improvement and standardization of processes that will ultimately benefit common citizens. Implementing a time and tested solution with minor customization will help in rapidly rolling out smart city projects as almost every city has similar components for delivering public services. As more smart cities are announced, a cloud-based standardized platform will be crucial for better planning and development.

MORE INSIDE

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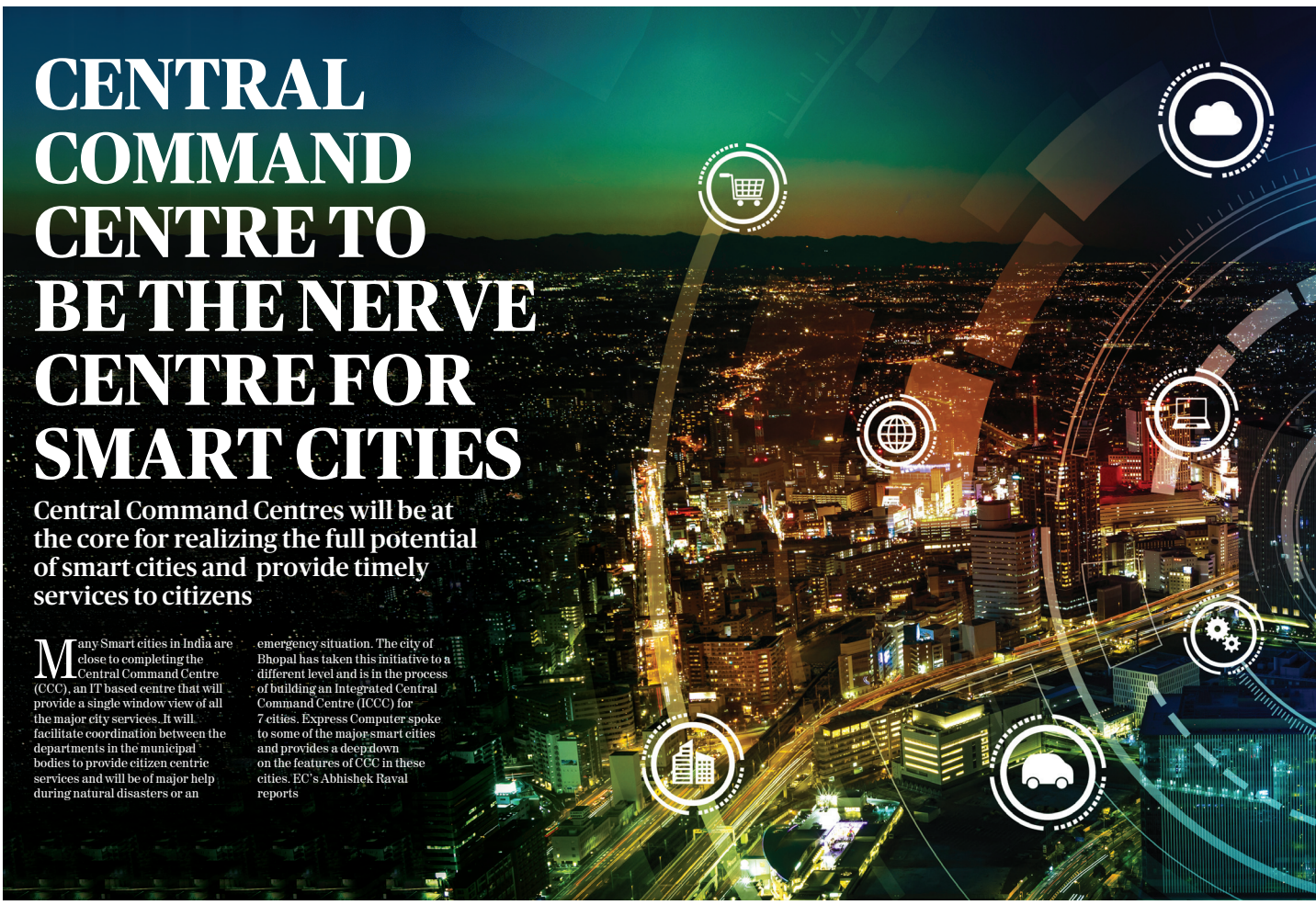
CENTRAL COMMAND CENTRE TO BE THE NERVE CENTRE FOR SMART CITIES



Central Command Centres will be at the core for realizing the full potential of smart cities and provide timely services to citizens

Many Smart cities in India are close to completing the Central Command Centre (CCC), an IT based centre that will provide a single window view of all the major city services. It will facilitate coordination between the departments in the municipal bodies to provide citizen centric services and will be of major help during natural disasters or an emergency situation. The city of Bhopal has taken this initiative to a different level and is in the process of building an Integrated Central Command Centre (ICCC) for 7 cities. Express Computer spoke to some of the major smart cities and provides a deep down on the features of CCC in these cities. EC's Abhishek Raval reports

BHOPAL

Chandramauli Shukla,
CEO, Bhopal Smart city

The vision of the state of Madhya Pradesh is to have an Integrated Command and Control Centre (ICCC) for seven cities, which will have a single analytics layer and visualization of all the city related information for any given city in the state, rather than having siloed information of every city, which isn't a useful model to have. Secondly, an Integrated Command and Control Centre (ICCC) helps in having an absolutely lean implementation timeline, because there is no need to build multiple DCs, instead just one and that too not a greenfield, but renting the services from one of the Meity empanelled CSPs. The total implementation timeline for the state is just 210 days.

The State Mission Director of Madhya Pradesh took the decision to create an ICCC for the seven cities, a single data centre on a single IT platform. A separate DC for every city would have required a highly trained manpower. It's also a capital intensive exercise. Whereas going for a cloud enabled Unified IoT based ICCC is a scalable model. Going forward, more cities can be hooked onto this platform without the need of a separate DC; yet they will have their own CCC. The data will be parked onto the cloud and the cities will be charged on a pay-as-you-grow model. For example, Bhopal will have to pay more than Satna because Satna is a relatively smaller city and will generate less data. The advantage with cloud, apart from cost and data management is that the cities do not have to do a separate technology refresh every few years, since cloud enables the availability of the latest technologies all at once. Currently, every proposed smart city in Madhya Pradesh has a city level visualization front-end. However the data is hosted on the cloud in the ICCC.

The visualization is hosted on an open source platform – TrinityCore and the IoT part will be over the HPE's Unified IoT platform. The police surveillance is done on TrinityCore, so it becomes easy to integrate it with the ICCC.

The IoT technology is the core as it provides real time data, which helps in analysis and taking more informed and accurate decisions for the citizens. Any new features can be added quickly and integrated with other services. The real time element and it's benefits to the citizens was the ultimate objective of the RFP.

"Bhopal managed the Tender Process Management for this initiative. The DC and the DR site is located at different seismic zones. We have shared this RFP with six-seven cities and the upcoming tenders are of a similar model," informs Chandramauli Shukla, CEO, Bhopal Smart city.

In the absence of adopting such a model, the costing for every city filing a proposal for their individual command centre was close to ₹ 200 to ₹ 250 crore. The ICCC (having an integrated DC for the 7 cities) has collapsed that cost to 300 crore for all the seven cities – a saving of close to ₹1000 crore. There are some smart cities in India, whose total cost for their CCC is ₹ 700 to ₹ 800 crore; this is an indication of the amount of savings achieved by this model.

The physical construction of all the CCCs in the seven cities has begun. HPE has been awarded the contract. The target completion date is the first week of April, and Bhopal is in the most advanced stage of construction. "We are expecting the completion of the ICCC, with the video walls and other infrastructure to be up and running by mid-march," informs Shukla.

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> **Chandramauli Shukla,**
> CEO, Bhopal Smart city

- **The** IoT technology is the core as it provides real time data, which helps in analysis and taking more informed and accurate decisions for the citizens
- **The** ICCC has collapsed the cost to ₹ 300 crore for all the seven cities – a saving of close to ₹ 1000 crore
- **Bhopal**, until now, has received ₹ 200 crore from the Central Government and ₹ 200 crore from the state Government under the SCM
- **More** cities can be hooked onto this platform without the need of a separate DC

Collaboration

Bhopal Smart city has collaborated with Rajiv Gandhi Technological University, which is the umbrella institution for all the technical colleges in Madhya Pradesh; a collaborative agreement with National Institute of Technology has been signed. An agreement has also been signed with an university in the space of materials technology. Thus new developments can be included in the construction material field. Overall there are seven-eight partnerships. Technology companies like Cisco, Ericsson etc, have also partnered with the state to set up incubation center.

MP has appointed Deloitte to set up an innovation and incubation center to partner with the startup community – the state is planning to join hands with 50 startups this year.

The financing model for smart cities is also an important aspect because of the heavy investments in establishing and managing them. MP has mentioned in its RFP to monetize the data. The model will only be finalised once the data reaches a considerable size, enough to hold a monetary value for itself.

Bhopal, until now, has received ₹ 200 crore from the Central Government and ₹ 200 crore from the state Government. "Money is not an issue. The objective is to conceive great ideas and deliver citizen services seamlessly and provide them superior experience," says Shukla.

VADODARA

Dr. Vinod R. Rao,
Municipal Commissioner,
Vadodara Municipal Corporation

Manish Bhatt,
Director-IT, Vadodara Municipal Corporation, Vadodara Integrated Command and Control Center

Need of a CCC with respect to the special requirements of Vadodara

Every city requires an integrated command and control facility to manage the city operations from day-to-day perspective (traffic, law and order management, public services management, civic services and grievances management, etc) as well as during emergency situations (disaster management, multi-agency co-ordination etc). In Vadodara, the ultra-modern integrated City Command and Control Center, located in the central area of the city, will equip the Vadodara city administration to provide faster yet effective civic services to citizens and enhanced safety and security to the public. The integrated CCC will operate both in normal situations (day-to-day city management) as well as during emergency situations (disaster management). Since Vadodara is a flood-prone city, the ICCC will deploy advance warning and weather/environment monitoring elements to handle adverse conditions. Vadodara is also considered city of senior citizens. The integrated systems and solutions (including mobile app with special functional modules for senior citizens) will make life of senior citizen more liveable.

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> **Dr. Vinod R. Rao,**
> Municipal Commissioner, Vadodara Municipal Corporation

Unique features

The CCC will operate on a collaborative framework where input from different government / civic departments such as transport, water, health, sanitization, fire, police, meteorology, etc will be assimilated and analyzed on a single platform; consequently resulting in aggregated city level information. This aggregate city-level information will be converted to actionable intelligence which then would be propagated to relevant stakeholders and citizens. The 100 crore project includes CCTV cameras, smart traffic solutions, environmental sensors, public address system, emergency call boxes, public transit management and various other smart components.

Other projects of Vadodara Smart City Mission like ERP, public Wi-Fi, GIS system, smart mobility / Intelligent Transit Management System, One-Vadodara unified mobile app, etc will be tightly integrated with the CCC. At the heart of the system, there is integrated software solution from IBM, namely IBM Intelligent Operation Centre, which is one of the world-class CCC solutions.

The entire ICCC building is newly constructed, located at Badamadi Baug on Rajmahal Road, Vadodara. Total time for construction of whole building was eight months. A state-of-art 25-seater command and control room has been setup inside the already operational CCC. The first phase of the project, includes following smart elements and systems: CCTV cameras, smart traffic signals with Area Traffic Control System (ATCS) at select junctions, Geographical Information System (GIS), City Bus Vehicle Tracking System, Solid Waste Vehicle Tracking System, Smart Parking Management System.

Other functional areas such as war room / conference room, technical support area, call centre / helpdesk area and CCC management rooms etc are being established. Further, a Smart Data Center and a DR Site is also being established to accommodate ICT computing facility like servers, storage etc.

In Phase II, which is ongoing, following city-wide smart elements will be deployed: Additional CCTV cameras (fixed and PTZ) with 150 km OFC network, Smart Traffic Signals with Area Traffic Control System (ATCS) at overall 33 junctions, ANPR camera and ANPR solution at 25 junctions, environmental sensors at eight locations, variable message display boards at 21 locations, public address system at 13 junctions, emergency call box at nine important locations, vehicle tracking system for fire-brigade trucks, and smart parking management system.

- **A** state-of-art 25-seater command and control room has been setup inside the already operational CCC
- **Other** projects of Vadodara Smart City Mission like ERP, public Wi-Fi, GIS system, smart mobility / Intelligent Transit Management System, One-Vadodara unified mobile app integrated with CCC
- **Other** functional areas such as war room / conference room, technical support area, call centre / helpdesk area and CCC management rooms etc are being established

SURAT

M. Nagarajan,
CEO, Surat Smart City

SMAC Center (Smart City Center) is an administrative control center for SMC.

It is aimed at improving service delivery, optimally utilize municipal assets and bring in synergy between different departmental activities by effective monitoring of city operations. It collaborates data from various domain systems, and enables monitoring of the critical parameters for various activities. It also enables identification of abnormal events and help take corrective actions. Cross department collaboration and early identification of issues will help in improvement of the quality of service. The SMAC Center aims to leverage latest technologies in the field of social media, mobile, analytics and cloud.

Need for SMAC Center

The population of the city is around 5.5 million with the area of 326 sq km. To cater to the city, the taskforce of more than 17,000 employees has been in place by SMC. The budget of SMC is more than 5000 crore. To monitor and manage the huge task, it is required to have a centralized system which can help the city administrators for efficient decision making. SMC provides various services like healthcare, water supply, sewerage, solid waste management, fire and emergency response, ambulance, parks and gardens, swimming pools and sports facility, primary and secondary education, etc. Rapid population growth, extended geography and extended city operations require to have a single administrative control center that enables effective monitoring of city operations and services.

Domains covered

SMAC was launched on June 25, 2016 and in the first phase, the following systems are covered.

- **Property tax system:** This system is used to monitor the collection efficiency and defaulter details. It helps monitor the ward and zone wise performance in terms of demand and collection, defaulter wise
- **VBD Health Survey Application:** This system is used to monitor potential malaria cases, positive malaria cases, follow-up of positive case and water logging/ mosquito breeding identification
- **Complaint Management System:** This system is used to monitor critical complaints, non critical complaints breaching SLA and to review ward wise complaint summary (red, amber, green indicators)
- **Monitoring city operations through CCTV network:** Surat City Police has taken up the Safe City Project. SMC, apart from other stakeholders, is a key partner in this project. Over 600 CCTV cameras have been installed at various critical locations across the city, covering over 100 strategic locations. The feed from these cameras is used to monitor various civic services like road sweeping, road / footpath / divider repairing requirement, road marking, plantation trimming requirement, illegal hoarding, etc

Domains added to SMAC (post-inauguration)

- **Monitoring of door-to-door garbage collection using GPS:** The door-to-door vehicles are required to visit the allocated societies / area during the stipulated time period. These vehicles are fitted with vehicle tracking system and the same are monitored from SMAC Center
- **Streetlight monitoring through CCMS:** With a view to conserve energy, SMC is replacing the conventional street light fittings with LED. The process also involves installation of smart street light monitoring system. Various activities like street light on or off, timer setting, light dimming, etc are controlled from SMAC Center along with daily street light performance
- **Intelligent Transit Management System (ITMS):** SMC has implemented ITMS for monitoring and management of City Bus and BRTS Bus operations. Activities like vehicle allocations, bus tracking, monitoring of operations for speed violation, headway and bunching, trip not initiated, non stoppage, etc are monitored through SMAC Center

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> **M. Nagarajan,**
> CEO, Surat Smart City

- **The** SMAC Center collaborates data from various domain systems, and enables monitoring of critical parameters for various activities
- **The** SMAC Center enables identification of abnormal events and helps in taking corrective actions
- **Cross** department collaboration and early identification of issues will help in improvement of the quality of service

Future planning

SMC has planned to create a dedicated Integrated Command and Control Center for the city. This center will house various departments / entities involved in managing city operations as well as traffic and mobility. There will be two video walls, one dedicated to monitor various civic services and the other for monitoring traffic and mobility across the city. Activities pertaining to the water supply, sanitation (door-to-door garbage collection, container lifting), drainage, streetlight, health, etc will be covered for monitoring under civic services whereas services related to BRTS, City Bus, Traffic Police, RTO, fire, emergency services, etc will be monitored under traffic and mobility. IT-enabled applications will help all the concerned agencies to co-ordinate and support each other for smooth traffic operations.

PUNE

Rajendra Jagtap,
CEO, Pune Smart City

For Pune, the Smart City Operation Center (SCOC) will act as the centralized monitoring and decision making hub for managing smart elements and other systems on real time basis and take appropriate decisions on basis of situations.

The City Wi-Fi system has been established at 199 locations across Pune city. It offers access to the Internet over a smartphone, tablet, or other device to the citizens. This facility will improve productivity of every citizen and provide a service towards digital transformation. The objective of City Wi-Fi element is to provide free City Wi-Fi (limited usage) and paid City Wi-Fi.

The Emergency Call Box at 136 locations across Pune city will help to improve the safety and security of citizens within the city where they can seek assistance from the Smart City Operations Center by pressing a button near them. The system provides facility of viewing video feed received from the calling location which will help operations staff to react in more effective manner. The Public Address System at the same 136 locations will enable operations staff to respond and communicate effectively while dealing with any emergencies.

The Smart Environmental and Flood Sensors at 50 locations across Pune city will enable operations staff to continuously monitor parameters such as temperature, humidity, water levels, noise levels and air quality. This will help to make life environment friendly by creating citizen awareness about environment and also notify citizens for alarming levels from time to time.

The Variable Messaging Displays at 161 locations across Pune city will be used to display the useful citizen information related to traffic congestion, accidents, ongoing roadwork zones, speed limits and key messages about any emergency or disaster.

The SCOC will enable city administration and its stakeholders in the following manner:

Effective decision making

Delivering effective governance by aggregating various data feeds from sensors and all subsystems

Providing interfaces and user friendly dashboards, equipped with standard operating procedure (SOP) and automated actions to minimize human errors

Instant event tracking, event logs and multiple reports generation for effective management

Results achieved

Smart city command and control center has been constructed, equipped and commissioned. The command and control center with the operators is functional and integrated with installed field smart elements. Following is the current status against each type of smart element:

- Design phase – completed
- Procurement phase – completed
- Field deployment and commissioning phase of Smart city operations centre – completed
- Smart element live with operations centre – Over 75 per cent of the total of 732 elements have been installed, commissioned and integrated with Smart City Operations Center
- Integration with applications of Pune Municipal Corporation is in progress
- Conceptualizing and implementation of use cases in progress, 90 per cent of all the features mentioned in the tender are up and running and on the ground. 70 per cent of the elements are integrated with the CCC.

The backend work is in the process of getting completed and it will be closed in the next three months.

"Teams from two states: One team from MP and an IAS led team from Tamil Nadu visited our CCC to learn from how our CCC has been designed, " informs Rajendra Jagtap, CEO, Pune Smart City

Sustainability

PSCDCL has ensured sustainability by three measures: Provisioning monetization to finance the initiatives, including operations and maintenance to ensure support during actual use, ensuring selected products and technologies are latest and proven in the market, PSCDCL has deployed monetization model for VMD and Wi-Fi elements in view of long term sustainability. By offering combination of citizen messages with advertisement on VMDs, it will ensure continuity of VMD operations. Further, Wi-Fi business model allows the service providers to monetize the Wi-Fi system by pushing advertisement and offering data off-loading. PSCDCL has also kept a provision for possible monetization of any additional streams in near future. Therefore this robust monetization framework will allow system sustainability. PSCDCL has also engaged with the same system integrator for operations and maintenance for five years with effective SLA monitoring system ensuring effective continuity and sustainment of deployed systems. The system integrator has back-to-back support contracts with all OEMs and has ensured adequate on-site spares for speedy repairs. While crafting master service agreement, there are multiple SLAs that the system integrator will have to meet within five years of operations and maintenance period. As a part of contract, system integrator and OEM will train operations staff as well as PSCDCL staff for operations and customization of the solution.

The products are being selected ensuring they are best in class, have assured technology and spares back-up from OEM for life time and critical components fall under Gartner's Magic Quadrant, ensuring longer support and upgrades. As a part of process, PSCDCL has ensured that each component, product manual, maintenance manuals, custom-built products details, field drawings, design documents and architecture are stored with all amendments incorporated. The repository has been created with back-up for easy access during project life-time. While designing use cases and standard operating procedures, respective departments and stake holders were extensively involved to capture all critical requirements and those are documented in form of operations manual.

Lessons learned

PSCDCL has deployed continuous learning process during each stage of the project. While executing the projects, some of the key learnings and take-aways include:

- While implementing city-wide smart elements, the requirement of city back bone emerged out as a primary need, which can provide fast internet connectivity at any location. Availability of such infrastructure will also avoid any road works that creates hindrances to citizens in their day-to-day life. To overcome this, PSCDCL with help of PMC is proposing a provision of city owned fibre duct which will offer fibre based backbone for entire city in the future
- During deployment, PSCDCL realized the optimization and relocation required for selecting such locations. With the help of a system integrator, PSCDCL involved Google to derive high footfall locations and accordingly do course corrections for redefining hot spot locations

Transferability

The project was planned on basis of requirements and needs which emerged out through ranking high priority issues as per citizen opinion. While the requirements might vary from one city to another, most of the issues are seen common among majority cities across the country. Therefore the model of deployment of smart elements that Pune city has adapted can be replicated ensuring seamless transferability. Similarly the lessons learnt, improvements carried and challenges faced can be shared among other city initiatives as a knowledge pool that proves transferability in real sense. In fact, Pune city has carried majority of initiatives well ahead of most of the cities. Stakeholders of other cities are already in sync with PSCDCL and are leveraging the firm's knowledge repository.

Transfer

During the phases of commissioning and going live, PSCDCL has planned for adequate marketing, carrying multiple campaigns, providing facility for citizens to experience the smart element and conducting larger citizen awareness. This will ensure the real purpose of the system is justified by serving citizen on larger scale and investment is transferred into real value to citizens. The structure of the project is designed in such a way that system integrator along with all OEMs remain active in the project through execution and operations period. This ensures proper system stabilization, implementing improvements and upgrades and carrying periodic maintenance through safe hands, which already have such exposure. This time will allow PSCDCL and the municipal corporation staff to get trained on the systems, know the system capabilities, understand possible configurations and also training on maintenance. This structure allows transfer of smart assets to the stakeholders in phased manner ensuring complete continuity.

> The CCC will be effective in emergency situations. Recently, the law and order problem in Maharashtra and especially in Mumbai is an example. CCC could have been used effectively to divert traffic and people to areas having less or no trouble
>
> **Pratap Padode,**
> Founder, Executive Director, Smart Cities Council India

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> **Rajendra Jagtap,**
> CEO, Pune Smart City

NAGPUR

Dr Ramnath Sonawane,
Additional Municipal Commissioner & CEO, Nagpur Smart City SPV

There is a separate control center for the Intelligent Transport System (ITS) and intelligent control and detection of crime, owned by the police department. The City Operations Centre (COC) is meant for delivering the basic services by the Municipal Corporation. Over and above, there are 15 more services that will be provided by the different Urban Local bodies (ULBs) under the 'Aaple Sarkar' scheme of the Government of Maharashtra. The COC at Nagpur is almost complete; the trial runs are ongoing. It is equipped with 8x3 video walls, with 24 screens and 12 operators.

The Command and Control Center (CCC), to be operated by the police, is currently under construction. It will have 10x3 video walls and 32 screens. "All the best practices and smart solutions being used globally will be deployed," informs Dr Ramnath Sonawane, Additional Municipal Commissioner and CEO, Nagpur Smart City SPV. All the important functions like disaster management, surveillance, public mobility, water, health, sanitation, energy, environment, governance and GIS based services and connectivity, will be included.

Project Background

The Smart Cities Mission promotes cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'smart' solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas and create a replicable model which will act like a lighthouse to other aspiring cities. The Government of India has a mission to develop 100 cities (the target has been revised to 109 cities) all over the country making them citizen friendly and sustainable. Nagpur is one of the shortlisted cities for the Smart Cities initiative under the Ministry of Urban Development, Government of India. Directorate of Information Technology, Government of Maharashtra has decided to take proactive steps to strengthen the initiative by implementing ICT based 'smart' interventions for Nagpur along with Nagpur Municipal Corporation, Nagpur Police Department and other city administration bodies. In this regard, Nagpur Municipal Corporation (NMC) envisions to "transform Nagpur into the most liveable, eco-friendly, edu-city that electronically connects people with government to co-create an inclusive ecosystem."

Objectives

The Objective of this Project is to create Nagpur City Network Backbone, Nagpur City Wi-Fi, Nagpur City Kiosk and Nagpur City Surveillance. Subsequent phases will comprise ICT interventions on solid waste management, parking, street lighting, traffic management, intelligent transport, health, disaster management and water management.

Benefits

Smart City means it has everything; it can improve life of People who live in Nagpur city and make them smart citizens. Smart Governance and Smart Education means to make governance efficient through ICT Interventions and eLearning. Smart Healthcare can improve health services in the city with more hospitals and providing healthcare information to citizens. Smart Mobility means it can help reduce the travel time within the city; additional infrastructure will help in commuting. Smart Infrastructure means it can help to have smart parking and smart strip in the city. Smart Technology means smart technologies will be introduced in the city which helps to make citizen smart. Whereas, Smart Energy will have smart lighting to save the power consumption across the city.

Solution components – city wide solutions

- **City Network Backbone:** With technology being a key driver for implementation of smart city initiatives across the city of Nagpur, a robust network is one of the key foundational requirements on which future ICT based 'smart' initiatives shall be designed and built. Accordingly, NMC has decided to establish a city-wide network backbone infrastructure that shall act as the backbone for effective implementation of smart city initiatives across Nagpur – 1200-km fibre based city-wide network connectivity (including approximately 650 km ducting); reliable, robust and redundant network connectivity with sufficient network capacity for current and future bandwidth requirements of Nagpur.
- **City Wi-Fi:** In a society with a high demand for digital connectivity on the move, there is an increasing demand for public Wi-Fi services to be made widely available. Understanding this need, NMC intends to provide public Wi-Fi services at identified locations across Nagpur city. These locations shall include market places, government offices, recreation spots, parks and lakes, educational institutes, holy places etc. It will also include internet connectivity for the general public and businesses at 136 locations across the city, and a total of 1,360 access points.
- **City Surveillance:** Protecting citizens and ensuring public safety is one of the topmost priorities for any government agency. It requires advanced security solutions to effectively fight threats from activities of terrorism, organized crime, vandalism, burglary, random acts of violence, and all other forms of crime. CCTV based video surveillance is a security enabler to ensure public safety. Government of Maharashtra, under the smart city initiative, intends to implement a holistic City Surveillance System in City Police Jurisdiction limits in the Nagpur City – CCTV based City Surveillance covering 700 locations; 2930 IP based camera - fixed box; 611 PTZ; 200 multisensors, 100 domes; 20 thermal cameras; and fixed box cameras.
- **City kiosks:** As a move towards an 'approachable city administration', NMC wishes to deploy a number of touch points in form of city kiosks across the city of Nagpur. These city kiosks are expected to act as an extended arm of city administration departments and help in connecting with citizens while promoting 'anytime services' complementing the mobile platform based service delivery. While delivery of G2C services shall be the primary focus of city kiosk systems, in order to ensure broader adoption and ensure business viability, B2C services may be provided through city kiosks – 100 Smart Kisok Terminals (manned and unmanned kiosks) across the city, provide any-time services to citizens of Nagpur.

"The Command and Control Center (CCC) , to be operated by the police, is currently under construction. It will have 10x3 video walls and 32 screens. All the best practices and smart solutions used globally will be deployed

Dr Ramnath Sonawane,
Additional Municipal Commissioner & CEO, Nagpur Smart City SPV

Solution components – "Smart Strip" interventions

- **Smart Strip (from Japanese Garden to Orange City Hospital Square):** This will fetaure smart transport – monitoring and tracking of 237 buses and availability of real time information inside buses and at 158 bus stops, along with mobile application for citizens; alongside other things includind:
- **Smart parking:** Wireless sensor based smart parking system along with mobile based parking space booking – 87 car parking areas
- **Smart traffic:** Adaptive Traffic Control System at 10 traffic junctions along with six voice and three text enabled Public Communication System
- **ICT enabled solid waste management:** Monitoring and tracking of vehicle and real time management of garbage collection points, enabled with two smart bins sensors per location
- **Environmental sensors:** To measure and display various environment related critical information at 10 locations, along with mobile application for citizens
- **Smart lighting:** 383 controller and sensor based smart LED lighting to support automated lighting, sensing and motion detection
- **Control centre and other solutions:** City Operation Center (CoC) with server room for Smart City Solutions along with Network Operation Center; Command Control Center with server room for City Surveillance Solution; Common systems like Integrated Operation Platform, Enterprise Management System and other security and network systems; helpdesk – one each for Command Control Center (surveillance)

- **The** Command and Control Center (CCC), to be operated by the police, is currently under construction
- **NMC** has decided to establish a city-wide network backbone infrastructure that shall act as the backbone for effective implementation of smart city initiatives
- **Smart** Strip will facilitate monitoring and tracking of 237 buses

INTERVIEW

Rajasthan leads India's first government Blockchain implementation

THE FOUR YEARS of Chief Minister Vasundhara Raje-led Rajasthan government has witnessed a slew of digital initiatives. To further the pace on the digital path, the state has become the first in India to have a fully developed Blockchain fabric, and a live use case on Blockchain. **Akhil Arora**, Principal Secretary, Information Technology & Communication, Government of Rajasthan shares his views towards Blockchain implementation and the state's success story with Abhishek Raval

How has the state government used Blockchain technology for managing electronic health records?

The base fabric of Blockchain has been built in a manner that all different applications and services can be moved to Blockchain fabric with complete ease. The platform fully leverages Bhamashah – the state resident data hub for Rajasthan, ensuring that the system adheres and complies to JAM Trinity, integrates with the state identity and can map any benefit being given on the nodes of Blockchain platform itself. The electronic health records are mapped to the Bhamashah ID primarily, and it has been ensured that complete privacy guidelines are complied with. All electronic records, health summary, vitals, reports, prescriptions etc are mapped and are kept on Blockchain fabric, and can be accessed only after due consent of the patient. The system is fully secure, integrated and non-repudiated in nature ensuring genuineness of data.

What's the rationale for using Blockchain and why not any other technology.

We first need to understand the ecosystem in which eHR or complete iHMS is envisaged to operate. In the state, we are allowing access to our e-platforms and solutions to even private sector through the 'Rajasthan Stack' for betterment of service delivery. Here also, the complete health platform would be leveraged by private healthcare ecosystem along with public healthcare, to provide services. In such a scenario, portability with due security is of utmost importance.

The biggest challenge that is being faced by healthcare systems throughout the world is how to share medical data with known and unknown stakeholders for various purposes while ensuring data integrity and protecting patient privacy. Although data standards are better than ever, each electronic health record (EHR) stores data using different workflows, so it is not obvious who recorded what, and when and hence creating a trusted environment for decision-making is a challenge for medical fraternity. The growing focus on care coordination and EHR access across the care continuum has raised questions about how to ensure that multiple providers can view, edit, and share patient data while still maintaining an authoritative and up-to-date record of diagnoses, medications, and services rendered.

With the introduction of Blockchain technology to the electronic health records (EHR), the system securely stores health records and maintains a single version of the truth. Different medical organizations and individuals like doctors, hospitals, labs, and insurers can request permission to access a patient's record from the Blockchain. Patients have more control over who sees their data, while healthcare providers can provide better patient care based on more accurate data.

What are the benefits to the government and citizens with the implementation of Blockchain?

The appeal of Blockchain technology can no longer be denied. This decentralized network can offer a wealth of benefits to a range of users. In fact, it's doing this already. It offers secure, private and immutable transactions by means of a consensus-driven system, resulting in the elimination of a middleman to facilitate transactions. In addition, Blockchain technology paves the way for the integration of artificial intelligence (AI) and machine learning (ML)-based systems. This opens a whole new avenue of high-volume data analytic solutions, which can be used in a wide range.

With an absolute clarity and consensus based sharing of data, with complete privacy of the individual and safety of data being prevalent at all times, Blockchain ensures solution to safety, security, transparency and non-repudiation of data to residents as well as the government – and therefore paves the way for a way more secure technological paradigm.

What is the progress of the EHR project, what's the timeline of completion?

The Electronic Health Records on Blockchain platform is already live. It was inaugurated by the Chief Minister during the Rajasthan Digifest, Udaipur on December 3, 2017. In addition to Electronic Health Records, the state is also evaluating multiple other use cases on Blockchain, and shall come out with some new advanced implementations soon.

Has the state used open-source initiative or a proprietary product?

The Blockchain platform is built on 100 per cent open-source platforms, and has been built in-house at the Department of IT&C itself. The department has a strong team of Blockchain architects, analysts and developers, who take care of the overall implementation.

Any plans on synergising the Blockchain platform with other state governments or the Central government for various purposes, or maybe only during specific occasions?

The state has already built a base Blockchain fabric, and has already made live a use case. With the technology being on priority, we welcome all other states as well as stakeholders from Central government to discuss and partner with us over future endeavours on Blockchain technology.

Data Analytics: The new asset and opportunity for government

INDIA HAS CREATED perhaps the biggest data repository in the world. It now faces the challenge of using this mammoth information for better governance

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In modern days, data is an asset and opportunity, and often it has been referred to as a the new oil. Interestingly, India stands tall in this field, thanks to massive focus of the government on digitalization. Today, perhaps India owns the largest complex of data gathered via digitalization of records for purposes like IDs, passports and payment of subsidies. There are a number of areas where huge projects have been implemented, like Aadhaar, passports and the inception of MCA 21, a Mission Mode Project of the Corporate Affairs Ministry. All this has opened up a lot of opportunities to apply this data to improve the citizens' customer experience, to improve government efficiency, especially in delivery of services and to boost business.

According to experts, big data analytics, which then merges into fields like deep learning, machine learning and artificial intelligence (AI), has tremendous possibilities. With internet of things (IoT) now coming onto its own, a whole new world is opening up for data. Big data is characterized by its volume, variety and speed and the analytics involves its processing in a cost-effective way in order to draw conclusions for their useful application. Fortunately, in all three key areas, there has been growth – processing power has increased by 40 per cent in last couple of years and the cost of storing data has also gone down by 500 per cent.

However India, which has created the biggest data repository in the world, now faces the challenge of using the information for better governance. "In India, both state and central governments are embracing this new data age. Government organizations are collecting massive amount of data every day and with Prime Minister Narendra Modi pushing Digital India and tech-driven Goods and Services Tax (GST), data collection has spurred like never before. Hence, use of data analytics tools to make sense of the mammoth amount of the data is an inevitable," says Dinesh Tyagi, CEO, CSC E-Governance Services India.

With government having massive amount of data, it has led to governments improving their efforts to take initiative for big data analytics. For example, recently Vasundhara Raje led BJP government in Rajasthan has signed an agreement with US-based data warehouse firm Teradata to help them create a common data and analytics platform that can be used by all government departments across Rajasthan to collate and utilize data effectively.

According to the state government, this is being done to provide a big data analytics environment to analyze state level data in order to enhance citizen services and engagement as well as increase the efficiency of departmental cross functional operations. The 'Big Data Environment project' was created to benefit the state by "future-proofing" its IT architecture in order to build a state level integrated data platform that will become a common source of structured and unstructured data for data mining and analytics initiatives for all government departments.

The project enables a 360-degree citizens' view by unifying multiple databases. Department of Information Technology & Communication (DoIT & C) is now able to improve the user experience of government services hosted on eMitra website by analysing the log, effectively addressing multi-lingual citizen grievances along with sentiment analysis. It will also be able to offer actionable intelligence to different departments to improve citizen services.

"Presently, government data is managed within department-level silos assisted by department-centric IT applications. Under the new 'Big Data Environment' project, we have developed solutions to hold integrated data being generated real time across the state to help better address analytical requirements that facilitate state-level decision-making. Implementation of big data analytics solutions will empower government departmental users with improved analytical insights and thereby enable more effective and timely decision-making as well as improve the citizen engagement processes helping the authorities to deliver better services and greater citizen satisfaction," informs Arun Chauhan, Additional Director, Department of IT and Communication, Government of Rajasthan.

On the other hand, some of the states that have been very active on the use of technology for the governance like Andhra Pradesh, Telangana and Karnataka among others already have a data analytics policy in place. The Andhra Pradesh government is employing big data and analytics to strengthen the decision-making process and improve governance.

Andhra Pradesh has digitized the data of every department and launched real time monitoring of the performance. The Chief Minister monitors the performance of each department through his CM Office Real Time Executive (CORE) dashboard. Unlike conventional method of updating data using excel, the data is updated automatically.

"With data analytics, we are getting insights into the performance of government policies, analyze trends and predict the future behavior of people and systems so that timely corrective measures could be taken. This helps in proper insight and corrective intervention for better governance," says J Satyanarayana, Advisor to AP Government.

Similarly, state of Odisha is banking on data analytics technology for ensuring that the least served areas get the benefit of government welfare schemes. For example, when LPG distribution centre was being opened, it was decided that centre would be opened that need them the most and not where LPG companies see the most demand. This was done with the help of geo spatial analytics.

The good thing is that today, there are different sources of data that is available and data collection has become easy, this has led to innovation as a diverse data from specialized data sources drastically improves the accuracy of predictive and prescriptive analytics.

"Traditionally, these advanced analytics were generated using statistical models created on only representational samples of data. Once these models are created, a second relatively larger set of data was used to test or validate these models iteratively. Upon successful validation, this model was used to evaluate or score test of entire data set. With the advent of big data, the first pass statistical model itself is created using much larger, and at times complete data sets. This not only allows introduction of additional predictor variables but also increases forecast accuracy many folds. Therefore, it may be concluded that what was the bad situation of yesteryears due to multiple source data systems, in silos processing etc, is the welcome thing in analytics when done on big data platforms," says Amit Sharma, Principal Technology Architect, Infosys.

According to analytics experts, analytics will no longer be an after-thought, rather it will become an integral part of government service delivery. Because government organization needs to know about the effectiveness of their service delivery and hence, they would require the tools to measure efficiency and performance. They need to know how much work is being completed in order to determine how well it is operating.

All the good things come with some challenge, so does data analytics. It faces challenges like security and shortage of human resources. A data warehouse has huge challenge of cyber security because in one case of breach, all the data could be affected. Therefore, there are experts who say that rather having a data lake, government need to think about collaboration such as how police and Aadhar can collaborate. "We need to think how police and passport division can collaborate for verification of passport, leading to faster delivery of passport to citwizen," adds Golok Kumar Simli, Chief of Technology, Passport Seva Project, Ministry of External Affairs.

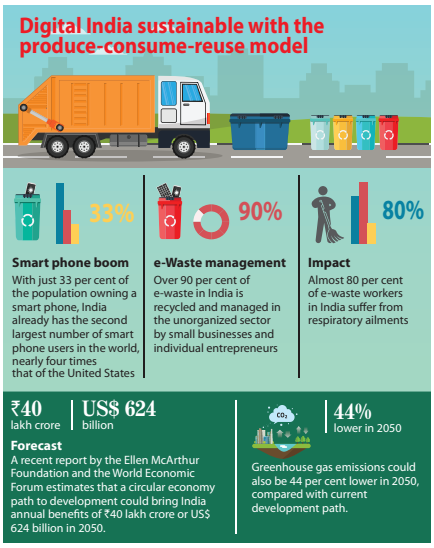
On human resource challenge, Satyanarayana comments, "We need to build a cadre of data scientists in the public sector. If they know the domain well, then they can do a good job."

OPINION

Digital India will only be sustainable with the produce-consume-reuse model

DATA CENTERS are one of the largest contributors to global warming, contributing a similar amount to global greenhouse emissions as the aviation industry

Urvashi Aneja



The latest Global E-Waste Monitor places India as one of the highest contributors to global e-waste, generating over two million metric tonnes in 2016. Posing serious health and environmental risks, growing e-waste represents the hidden cost of our increasingly digital lives in an information society. With just 33 per cent of the population owning a smart phone, India already has the second largest number of smart phone users in the world, nearly four times that of the United States. The amount of e-waste generated will exponentially increase in the coming decade as the cost of consumer electronics decline, middle-class incomes rise, and the frequency at which devices are discarded increases.

As governance instruments are increasingly digitized and industr y re-repositions itself to leverage Industry 4.0 solutions, the generation of e-waste will become a byproduct of institutional choices rather than consumer consumption and behavior alone.

India is already a leader in the management and recycling of e-waste. But, over 90 per cent is managed in the unorganized sector by small businesses and individual entrepreneurs, typically from low-income marginalized communities, and often women.

Almost 80 per cent of e-waste workers in India suffer from respiratory ailments due to improper standards and four-five lakh children are engaged in e-waste collection without adequate protection and safeguards. The bulk of the dirty and dangerous work supporting our march towards an increasingly digital society is done by those who have the least access to technology gains. Government regulations for the management of e-waste, on the other hand, are becoming more relaxed, presumably as a result of industry pressure. To streamline e-waste management, the government notified Electronic Waste Rules in 2011, based on the concept of Extended Producer Responsibility (EPR).

EPR makes manufacturers of electronic products responsible for the end-of-life management of their products, including setting up collection centers. By shifting the burden of EPR to manufacturers, the EPR framework, in theory, creates incentives for more environmentally friendly design. But, the impact of EPR rules on manufacturers have been minimal, at best. The recently released Draft Notification (2017) by the Ministry of Environment, Forest and Climate Change further relaxes the EPR rule by reducing the e-waste collection targets for industries.

While the efficiency and productivity gains of Digital India are to be welcomed, growing e-waste should draw attention to the broader sustainability of a digital society. Data centers, for example, are one the largest contributors to global warming, contributing a similar amount to global greenhouse emissions as the aviation industry.

This amount is expected to triple in the next decade. In many ways, the sustainability challenge is a 'wicked problem' – where possible solutions create a new set of additional challenges and the choice between available alternatives is largely about competing values.

For example, data centers powered by renewable sources of energy such as solar provide a greener alternative, but will also create new forms of e-waste in the form of photovoltaic cells and panels. An unverified estimate suggests that India's projected solar capacity of 100GW by 2022 will create 7.76 million tonnes of e-waste. Without adequate and preemptive consideration of how this waste should be disposed and recycled, renewable energy solutions can create new negative externalities.

For Digital India to be sustainable, we need to develop anticipatory knowledge for preemptive solutions. It is an opportune moment to think of the broader architecture of a digital society, one that avoids getting locked into unsustainable models of production and consumption.

The argument that such considerations are premature for India, given high levels of poverty and unemployment, are misplaced. Enquiries into the sustainability of Digital India are no less urgent than the need for sustained job-creating economic growth. These issues should not be addressed in a sequential or linear manner, but in parallel. Else, we will be only partially aware of available choices and their consequences, creating new forms of technological and economic lock-ins.

The value-based choice demanded by the "wicked problem" at hand is one that embraces the idea of a circular economy — one that departs from the linear economic growth model predicated on "take, make, dispose" to embrace a growth model based on creating closed loops of production, consumption, and re-use. A circular economy model is built on the idea of designing out waste and pollution; keeping products and materials in use; and regenerating natural systems. In many ways, India is already a leader in the circular economy.

Alongside, the management of e-waste and other forms of recycling, high levels of repair and reuse are distinctly observable. A number of reports note that the informal waste management sector in India works better than systems in many industrialized economies.

A circular economy vision for Digital India would include organizing informal waste management systems, including safety and social protection initiatives for workers; revising and tightening existent e-waste rules for increased accountability by manufacturers both in terms of durable design and responsible disposal; green data centers; and building future Smart Cities with a view towards energy and water efficiency, among others.

A recent report by the Ellen McArthur Foundation and the World Economic Forum also estimates that a circular economy path to development could bring India annual benefits of ₹ 40 lakh crore or US$ 624 billion in 2050. Greenhouse gas emissions could also be 44 per cent lower in 2050, compared with current development path.

Unsurprisingly, Nordic countries are leading the way in promoting the idea of a circular economy. Sweden recently announced tax breaks for repair related activities and Finland hosted the first global conference on the circular economy earlier this year. The circular economy provides an opportunity for India to capitalize and leverage an already existing culture of circular activities, and promote it as a policy agenda that will create new forms of employment while facilitating sustainable environmental management.

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Technology players open for more local collaboration to drive Smart Cities Mission

INDUSTRY COLLABORATION has given a major push to start-ups and niche solution providers, who otherwise, face financial crunch and long lead time to create end-to-end solutions

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The vision to have 100 smart cities by 2020 is almost catching up fast with most of the leading technology giants like IBM, Microsoft, HPE, Cisco, Honeywell, LTE and several others. Each technology player is vying hard against to get a small pie into its kitty. Technology will be the backbone of driving this smart cities project. Hence, it is crucial for large techno-commercial players to go indirect and open up for collaboration of like-minded technology partners and app developers to take the vision forward.

Let's first understand where we stand today and what technology partners are offering different solutions in this domain.

In a short duration of 2.5 years, the first round of 20 cities was selected in January 2016, and last 30 cities were selected as recently as June 2017. Smart City Mission has a strong focus on innovative digital technologies and dovetails with Digital India vision areas – digital empowerment of citizens, making government services available digitally, and creating digital infrastructure as utility to every citizen – very closely.

Digital technology solutions such as surveillance systems lead to greatly reduced crime and improved safety of residents, particularly women. City-wide Wi-Fi networks have improved communication among citizens as well as that with various service providers. E-governance and citizen feedback management has led to improved social cohesion by increase in opportunities for citizen engagement, reduction in social inequities, and reduction in response time for services for business. Integrated traffic management will increase the traffic speeds and reduce traffic congestion, hence providing cleaner air for people to breathe. These are some of the real time projects, which are integrated with an unified Integrated Command and Control Center (ICCC) in cities like Bhopal, Gwalior, Jabalpur, Indore, Ujjain, Satna, and Sagar.

As per the Housing & Urban Affairs Ministry, the Smart Cities Mission is progressing at a brisk pace – 90 cities have been selected so far. The selection of 10 more cities will be announced shortly. There are about 3,000 projects worth ₹ 140,000 crore at various stages of implementation. Tenders for projects worth ₹ 16,000 crore have been called, and more than ₹ 1 lakh crore worth of projects are being readied for issuance of tenders. This remains one of the fastest ever project implementations at this scale and geographic spread in urban sector.

More technology collaboration in the pipeline

As the process of establishing 100 smart cities gathers momentum across India, several technology players such as HPE, along with Intel and other smart solution providers, are working jointly to tap this golden opportunity along with governments and city administrations to accelerate time to value and deliver new, innovative, and interactive services to the citizens through IoT.

Recently, the Bhopal Smart City Development Corporation selected the HPE Universal IoT Platform to create India's first cloud-based ICCC, which with its multitenancy capabilities, will be able to run several city command center operations in parallel across seven cities in Madhya Pradesh.

Additionally, HPE has launched its first Customer Experience Center (CEC) to demonstrate IoT-based smart city solutions that address the complex and fragmented ecosystem that exists within IoT environments and HPE can help implement an infrastructure that interconnects the various components of the end-to-end solution.

Som Satsangi, Vice President & General Manager, Enterprise Group and Managing Director - India, HPE, says, "At HPE, we are working with various technology partners, be it Intel, 2020 Imaging, Map my India, Fast Lane, Qizon to build end-to-end smart city solutions. At the CEC, we have integrated with seven live command and control centers and are giving full experience to our partners and customers. Almost, 80-90 smart cities' tenders have already come up in last two years. To accelerate the speed, industry collaboration is the way to go. Today most of the cities in India are having free Wi-Fi infrastructure and we are among the leaders in this. By partnering with ISVs and solution providers, we will be seeing incremental increase in our pace of smart cities journey."

Express Computer reached out to various ISVs and solution providers to understand how these companies are getting aggressive to tap this opportunity.

Sapna Ahuja, Chief Operations Officer, Map my India, says, "Map my India's endeavor has always been to provide maps and location based solutions to make Indian cities and businesses globally competitive. For the last six months, we have been collaborating with HPE to bring our bespoke smart city solutions to their UIoT platform such as grievance redressal, solid waste management and smart street lighting. Map my India's Map Engine (which can be deployed in-premise or on the cloud) in combination with HPE's UIoT platform will create a powerful foundation for IoT-based smart city solutions."

Similary, Aman Chawla, Founder, Aatapaha Smart Lighting (an unit of Nav Shikha Polypack), shares, "Since we (Aatapaha) are a strong player in street light automation space, with successful projects in over 70 locations in India, it was clear to us that to find similar success in the smart city space, we would need to partner with the best solution provider for smart city. A challenge we have faced is that most smart city RFQ describe theoretical products, with limited reference to any standards."

India's Smart City Mission is different from that of the developed world. The developed world has all smart elements already in place and there is enough amount of data that is available for conducting data analysis to deploy strategies for better management of the sub-systems. In India, we are just making the ICT infrastructure and deploying smart elements. 2020 Imaging's state-of-the-art I3OP platform provides ICCC visualization layer to the northbound of HPE's UIOT platform - giving a common operative picture for the Smart City. "We shall shortly witness some lighthouse projects that will shift the paradigm of the solution centric Smart City vertical. Smart City encompasses Smart Buildings, Smart Enterprises and a Smart Environment for us to live and that is the Future City vision from HPE. We are looking forward to being the partner that enables realization of this vision," informs Kamesh Ramamurthy, Chief Strategist and Mentor, 2020 Imaging India.

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- **There** are about 3,000 projects worth ₹ 140,000 crore at various stages of implementation
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Cyber Surakshit Bharat: A novel step to empower the cyber security posture of India

AS INDIA GOES more digital, the cyber security initiative is a landmark initiative

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Setting up of Cyber Surakshit Bharat (CSB) by the Ministry of Electronics and Information Technology (MeitY), in association with National e-Governance Division (NeGD) and industry partners, have been welcomed by the Indian CISOs community. It is the first public-private partnership of its kind and will leverage the expertise of the IT industry in cyber security. To begin with five-six IT companies have come forward for some big role such as Microsoft, Intel, Wipro, Redhat and Dimension Data to bring the best experts to help train and create capability to deal with the latest cyber security challenges. It is targeted at CISOs and technical officials from the central government, state governments and union territories, public sector banks, public sector units and defense forces, defense PSUs and technical arms of the Air Force, Army and Navy.

With increasing importance of identifying roles of the CIOs and CISOs in both government and private institutions, government has taken various steps to strengthen the role of CISO as it is possibly a challenging role in any organization. Today, most of the ministries have put CISOs in place in themselves, organizations, various departments, financial sectors, in telecom and many key areas and trying to put in all efforts to equip them, give them the tools, organizational strength to perform their goals better.

MeitY had earlier issued a directive to all central government ministries to appoint a Chief Security Officer (CSO) to ensure cyber safety, in addition to issuing an RFP to all empanelled auditors to conduct a cyber security audit for government departments.

Commenting on the launch of Cyber Surakshit Bharat initiative, Deepak Agarwal, General Manager, Indian Oil Corporation says, "It is a good step taken by the GoI in its endeavor of strengthening the cyber security posture of the country. It is pertinent now that the key persons responsible for security in any organization / setup, that is the CISOs, be trained and be aligned to the common country goals. The CISO community certainly stands to gain from the initiative. The CISOs are always under pressure from various sections and especially in a moving goal-post environment, it would be really beneficial if they are equipped with knowledge to handle specialized tasks."

Anant Maheshwari, President – Microsoft India, says, "CSB is a significant initiative. Security and data privacy is the highest priority for Microsoft. We invest over a billion dollars every year globally in this area. Here in India, we launched our Cyber Security Engagement Center in October 2016 to build local capabilities and are now proud to be part of this important initiative. As part of this initiative, we will bring the best experts to help train and create capability to deal with the latest cyber security challenges."

Digital is way of life today and whether is private sector, public sector or government or general public, there is a huge focus on digital. While one gives impetus to digital, it is important to focus on cyber security.

"I personally think that the Cyber Surakshit Bharat initiative to strengthen cyber security ecosystem in India is really a fantastic one and a very timely move. A really commendable part of this is that it is a public-private partnership where expertise of government and IT industry in the country will be harnessed to make it a big success. One of the key pillars of cyber security is awareness and education. This program being focused on principles of awareness, education and enablement is really commendable. CISOs play a pivotal role in the organizations as the center-point of all efforts and it is really nice that the plan is to start with awareness sessions and sharing of best practices with them and then take it further in their organizations. It will help CISOs to enhance their own knowledge and capability and help them strengthen security in their organizations," highlights Vijay Sethi, CIO and Head – CSR, Hero MotoCorp.

Areas CSB can equip CISOs

As the digital assets of these large public companies are getting bigger, CISOs would have to be more proactive than reactive. In the case of oil behemoth, IOCL has a vast network – both physical and virtual. Obviously to manage the cyber security of this huge setup requires a lot of effort; and in a dynamic environment, the priorities keep on changing with the surroundings.

"We are now focusing on bringing complete visibility of our network on to a common platform – primarily to converge the IT and OT networks at a central point to enable us to ensure better security management of both the networks. Also, we are focusing on targeted attacks and are equipping our endpoint and gateways to detect and respond to any such attacks," informs Aggarwal.

Similary for Heromotocorp, cyber security continues to be one of the top agendas and as digital footprint is increasing so is focus on cyber security while the company will continue with focus on triad of people (awareness), process and technology, with increased usage of mobile, technologies related to mobile security will be a priority. In addition, enhancing dashboards and real time view of overall threat and risk landscape and mitigation thereof would be priority. Thirdly, the company will start exploring technologies like Machine Learning and Deep Learning as to how they can help further improve our security posture.

Where is the role of CISO heading?

CISOs role is important is now a banal statement. In future, its importance is only going to increase, with so much happening in the country on the digital front. The era of responding post an attack is going and the CISOs have to be preemptive in their strategy. One thing that CISOs have to learn from business is that no matter how much one is prepared for any eventuality, there would still be cases which are unseen and hence one cannot be complacent in any stream.

CISO role is becoming more and more critical and is moving beyond being just the technology and support providers for information security but being trusted advisors of the business in overall risk mitigation. One thing CISOs need to change is change their 'language and approach' from being technology centric to business centric so that business can relate to them more.

'Unified Communications has now evolved into an overall enterprise story'

OVER THE YEARS, Unified Communications has generated a more approachable image for itself, with many customers realizing its importance. **Mary T McDowell**, Chief Executive Officer and Member of the Board, Polycom, in an interaction with Nivedan Prakash, shares about the market evolution, challenges and the company's strategies

How has the market evolved in the past few years? It used to be a pure video conferencing industry and it has become more of a collaborative industry. How has it evolved and how is Polycom jumping into the opportunity?

People used to think of video conferencing as very high end, expensive, you would put it only in very large board rooms and things like that; largely because some of the consumer things going on – people getting used to Facetime, etc. So if you are a millennial addicted to your phone, you got to have the same tools that work on your phone even though you may not be in the boardroom. This is putting a lot of pressure on corporations to bring collaboration solutions across the enterprise in a way that hasn't happened before. As a vendor, we say that we are going to have great immersive conference rooms, but we also need to think about huddle rooms and everything in between so we have the right size solutions and price solutions to video-enable the whole enterprise.

When you interact with customers, do you see any kind of commonality in terms of requirements they are looking for, or does it vary from vertical to vertical?

A common thread is, when people start bringing in video more broadly across their campus or state, they are surprised with how much video is actually consumed. We have seen this with some of our largest consumers. We knew people wanted video but when you make it easy and make it pervasive, almost all of a sudden, all interactions start using video so the number of video meetings and video starts to grow – many customers have been surprised at that. All of a sudden, it becomes about how you do business and it really takes off. For example, if I wanted to have a meeting with someone, we would get on a video bridge so that we can get on a call together and there is a lot of consumers like that; so it becomes really pervasive. Then, there are specific vertical requirements – on the industry, price might be a factor, or security for things like healthcare so some of those things can be vertical specific.

Earlier, UC was percieved as costly, and we know that UC as a solution was used to cut down on travel cost, rather than invest on solutions and reap the benefits out of it. Has that thought process of customers changed?

Definitely, because it does not take a million dollars to set up a conference room, we can provide an immersive solution at a fraction of that cost. One large customer said that they used to frame it as how many flights can we avoid taking. But now particularly for some of the millennials, it is about having the right work-life balance. We used to recruit kids straight from the university and for some of the jobs you had to spend money on air travel and now some of the millennials don't want to live like that; but you want their expertise. They can have the lifestyle they aspire to and companies could take advantage of their expertise so it is a different type of framing what the benefits are and it gives you access to the best and brightest talent because you can make them productive without forcing them.

When you interact with customers, what kind of challenges do you come across that well addressed by the kind of solution offerings you have currently?

Earlier UC was kind of its own island and now you see it folded into overall enterprise story; so how it interacts with messaging and allows people to interact and is why the partnership with Microsoft has been such an important piece to us, because the first thing people ask is how is it going to work with their email, with messaging, teams because we don't want a standalone island, we want something that is part of our larger collaboration strategy and I think that is very different.

Could you further elaborate on your partnership with Microsoft?

Polycom had been working with Microsoft since 2012, but as you may remember in 2016, we went private – Siris capital who took us private actually interloped on a deal. We were about to be acquired by Mitel, but Siris stopped that deal and one of the parties that were very influential in making that deal happen was Microsoft, because they did like the prospect of Polycom falling into Mitel's hands because Polycom was a strong partner for them and they wanted us to stay neutral and not be a company with our own PBX or back end capability. It was crucial for Microsoft that Polycom continues to innovate and sustain the partnership and so we did a new commercial around our arrangement with Microsoft where there is a joint collaboration from an engineering standpoint as well as joint blending of engineering projects. So that has been very important first for Skype for business kind of solutions, and now with the team's migration, there is a lot of projects going on as well, so those enterprises can be ready as they migrate to teams.

Cloud was a boardroom talk; now we are seeing many deployments happening. Will Polycom, as part of the partner ecosystem, collaborate more with cloud service providers?

The common installation with Microsoft customers is hybrid implementation, they have skype for business on-prem and they are starting to augment that with cloud capabilities. Not many have made the leap to be totally on cloud, but they are on that journey and Polycom solutions can work well on-prem and also interact with the cloud. We also have a cloud service that is hosted on Azure that will allow compatibility. For instance, one might have been a long-time Cisco customer and wants to migrate to Microsoft, but doesn't have conference rooms full of Cisco gears and doesn't necessarily want to rip them out. Herein, we have a cloud service that will allow Cisco gear to work with Microsoft services. It is a great strategy for us to get in the door of Cisco accounts.

You have been talking a lot about partnering with competitors. Is it a conscious decision and how do you see this integrating so that you are well geared to any market requirement that may come up?

It is a conscious decision and we are actively driving it; as we see the growth of Microsoft, Zoom, Blue Jeans, we will continue to offer our own video infrastructure for people who want to have on-prem or private cloud. However, let us also embrace these high growth companies and partner with them to bring Polycom end-points to customers who want to leverage cloud solutions.

What are some of the key strengths of Polycom offerings that are creating a difference in the market?

The devices themselves offer best in class audio and video capability. We have world class engineers dedicated to audio algorithms. For example; when you buy our product, it stands alone in terms of capabilities that it can deliver. More than that, as a customer, when you buy a Polycom end-point, you're not locked in to a particular backend solution. You can connect it to a Polycom backend or any one of these (interoperability).

What is the idea behind collaborating with VaaS?

They are high growth, highly funded companies backed by a VC. They are attracting customers who thought that video conferencing was too complicated for them – it is a simple to deploy solution. When we look at the strengths of our end-points, it would be crazy to not attach to those rocket ships to participate in their growth. From their standpoint, if they partner with us, we have enterprise selling capabilities, great enterprise channels and higher end products that bring them up market as well.

Andhra Pradesh to complete FSOC network across the state within a year

ALTHOUGH THE GOVERNMENT provides optical fibre connectivity to every home, there are possibilities of someone tampering the cables for unethical purposes. That's where Free Space Optical Communication (FSOC) plays a role. It's being developed by Google. FSOC provides high speed wireless internet connectivity to a distance of upto 20 km. **J A Chowdary,** Special Chief Secretary to CM & Advisor to the Government of AP speaks to Mohit Rathod and Abhishek Raval

Could you elaborate on the Free Space Optical Communication (FSOC)?

Although we are able to provide optical fibre connectivity to every home, there are possibilities of someone tampering the cables for unethical purposes. That's where we want to use the FSOC. It's being developed by Google which earlier used this technology for communication with the International Space Station (ISS). The same technology is being commercialised and for the first time in the world, Google wants to use it in Andhra Pradesh. The company will also manufacture the devices in Visakhapatnam. One interesting thing about this technology is that connectivity can be established in a short time.

Which are the areas that FSOC will cover in the state and how many devices will be deployed?

The initial deployment will be in the tribal areas – they are largely unconnected. With this implementation, the tribal population can interact with government officials; even the Chief Minister through video conferencing. It will also enable digital healthcare services, wherein patients can speak to doctors through digital means. Similarly in education, teachers can conduct classes digitally; and e-commerce can also be extended to these areas.

FSOC takes no time to be deployed because there's no big installation cost involved. When we conducted an experiment, the communication was set up within just an hour. These devices will be deployed wherever it is necessary to provide the backhaul network. The entire FSOC infrastructure will be developed in the state within one year. Google is also looking in the country as a market for these devices, and is even planning its export from India.

Could you shed light on the Andhra Pradesh Fibre Grid project?

The reason why the Chief Minister, for the first time in the country, thought about having the fibre in every home is because, for the success of the Digital India program, it is imperative to have the basic digital infrastructure. It will result in the availability of high speed internet connectivity to every region. After demonetisation, there was no connectivity in most places, thereby also impacting digital payments.

There are several reasons why urbanisation is happening. One is lack of good quality education; second is inadequate healthcare facilities; the third is that the middlemen are taking away farm produces and goods. Due to the absence of internet connectivity, e-commerce is also hindered in these areas. These days shopping is done through e-commerce. For someone to sell locally produced handicrafts for instance, the best platform is e-commerce. Hence realising the importance of these applications, our Chief Minister thought about bringing fibre connectivity to every home, which will enable digital infrastructure for all the sectors such as education, healthcare, e-commerce and so on.

This will also help in addressing grievances; digital interface between citizens and the government will bring convenience and also eradicate corruption. The slogan we are working on is 'Invisible government, good governance'. For this, digital infrastructure is required and bandwidth is essential. Looking at these factors, we discuss internally how we can build digital infrastructure through optical fibre. Initially we got a costing of about ₹ 5,000 crore and it will take at least about two years, but our Chief Minister said that we don't have that kind of budget and though if we can use the same Infrastructure used by the cable television providing services. They draw the cables through electrical poles, and that's the approach we are also using thereby bringing down cost to `330 crore. The timeframe has also been reduced to six to eight months. That's how the AP Fibre Grid project was conceived. We are glad that President Ramnath Kovind has now inaugurated this project.

Technology is a good equalizer, creating a level-playing platform for the haves and have-nots. In a country like India, technology is the only way for addressing the issues of the common man. Using this we are able to provide connectivity such as phone, digital television, and internet – through which a vast amount of knowledge on various topics such as Blockchain can be gained. Another important thing the Chief Minister thought about is financial empowerment solution for increasing farmers' income. Pilot project for this has already been started with one company. Once this is implemented, villagers can earn additional income through digital works. This will facilitate growth for the rural economy.

Please elaborate on the Andhra Pradesh Surveillance Project.

It is not possible for the police to ensure total surveillance through patrolling, so the drone technology can be highly useful. Drones can follow any suspected vehicle, making it easier for the police to trace it. Likewise, we are identifying many such applications. Another application of drone is that of monitoring agricultural lands for information on crops and land damage. It can also collect data, for the last three years for instance, and guide the nearby agriculture officer on predictions regarding crops. We are trying to take visual data of crops to check infestation. Similarly, drones can also monitor the rural road network and status of under-construction roads, which further ensures quality infrastructure. These are the reasons behind setting up of Andhra Pradesh Drone Corporation. A lot of companies manufacture drones in the state and we are going to use them for law and order, agriculture and infrastructure related purposes. In terms of surveillance, we are now connecting surveillance cameras, helping the police to nab the culprit in real time. We want to provide these services to the people on a subscription model.

Could you shed light on the latest updates in Blockchain?

Providing a push to equalization and democratization of the government also involves some threats. When everything is put in digital form, there is also a risk of cyber threats. To curb this, there's a need to have a robust cyber security mechanism. Hackers are now using AI-powered bots to conduct attacks. With these threats, citizens lose interest in digital systems. The Chief Minister has said that the government will ring-fence all the digital assets by end of 2019 – all the digital assets of the Andhra Pradesh government will be re-fenced through Blockchain. We have already completed a couple of pilot projects, and recently we had a meeting with all the department heads on the execution plan for implementing Blockchain across the state. We have already got a project named 'AP Blockchain 2019'.

Could you brief us about the Real Time Governance Center at the Secretariat Building in Andhra Pradesh?

It is a command and control center located at the Chief Minister's office in Amaravati. It provides end-to-end connectivity to every district administration. We also have a big call centre – operated 24×7. The Chief Minister urges real time monitoring of every project through drones. The Chief Minister, in his chamber itself, has access to the digital interface of the RTG, wherein he can monitor. The RTG centre employs about a few thousand people. We have also got Asia's largest Video Wall installed in our command and control center in Amaravati.

Today file movements are also tracked at every moment, under e-governance in the state, helping to identify where the delay in process exactly happens. Using the real time governance mechanism, we are able to issue certificates, measures and redressals. With a country like ours with huge population, there are many complexities and technology helps in real democratization of good governance.

Odisha banks on emerging technology for effective governance

EXPRESS DIGITAL GOVERNANCE SERIES, organized by Express Computer and Microsoft India, focuses on potential of Odisha and how technology can overhaul the existing infrastructure







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With the focus on 'Technologies for Effective Governance', the Bhubaneswar edition of Express Digital Governance Series was organized by Express Computer magazine in partnership with technology giant Microsoft India. Government heads, visionaries, policy makers and IT leaders from the state came together to discuss and debate the great potential that Odisha offers and how technology can overhaul the existing infrastructure for the state.

The conference began with the overview address from Munish Gupta, Director, Microsoft India. He spoke in detail about the impact of emerging technologies on life and how over the years the dynamics of governance have changed due to tech intervention. He said, "Governance has become more demanding as people want services on the go." With the help of video presentation, Gupta showcased some of the futuristic work done by Microsoft India in the area of machine learning and artificial intelligence (AI) and their impact on governance, agriculture and healthcare. He was of the view that government has to re-imagine its role in the light of automation of services, which will happen because of proliferation of emerging technologies.

Delivering his keynote address, Dr C S Kumar, Principal Secretary, Revenue & Disaster Management, Government of Odisha, shared his views on how revenue department is using technology to automate various processes. He was of the view that with proliferation of technology, the vector for cyber attack will also increase, therefore both government and enterprise should adequately invest in cyber security. "With growth of technology, cyber attackers are also becoming smart. So, we have to strategize in a way to minimise the cyber risk," he said.

On the challenge of adoption of emerging technologies in government, he was of the view that only those efforts will succeed that can easily be adopted by people. "Your architecture could be complex, but at the user end, things should be simple," he said, adding that this could only be achieved if organizations keep people in mind while deploying technology.

The Guest of Honour of the programme, Dr Omkar Rai, Director General, STPI, Government of India emphasized on the importance of creating indigenous products and solutions. While highlighting the work done by STPI in promoting 'Make in India' efforts of central government, Dr Rai said, "With the impetus of the government on Digital India and Make in India, there is gradual move of technology adoption across the country. And, this is quite visible from the fact that a large number of mobile manufacturing units is being established in the country." He also highlighted the Government of India's policies like giving incentive to start-ups and people who are manufacturing in the country for promoting entrepreneurship and job creation.

Chief Guest of the conference, Surjya Narayan Patro, Minister for Food & Civil Supplies, Cooperatives, Government of Odisha, concurred the possibilities and challenges of technology adoption in the government. While sharing his tryst with technology, he said that he has been Minister for IT & Electronics and seen the stride made by Odisha in digital empowerment of the people. During his address, he also emphasized on the role played by companies like Microsoft in digitizing the world. He agreed that future is going to be changed by technology intervention, so the governments need to think about the modern way of engaging with citizen. Making reference to Odisha government public distribution system (PDS) and food programme, he said that the government has been able to do it successfully because of the intervention of technology.

Apart from the benefit, he also focused on challenges, especially the challenge of connectivity. He said that without proper infrastructure to connect people, the country will not be able get benefits from emerging technologies. So, basic infrastructure that is sustainable and affordable must be laid down across the country, he said. In addition to connectivity, he also emphasized the risk of cyber security. He said, "With growing cases of cyber crimes, it is imperative that government as well as private companies need to make cyber security an integral part of their technology push."

The conference featured a panel discussion on 'Emerging Technologies for Effective e-Governance' moderated by Mohd Ujaley of Express Computer. The panellists discussed about various challenges faced by the Odisha government and how emerging technologies like cloud, virtualization, mobility solutions could help the state in delivering people friendly services.

Participating in the debate, Rudra Narayan Palai, Special Secretary, IT and Chief Executive Officer, OCAC talked about various e-governance projects being taken by the state to improve citizen service delivery. He said that the Odisha government has a robust system of citizen service delivery and the efforts are being made to improve it further.

Agreeing with Palai, Anjana Prusty, Special Secretary, Science & Technology Department, Government of Odisha said that her department focuses more on research and promotion of science education. "Odisha is in the right direction; the scientific temperament in the state is high, thanks to right kind of policy framework that state has taken over the years," commented Prusty.

Participating in the debate, Vineet Gaur, SeMT Head, Odisha, informed about different IT-related programmes run by the state government. He asserted that state is taking all necessary action to ensure that government to citizen services are provided in friendly way. He emphasized that the next wave will be about mobile. "Our services have to be mobile friendly, because this is the medium on which large number of people is accessing internet," Gaur said.

Sharing his views on cloud technology, Manish Lodha, Director Sales, Microsoft India said that cloud technology has completely changed the way people use to imagine IT infrastructure. Now, they are able to launch services quickly and with less cost. He assured the audience that cloud is more secure than any other form of IT infrastructure.

One of the other key highlight of the conference was the special presentation from Sriram Viswanathan, of Fluentgrid on "Transforming Utilities & Smart Cities through Innovative Solutions." During his presentation, he explained about the importance of cloud and how with the help of Azure platform one can create application on the go.

Express Computer Digital Governance Series: How Nutanix and Lenovo are unlocking the HCI opportunities in govt

IN A WINTRY EVENING of January 2018, Express Computer kick-started its ongoing series of Government focused initiative – Express Digital Governance on the eve of 'World Youth Day' on January 12 in Delhi






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Over 80 government delegates gathered in Delhi to attend the Nutanix + Lenovo joint event – Hyperconverged Infrastructure (HCI) for Smart Governance. Mohd Ujaley, Principal Correspondent at Express Computer, welcomed the delegates to the event. He talked about how over the years, HCI is getting discussed at various government departments as a new age infrastructure, which simplifies data centers by replacing complex storage and servers with a simple, scalable converged solution.

Sensing the untapped opportunities of HCI in the government sector, two leading enterprise cloud solution providers, Nutanix and Lenovo, joined hands to talk about the potential of HCI in the corridors of the government. The event started off with a short video case study of rail coach factory, which showed how the coach factory is adding more efficiency into the systems with the help of HCI.

In an energetic presentation by Naresh Purohit, Head, System Engineer, Nutanix, says, "Given the flexibility and simplicity that hyperconvergence brings to the data center, it should not be viewed as the end point objective, but as a foundation for building an enterprise cloud. Similar to public cloud services, hyperconverged infrastructure solutions enable IT teams to start small and scale incrementally to precisely meet application demands. With an enterprise cloud, IT teams gain the security and control they need to manage their infrastructure with confidence."

Talking about how the government segment is creating opportunities for HCI, Purohit says, "In terms of HCI, government is more mature than enterprise." Presenting a scenario before the IT team in the government, he says, "Most of the time, government departments are struggling to scale up the IT infrastructure as there is a need of a faster roll out of services. The ground reality is that acceptability to HCI in government is seeing an uptake. Some of the state governments who were previously working with the cloud service providers, are now looking for alternatives. Hence, we see huge opportunities for Nutanix + Lenovo solutions."

Besides Rail Factory Coach project, Nutanix is currently working in five states for the HCI and with such event and partnership with Express Computer, the company is looking to start more dialogue with the government. Nutanix has recently won contracts to facilitate Rajasthan government's Esign project apart from a few other government initiatives and see opportunities with the government as an area of growth. He also pointed that in some of the state IT projects, RFPs, government is mentioning for HCI and this is a Nutanix+Lenovo win.

Giving a perspective on how Lenovo is driving his global partnership with Nutanix, Shivasankar K, Head – Sales, Lenovo DCG India says, "Lenovo and Nutanix announced a partnership to deliver a Lenovo-branded hyperconverged appliance powered by Nutanix Enterprise Cloud software. With this agreement, the Lenovo HX series of hyperconverged appliances was born."

A wealth of Lenovo customers is now enjoying a public cloud-like experience in their on-premise data centers with an IT infrastructure that is quick to start, simple to scale and predictable in cost. This allows IT to run at the pace of business when new applications and services can be deployed quickly in a day, not months. Building on the Lenovo achievements of #1 reliability, top in customer satisfaction, industry differentiated security, and more leadership performance benchmarks than any other server vendor provides the ideal foundation on which to integrate the Nutanix software. The combination is looking for more opportunities and driving the emergence of HCI beyond BFSI, IT/ITT services to government.

The event also featured a panel discussion on 'Simpler IT for more agile government', moderated by B K Murthy, Senior Director, MeitY. Satyaki Maitra, Regional Director (North & East), Nutanix; Golok Kumar Simli, Chief of Technology, Passport Seva Project, Ministry of External Affairs, GoI; Lt General Kohli (Rtd), Indian Army and Shivasankar K, Head were among the panelist who discussed about various challenge, opportunities and the role of technology in building the digital economy. The discussion touched upon four key pillars such as building agile digital infrastructure, on demand services, digital empowerment to the citizens. Each panelist expressed their views and committed to build a digital economy with the help of IT as a backbone.

We see sizeable opportunities in storage virtualization, network virtualization and digital workspaces

VMWARE IS SEEING huge success for its Digital Workspace solutions, and is positioning it like a platform. **Sumit Dhawan**, Senior Vice President and General Manager, EUC, VMware, shares how VMware is looking at transforming the current traditional workspace environment

With the convergence of mobility and collaboration platforms, how are looking at positioning Digital Workspaces?

Today, convergence is taking place in terms of just the endpoints that end users interact with, which is something we are all familiar with. There are larger screens, and there are smaller screens. Those technologies are, to an extent, converging because without convergence you cannot build a platform that provides an experienced verification or security simplification, which is what 'Workspace ONE' is built for. Now underlying what has happened in the ecosystem, there's a general standardization that has taken place in terms of how to communicate with these endpoints, and that's what we have embraced. Therefore, we're standing on the shoulders of giants like, Apple, Google and Microsoft which are providing this underlying oasis which we all interact with. They are all now providing these API driven controls which gives us the ability to standardize this. Now when we extend that to collaboration platforms which are more than one, you now look at how people now use multiple applications to collaborate. Office 365 is a big one but it goes beyond that.

For example, in certain specific cases, Slack may be a collaboration platform for certain type of users that are working in a specific application and are now collaborating; but people who are in the field, are collaborating not necessarily with Office 365 alone, but are collaborating with Salesforce because that is their way of sharing information about the clients and customers, not just within the people in the field but within the headquarters and what not. We have taken the application, APIs and all of these application providers, whether it be Salesforce, Slack, Office 365 or the device APIs, and have also connected the two with a single platform. So, the end users get a great experience that is unified, regardless of the endpoint. Today, IT is able to secure all of their information in one way, hether it is with a BYOD or a corporate owned device. So that is essentially the 'Workspace ONE' platform and that answers the question of how collaboration and mobility have come together.

Are you looking at positioning this as a platform? More than a solution or a product, can this become like an OS or a virtual ecosystem? For instance, can this be a hub and spoke system where you have the hub like the 'Workspace ONE' and everything plugs into it together?

We call it a platform, because operating systems can be multiple and this is an OS abstraction platform. It's an OS and application abstraction platform. This abstracts the two so that you don't have to worry about one at a time, since the marginal cost effectively becomes very high.

So this takes me to your second question, if we were to think about just the world of desktops, what did IT do over a period of 15-20 years? They, standardized the cost, standardized the management and cost, and when they moved, they did the same. Now if you were to expand to what devices people will interact with, even before you go into how consumers interact with IT, in the context of workforce and the tech devices that people interact with, you put yourself in the context of multiple use cases; whether they are drivers in the trucks, or in the context of back offices, or maybe a banker trying to surf clients in a branch.

In either of these cases there are will be devices that people will either wear or will have in their surroundings. Now all of these devices will not be just passive devices. They're not just sensors, they will do some compilation and they will be collecting data. Now what we do as part of our platform is to enhance the same technology because the underlying technology is the API abstraction, security and giving experience. So, we're doing the same thing that we've done between desktop and mobile in taking it down to other devices. Today already, for example, if you look at most retail locations in the US and probably in India as well, when they have all of these devices as their modernizing retail or in healthcare getting modernized with all of these wearables as well as other IoT devices coming in. They are all using our technology. It's the same 'Workspace ONE' platform that people use to access their applications and do collaboration like you said in this queer fashion on the devices that they can interact with and the same technology is securing the information on the devices that are around that are not necessarily the ones they are interacting with but the devices are interacting with them in a way of collecting data.

You have also done some specific mobile security alliances?

So this is the platform. The reason why hub and spoke is the only viable way of going forward is because if we think about security, it was alright when it was all a Windows world and it was all connected to Active Directory and the Active Directory became your way to control policies and systems. That model broke apart with the emergence of mobile endpoints as well as a mobile workforce.

When people started walking with their laptops outside of the networks and not connect to the network, for sometimes days or weeks, then that model breaks apart. So what happened as a result if you think about it is all these security technologies have sprawled. The fundamental reason why they have sprawled is because of truly mobile workforce and of course cyber threats. Now if you hack our platform that is there on all of these endpoints and applications what we have done, is that all of this information is; who is doing what and with what devices, at what point of time is going through our platform and the system and we are using that information to make contextual decisions whether you can really access this document at this point in this location because of potential threats or vulnerability of network endpoint, etc, you cannot make that decision, the system can inform that for you. Now in addition we know that security threats are of so many kinds.

We cannot protect you on all possible security threats. That is one thing we don't want to necessarily say "hey we are the ones who will control on every possible security threat". There are experts who are continually detecting what's happening. So what we did was we said, "hey listen, we have this entire context, already in our platform. We're using that to make decisions ourselves." So we created a very open alliance. Anyone can use the same information, same context that we are collecting and make other security decision and feed that back to us. That's what mobile security alliance is. So it's a two-way exchange where they can get context from our system and provide the risk or control that the security technologies think are appropriate that we can do because we are the context system and control system.

In the future, can Workspace ONE be used as a platform to provide 'as a service models' by IT service providers?

'Workspace ONE' as a platform is available via the cloud, including in India. The 'Workspace ONE' and on top of that we have a technology that we announced at our event, in the US - VMworld event. It's called 'Workspace ONE' intelligence. The objective of 'Workspace ONE' intelligence is really two-fold. One is to give our customers deep insight about the historical trends and patterns, including the data that we collect and the data from mobile security alliance. So this is where you can, see what is happening in the system, how things are changing, what are the risks and just getting insight. Second is creating full automation around it.

Specifically with respect to IoT and connected platforms, how do you see the future? How do you see this space going forward, for example all IP driven assets?

We have customers now who have IP connected trucks and within the cars they have multiple sensors, not just to aid the driver to be able to drive or automatically drive their truck but more importantly to do business functions. For example, being able to communicate with the truck and on multiple things like performance, optimization, service, etc. We have customers who are completely redefining their branch

> 'Workspace ONE' as a platform is available via the cloud, including in India

experience for how they will serve in banking. You've heard about that, people carrying cards and mobiles or swiping their cards. As soon as they come into the branch, you don't need a cashier. In the US for example, there are compliance rules that require you to have certain functions only to be performed by you; so in those cases what's happening is through wearables, through beacons and integrating the technologies with other mobile devices the optimization of how customers are served, the experience of the customers or the optimization of how all of this equipment are performing as the best possible way like fleet, those are the two extremes.

In healthcare there is, again combination of both which is happening. So, in that case what we're seeing the trend is that they will be more and more. There will be so much compute that happens; the cases of fleet for example where you don't necessarily manage every possible endpoint. Usually the compute happens and not all data can be pumped to the cloud, so that's where this whole 'Edge Computing Gateways' come in. So, what we have done is we have created an extension of a technology platform – the underlying technology is the same, we created a solution called 'VMware Pulse'. The Pulse solution essentially, in addition to creating this Workspace experience and data security on the endpoint, is priced and optimized as a technology - underlying technology is the same but it is priced and optimized for managing gateways and sensors.

For managing them better because now on the gateways these are different platforms and the data that you're collecting is random because what a fleet management system is collecting maybe very different from a healthcare system to what a retail is collecting. So we let in a very simple scripting based language which lets customers customize how they want to collect data and what they want to be able to do with it using the same underlying fabric; and it works side-by-side with 'Workspace ONE' because the underlying technology is the same.

How do you see the size of opportunity for 'Workspace ONE'? Would it be as huge as server virtualization or NSX?

See, I think if you look at NSX as an opportunity in size of the markets alone, the NSX addressable market of just foundationally disrupting, how switching can be done, we just took a look at it and just said, "hey that whole switching market gets disrupted" and the whole layer 2 to layer 7. The total networking spend would be potentially 2 to 3X the size of the addressable market that I talked about here because this is the addressable market, which is roughly 12 billion.

Without IoT, it is roughly 12 billion. For NSX, if you look at the total networking spend, you probably would know it would be 30 billion, something like that, 25 to 30 billion, by the time you add up all layer, total layer but that includes hardware, so software valuation may be a little less. So to me, at some point of time when the addressable market goes over five billion or 10 billion, it's big enough where there's no use comparing one versus the other. These are sizeable opportunities for us. We see them in the same magnitude as a company. We see storage virtualization, NSX and digital workspace as three big areas for us.

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I, Vaidehi Thakar, hereby declare that the particulars given above are true and to the best of my knowledge and belief.

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Impacting government processes with technology intervention

MADHYA PRADESH IS among the states that have been progressive on the use of technology for governance. Over the years, the state has created decent IT infrastructure and human resources pool that can respond to people's need immediately. The Dial 100 project, use of technology during Simhastha Kumbh and now the implementation of Revenue Court Management System for lowering pendency, is testimony to this. In an interview with Mohd Ujaley, **Manu Srivastava**, Principal Secretary, Renewable Energy, Science & Technology Department, Government of Madhya Pradesh, says, "The state's goal is not just IT, but to impact the government processes or final delivery of services in a meaningful way with the help of technology intervention"

Land disputes seem to be one of the main reasons of litigation in various states in India. How is Madhya Pradesh addressing this challenge?

You are right. This is also because it is related to the livelihood of people. In Madhya Pradesh, our goal is not just IT, but to impact the government processes or final delivery of services in a meaningful way with the help of technology intervention. To address this challenge of growing number of revenue cases, we have implemented Revenue Court Management System (RCMS).

The core job of the collector is to collect land revenue, but over a period of time, land management and issues pertaining to land have moved to the backburner. Whereas, in the other issues that seem to dominate more – basic law and order, developmental issues – the collector and the district administrator, both have a role. However, one of the fundamental weaknesses that all of us realize is that the focus on land mangement, which was the main job of the department, is being neglected to focus on other areas – this has been an area of concern for all.

RCMS is a way to track the progress of revenue cases in all the Revenue Courts – from Nayab Tehsildar, Tehsildar, SGM, Collector, Additional Collector, further onto the Board of Revenue. The idea is to ensure that is done in a more prompt manner; so what it does is that it brings the number of cases pending in each court and details such as the next date for the case, on a system, which can be monitored by everyone. For example; today even the Chief Secretary's office can find out how many cases are pending in which courts. This information was used by the present Chief Secretary, and he has also held meetings in every divisional headquarter to review this, wherein every revenue official was called. This has thereby resulted in a huge drop in pendency. Law and order problems often originate from problems pertaining to land, which has had an impact on the functioning of government and delivery of services.

States like Uttar Pradesh have successfully implemented Dial 100 projects to improve policing. How is the Dial 100 project working out in Madhya Pradesh?

Dial 100 project in Madhya Pradesh is also doing great work. We have integrated GIS technology, wherein the present locations of all the vehicles can be found out in a particular area. In case of a problem, the control room asks to identify the vehicle location, which will then be pinged on the map and the nearest vehicle will be asked to address the problem. In addition, we are digitizing the maps of all police stations; this will address the problem of jurisdiction conflict. Under this, the person who pings his location would be informed about the police station under the jurisdiction, alongside its contact details.

Most of the examination boards in India struggle to handle the volume of traffic their servers receive during the conduct and results announcement, but Madhya Pradesh Professional Examination Board has been able to manage it. How did you do it?

We have been able to do it because we have dedicated professionals who handle technology in the state. Along with MPSED, we also have MAP-IT who are creating indeginous software and solution. For Madhya Pradesh Professional Examination Board, we have developed a system which ensures immediate results after the examination. Something, that you find with CAT and other big examination. We are yet to match their level but we are on the right way. So far, our servers have withstood every examination and there are no problems reported.

> Under renewable energy, the biggest project we have implemented is Rewa Ultra Mega Solar (RUMS) , which is also one of the biggest in the world

You mentioned about MAP-IT. How is it placed compared to independent consultants?

Mostly, in the government, when programs are implemented, tenders are offered and outsourced to a company. However, we have software engineers employed in our organization who undertake these programs. Project management is done by us, which ensures privacy and data ownership. For instance, for renewable energy, we had asked Madhya Pradesh Agency for Promotion of Information Technology (MAP-IT) to develop a program for monitoring renewable energy systems. These are the prominent examples among many others including school education, wherein all the scholarships are available online.

Rewa Ultra Mega Solar (RUMS) is a promising project, at which level has the work reached?

Under renewable energy, the biggest project we have implemented is Rewa Ultra Mega Solar (RUMS), which is also one of the biggest in the world and it is entirely managed by the state. Whereas, most of the other ultra mega solar and thermal plants are managed by the Government of India. Development of the solar parks is generally done by the states, whereas bid conduction and development of documents, etc is either done by NTPC or Solar Energy Corporation of India (SECI). However, in the Rewa project, the entire project has been done by us. RUMS was set up in 2015. Interestingly, RUMS is also the first and only project in the country to provide power to inter-state open access customers; almost 24 per cent of the power from the project is being given to Delhi Metro. It is also the first and the only project in India to get a loan from the World Bank and Clean Technology Fund, which has helped to keep the prices low. The work has already been started and it should be commissioned by the end of this year.

What challenge do you see for technology intervention in government?

Technology needs to adapt people, it should not be vice-versa. It is difficult to expect people to change. For instance, we are working on renewable energy based cooking. To expect people to change their eating habits for utilizing global renewable energy is unreasonable. We have to change technology to adapt to people's requirements. However, there's no lack of acceptance among people, as long as the process is simple.

FEATURE

CRIS drives technology enablement at Indian Railways

INDIA HAS THE FOURTH longest railway network in the world; and Center for Railway Information Systems (CRIS) , the ICT arm of Indian Railways has been the driving force to introduce slew of technological innovations as part of the government's Digital India initiative. Securing this large ICT infrastructure is also one of the biggest responsibilities of CRIS. Express Computer finds out these new intiatives taken by the CRIS

Driving digital outlook for railways

The collaborative model of working ensures the delivery of cost-effective, sustainable and secure information systems. This autonomus body has been successful in using cutting-edge technologies in practical ways to ensure workable IT solutions for the Railways in many areas, and also ensuring the information security by regular security audits of these new digital services and projects, including such as development of ticketing on mobile phones, tracking of trains in real time through GPS, tracking of rolling stock using radio frequency identification (RFID), setting up a geo-spatial database for the Railways, and the setting up a state-of-the-art data centre to house the Railways' IT system.

CRIS approach focuses on new ways of conducting business by combining IT innovation and adoption, while leveraging an organization's current IT assets. It works with the Indian Railways to conceive prudent technology and security strategies and build new services in today's dynamic digital environment. The firm believes by going digital it can unlock far more than currently utilized capacity of the available infrastructure.

Importance of secuirty audits

All kinds of audits, including information security audits are equivalent to measuring the health, status, work done and posture of Info-Security, etc; as a famous saying goes "We can't fix / improve what we can't measure". Also, everything involving humans tend to slip down with time. So, (independent) audits are a must to verify every claim made about mitigating Info-Sec risks, whether by insiders or outsiders to the organization. Without periodic audits, "ignorance will be bliss" for the business, till a risk actually occurs. After the audits, the compliance fixing as soon as possible, is equally or even more important. This part is also followed-up by the security group thru re-audits.

Being the security group of CRIS which is the ICT arm of Indian Railways,ensures information security in all the layers of IT infrastructure. The security audits of development tools and applications, against the standards and compliance is also key focus of CRIS. As the technical R&D team keep on rolloing out new applications. CRIS secuity arm key task is to ensure the security piece of digital services before the applications being made live. It audits all applications regularly and keep on giving feedback to developers and the risks attached to it. Another area is conducting on-demand audits of changes in applications. At times Indian Railways also asks CRIS to do these on-demand SW audits, especially in the case of web based applications for public users.

Automated self-Audit

Today automation is touching very part of the large organisations and Indian Railways is also driving the change. CRIS feels there is a huge scope for automated self aduits tools. Hence, it has implemented automated self-Audit SAST tools from reputed OEMs, for the development teams to check code for security issues. Now it is also implementing SAST tool in next few months, where application developers will get instant feedback of their coding issues. These are part of our "secure coding" push, so that audits later do not have major issues to fix.

Besides internal and independent audits, to make the secuity audits more proven, CRIS has decided to move the external audits work from STQC , the Audit arm of MeiTY, since past three years. Also CRIS proposed to shift the external Audit tasks from STQC to private party auditors. The selection of private audit agency will be done from within the 20 odd CERT-In empanelled agencies.

Use of Artificial Intelligence (AI) in security

According to CRIS, in the area of information security systems, Data-Correlations (SIEM) and Analytics (Threat Intelligence) may be adequate for now as these are software driven, leading to advancements as per needs. AI may help in automated correlations and risk-costs adjusted actions based on those results, but there can be major pitfalls in terms of potential business, customer and reputation losses due to unsupervised (by human experts) actions. Any kind of AI system, which can learn from the collected data analytics, correlations and human experts, and predict the possible security breaches in the real-time will have potential. Identity, access, recognition, non-invasive VAPT etc may benefit from AI, by reducing their need and the false-positives.

Going Cloud way

As the Indian Railways looking to move some of its web-based applications to Cloud, both in private Cloud and the MeitY approved Indian Public Cloud providers. CRIS has started gearing up for this new move and now holding discussions on the Applications that can be hosted on the Cloud and their Security Architecture. At CRIS, it is also trying to migrate the existing Datacenter to include the Cloud layer making it a Private Cloud for Indian Railways. This move will help, CRIS to unlock far more than the currently utilized compute and storage capacities of the available infrastructure. With new tech advancements, CRIS is looking data security on the Cloud more deeply, as systems will be operating 24x7 across the geographies. It will build new applications such as Assets and Master management solutions on the Cloud.

Role of security group at CRIS

In the opinion of CRIS, Indian Railways is looking at Cloud as the applications facilitator. The Railways expects that Cloud will speed-up the delivery of the applications and response time will improve. From the info-security perspective, the threats will keep on coming-up even on the enhanced Cloud technologies. CRIS secuirty team thinks they have to learn the new techniques to protect the same or improved infrastructure on Cloud.

Moving forward

With the new technology shift and digital assets of Indian Railways growing multi-fold, CRIS has proposed to setting-up a Security Operation Centre (SOC) for Indian Railways in this budget, it will be monitoring multi-lakh PCs and network devices used across the 'RailNet', for any malware attacks and unauthorised access in the systems. Also, incidents monitoring of ICT infrastructure and sending alerts, to both users and back-end teams for controlling the incidents and mitigation. But as CRIS knows well Railways' priorities are first on the safety and security of train running, hence on the IT part also, services get the first focus followed by info-security. The total IT budget of Railways is in the range of ₹ 3,000 crore, out of a balance sheet of ₹ 2 lakh crore. Out of that IT budget, info-security gets about two per cent allocation as of now. CRIS is now getting earmarked budget for information security. Earlier it was within the IT budget. Lastly, it has proposed a fresh set of ICT and Cyber Security policy guidelines to the Railway Board for review.

More enterprises and govt departments looking at cloud technologies in India

JEFF SMITH, SENIOR DIRECTOR – Systems Engineering – APJ, Nutanix, in an interaction with Express Computer, sheds light on Nutanix's positioning in the cloud space among enterprises, and the market opportunities for the company in India, among others

What's your vision on moving the needle from Hyper converged Infrastructure (HCI) to enterprise cloud?

HCI is a key building block for enterprise cloud. The challenge Nutanix is addressing with enterprise cloud is how to provide a public cloud-like experience in the private data center in terms of: Easy of use through consumer grade design, consumption models that do not require up-front purchases of three-five years of capacity but rather pay as you grow, ease of management by making the mundane maintenance tasks, resiliency, expansion of capacity and other common activities invisible and automatic out of the box.

To achieve this goal of the enterprise cloud, the foundation must be based on an architecture that comes from the public cloud and large-scale data center world; not from traditional enterprise. Traditional enterprise architectures required and still require specialist technicians and operators for the storage, the storage network, the computing and the virtualization components – a cumbersome and costly approach in practice. Instead, web-scale architectures that assume failure of underlying hardware yet "route around" the problems through self-healing, that are software defined, highly analytics driven and automated are required. For example, in a Google data center, tens of thousands of servers are managed by a handful of people. When a server fails, the cluster of servers heals itself and returns to full resiliency.

The failure and replacement of servers is not an emergency situation, but rather a simple, periodic maintenance task where a broken server is removed, a new one is inserted and it automatically rejoins the cluster of servers – with minimal intervention from humans other than to physically remove and replace the server. Nutanix took this approach to data center design and built software, initially running on an appliance of standard x86 server hardware and now on a choice of hardware vendor platforms, that the average enterprise could easily consume.

Another key aspect of enterprise cloud and a requirement to the underlying hyper converged infrastructure is around continuous innovation. True HCI is completely software defined and has no specific dependencies on underlying hardware, specialized FPGAs or other proprietary hardware. The pace of innovation and the very fact that the exact same infrastructure will improve in performance and functionality on a regular basis, merely through software upgrades, delivers on one of the characteristics that IT and the consumers of the infrastructure have come to expect based on their experience with public cloud and many XaaS offerings.

Observe also that there is no single cloud and instead there are public clouds, private clouds and distributed clouds. Distributed clouds may be remote office/branch office instances or edge computing and IoT applications such as on oil and gas rigs and cruise ships. The challenge that organizations face today is that each of these 'clouds' utilize different technology stacks and thus applications and data are not portable. Management of each of these is fragmented and thus can lead to complexity, with unforeseen and nearly un-debuggable failure modes. From a business and finance standpoint, these environments all have different consumption, licensing and metering models which can lead to unpredictable IT budgets and expenses.

What if an organization could start anywhere along the spectrum of public/private/distributed cloud and leverage a platform which provides a consistent, public cloud-like experience and economics but satisfied the varied needs of each mode of deployment while providing unified, scalable management plus app-centric management, orchestration and automation?

This is what Nutanix is building as the enterprise cloud. On top of that, Nutanix believes in giving our customers choice and not locking them in and thus we provide hardware choice of our own appliance, DellEMC, Lenovo, Cisco UCS, HPE and IBM Power with choice of hypervisor including VMware, Microsoft Hyper-V, Citrix XenServer and Nutanix's native virtualization with AHV. Even our Calm (Cloud Application Lifecycle Management), offering to manage applications, provide self-service governance and hybrid cloud management, will allow customers to not only automate and move their workloads between private cloud, distributed cloud and public cloud, but also move their workloads completely off Nutanix if they so choose. We have also published from early on details of our entire underlying architecture and operations in something called the Nutanix Bible at nutanixbible.com. Our vision is for customers to have choice and to be able to easily use the right cloud for the right workload at the right time. One Click. One OS. Any cloud.

ANY GIVEN ORGANIZATION MAY HAVE WORKLOADS THAT ARE BEST RUN IN:

- **Public** cloud such as systems of engagement type of API-driven, stateless services in support of mobile apps
- **Private** cloud for systems of record applications and data that must remain on-premises for security, compliance and performance
- **Distributed** cloud for remote offices or distributed functions of the organization which may have real-time analytics and control system requirements to remain close to source of the data or the system being controlled

What are some of the primary business verticals that Nutanix will target in India? Which verticals are ahead of the curve in terms of adoption of cloud and what kind of workloads are being deployed?

As of now, the banking, finance and insurance (BFSI) sector, IT and telecom, hospitality, healthcare, manufacturing and government projects are the areas of focus for Nutanix in India. The BFSI sector is one of the early adopters of cloud technology. Any workload in any environment, and any application type can be moved to the Nutanix platform in a single click.

What are some of the big opportunities that Nutanix sees in the enterprise space in India?

The India market is fast changing. We have seen more and more enterprises and government departments (central and state) looking at adopting enterprise cloud technologies to improve efficiency as well as to reduce costs. With important government initiatives like Digital India, technology and innovation is here to grow. For Nutanix, India is an important part of its growth strategy and we will continue to focus on key sectors including both central and local governments, banking and finance sectors as well as service providers, to offer high-performance and cost effective enterprise cloud solutions. Today we have over 600 employees in India and our R&D center in Bengaluru is our second largest in the world. India is a growth story for us and we will continue to invest in our growth here.

What are some of the opportunities that you see in the government sector in India?

We see that the GoI is on a huge digitization drive; be it Smart Cities, Digital India, Aadhaar enabled services, state data centers and so much more. GoI is not only the biggest spender on IT and services in India, arguably they are one of the biggest spenders on IT globally. Data security and sovereignty are key aspects in any government function and we believe this is where Nutanix adds great value.

US Federal Government is one of Nutanix's largest customers. It was one of our very early markets and because of the commitment that Nutanix made while it was still a very young company, it still constitutes a significant market for us which has now expanded outside of the US to other government and public sector markets in Europe and Asia-Pacific.

Similar to the US, India is a large geography. There will be an increase in analytics, inferences, summarization, and aggregation of data at the edge with only relevant summaries pushed into a core cloud which may be public or private. Our experience from these large enterprise private cloud deployments and ability to create agile, flexible and extensible platforms can help governments role our consumer services at a much faster pace and far more efficiently compared to traditional architectures.

'With tech intervention in government, data protection has become challenging'

FROM COMMON INTEGRATED Police Application (CIPA) to Automated Fingerprint Identification System (AFIS), to under-progress Crime and Criminal Tracking Network & Systems (CCTNS), Madhya Pradesh has come a long way into integration of technology in its policing. The state has been one of the early adopters of CCTNS project and it is now embarking on overhauling the tech infrastructure with emerging technologies. In an interview with Mohd Ujaley, **Purushottam Sharma**, an IPS officer of 1986 batch of Madhya Pradesh cadre, currently posted as additional DGP (CP & PR) says, "Today, bringing technology is not a big challenge but data security is and we need to allay this fear from the minds of people by having robust data security policy and procedures in place"

> "In traffic management, Madhya Pradesh is going with Intelligent Traffic Management System (ITMS) that encompasses e-challan, red light violations, and number plate identification system

What have been the notable technology projects in Madhya Pradesh Police?

The first project we started in Madhya Pradesh Police was Automated Fingerprint Identification System (AFIS). During that period we had Common Integrated Police Application (CIPA) which was rolled out in Bhopal and other cities, but not fully implemented in the entire state. However, with the arrival of AFIS that time, we digitized three lakhs' data. Even today, for instance if National Crime Records Bureau (NCRB) has eight lakh people's fingerprint data, of that three lakh is from Madhya Pradesh. Following digitization of data, we started studying the complexity of the whole software. We improved the software and suggested to the Government of India, as a Chairman for the Benchmarking Committee, wherein I requested NCRB to circulate the software, enabling all the states to digitize fingerprint data. Fingerprint is the only way to identify criminals and track them throughout the country. I have also suggested to include IRIS data too, however, the law needs to be changed for that. This is one area which will certainly have an impact in the future, because it can track criminals within and outside the country.

Another project is Crime and Criminal Tracking Network & Systems (CCTNS), wherein we have done wonderfully well. It has been rolled out and now we have FIRs filed on computer, but investigation models are in stabilization process.

What are the areas in policing that you see technology having significant impact?

I think technology is playing and will keep on playing significant role traffic management. In traffic management, Madhya Pradesh is going with Intelligent Traffic Management System (ITMS) that encompasses e-challan, red light violations, and number plate identification system. Under technology for intelligence, we have voice logger for tapping and tracking phone calls of criminals, alongside interceptors. All these technology intervention have helped us in improving policing in the state.

What are the major challenges you face while implementing a technology driven project?

The biggest challenge is capacity building. People are updated in terms of knowledge, so the biggest challenge includes acceptability and competence development in our own people. Secondly, the technology is being purchased, but we don't bother it will become redundant after a period of time, so should also think of the updation of technology and return on investment (RoI). Fortunately, these things noare w becoming more streamline as governments – be it centre or state – have started realising the importance rationalising technology and RoI.

You mentioned about challenge of acceptability, skilling and educating officials regarding technology, how do we address that?

I have always to tried to present technology as a business process re-engineering. For instance, if we put into the perspective of the layman that technology can bring the change, most of the people get convinced - I have tried that. Today, bringing in technology is not a big challenge; data security is a challenge and we need to allay this fear from people mind by having robust data security policy and procedures in place.

Are there any programs you are thinking to propose on data security?

I have proposed to Madhya Pradesh DGP to bring out a cyber security or data security policy document for the police department, alongside certain standards which should also be documented. I a suggest multi-layer security system.

Within your present posting, are there technology implementations and training of officers?

In whatever technology we purchase, there's a component of capacity building and hand-holding period. We had made a policy wherein it's mandatory to include these in all the technologies that we purchase, so that we develop trained officers and also turn them into trainers. This is what we are doing presently, and the focus for the future is on ITMS, Dial-100, e-challan, and improving the functioning of the police department.

What is your view on police reforms and role technology can play in it?

Madhya Pradesh government has always followed all the directives given by the Supreme Court and various committees. And we have created guidelines in accordance; for instance, we have a committee of postings and transfers. There are many things that need to be done to improve the image, for which, I have asked the DGP to install cameras in every police stations. This will bring a lot of change. We are going big on installing surveillance cameras, which are important to ensure security. Now I'm also asking the police department to adopt the best technology in terms of cameras across cities. For instance, now we also have infrared cameras for night-time surveillance.

BFSI Digital Enablers Summit: Encapsulating the industry's digital growth

RECOGNIZING THE TECTONIC shift in the BFSI sector, Express Computer along with Nutanix and Lenovo, organized the 'BFSI Digital Enablers Summit'

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Following the Hyperconverged Infrastructure (HCI) event by Nutanix and Lenovo in Delhi, Express Computer organized the 'BFSI Digital Enablers Summit' powered by Nutanix and Lenovo, in Mumbai on January 17, 2018. The event brought key leaders from the Banking, Financial Services and Insurance (BFSI) sector from a range of organizations. Given the fast paced nature of business today, the growing demands of enterprise applications in the BFSI sector threaten to put legacy IT design — with separate storage, storage networks and servers — at risk of failure. The silos created by traditional data center infrastructure often present barriers to change and progress, adding complexity to every step from ordering to deployment to management. The Indian BFSI sector is at a stage of digital disruption, where it needs IT infrastructure to be flexible, without any vendor lock-in, and where its IT team can seamlessly manage applications across cloud. Digital businesses need the capability to scale fast, and need infrastructure that can help them scale exponentially at a speed and cost that is a fraction of traditional infrastructure.

The event kick-started with presentations from Nutanix and Lenovo, which were conducted by Rajesh Krishnia, Enterprise Account Manager, Nutanix; and Shivasankar K, Head – Sales, Lenovo DCG.

Speaking on the occasion, Krishnia highlighted that 'Prism' will be the tool to manage public and private remote data centers, and mentioned some of the use cases which span across – business critical applications, VDI, remote and branch office, messaging collaboration, big data, server virtualization, private cloud and more. "In the BFSI sector, security is paramount – our first customer was the US Federal Department. We now have over 300 customers and we have invested US$ 15 million in India. This year we are also hoping for more customers from the BFSI sector," says Krishnia.

Lenovo and Nutanix have a 360-degree joint innovation partnership in delivering path breaking value to customers. Lenovo has always been the "First to Market" to deliver real value to our customers with our technology innovation. Lenovo and Nutanix have several partnership agreements. However, this partnership goes beyond simple resale and packaging. The two companies have agreed to work closely at every level, including engineering, go to market, and support. The innovation is happening around bringing a web-scale management within the enterprise by automating and eliminating multiple resources for ongoing management and operations.

With added value of Lenovo XClarity which is Lenovo's new centralized resource management software, it allows IT managers to automate a number of lower-level tasks, including hardware discovery, hardware inventory status, and firmware updates. This capability, along with a dashboard-driven interface, allows IT staff to spend less time running/managing their IT and more time innovating and improving their business. In terms of the complexity revolving around the network management and the need of network automation in a web-scale environment, Lenovo has introduced network orchestration software (ThinkAgile Network Orchestrator) which seamlessly gets integrated with the HCI platform to deliver software defined network automation.

Shivasankar K informs that Lenovo's focus is more on offering solutions than selling servers, while citing Artificial Intelligence (AI) and Internet of Things (IoT) as areas of focus too. He says, "Last year we launched 14 new server platforms, seven storage offerings and five network switches. We are now also focusing more on our ThinkAgile offering. We are already among the leaders in the HCI segment."

One of the major highlights of the event was the panel discussion on 'Digital Transformation via Cloud', which featured panelists including Baskar Raj, Chief Technology Officer, Euronet India Services; Abhijit Singh, Head – Technology Group, ICICI Bank; Mridul Sharma, EVP – Head, Technology IndusInd Bank; Prasanna Lohar, Head – Technology, Innovation and Architecture, DCB Bank; Suresh Shanmugam, Head – Digital Innovation and Future Technology, BITS, Mahindra & Mahindra Financial Services; Ritesh Gupta, Sales Head (West), Nutanix India; and Shivasankar K, Head – Sales, Lenovo DCG. The panel discussion was moderated by Srikanth RP, Editor, Express Computer.

ICICI Bank has taken a lot of digital initiatives. Responding on a question on the difficulty to manage infrastructure at the backend, Singh says, "Right from 2010, we have been focusing a lot on virtualization, which is a big advantage for us. Today we are close to being 100 per cent virtualized. So provisioning infrastructure is not difficult for us to roll out projects. Moving forward, we want to create AWS on-premise. We have looked at several cloud providers, but I think we should follow the principles of invisible operations; in some pockets we have achieved that and as we go forward, we'll change it completely. Security is also playing a big role. It's important that in rural India too, there's presence of technologies such as virtualization; and to provide resilient VDI services we need to adopt some of the cloud principles." Echoing the same thoughts, Sharma, adds, "On similar lines, the requirements and realities are the same. We managed to create a bit of the private cloud infrastructure, which is already up-and-running; it has definitely given us a lot of agility. We are around 85 per cent virtualized. However most of the customer-based applications are virtualized."

Ideal IT infrastructure

There have been IT vendors who promise various things. However, there has been a question on how difficult is it and how far is the industry from finding a 'dream' IT infrastructure. According to Sharma the industry is close to it. However, the only problem it sees is the mindset of people and the plethora of marketing pitches. However the reality is clear and people are realizing that. "Our journey of virtualization started around 2014, and a good thing for us was that, being a small bank, we hadn't delivered too many products to our customers until 2014; so it was a good time for us to get into new things. We have architectured our new products around virtualization. Earlier the time consumed to introduce a new product was huge. With virtualization, we have provisions to many things. Earlier the manual process used to take one to two days, but now it takes just a click. We are 90 per cent virtualized," comments Lohar.

Shivasankar adds, "I do see the gap filling, in terms of footprint reduction or improvement in power utilization. The expectations are always going to be running ahead. Another point is that, with everything going on cloud, most of the things have to travel to the desktop."

IT infrastructure challenges and change in trends

According to Raj, Euronet India Services' business environment is not different from banks, as far as customer-sensitive information is concerned. He says, "We have to always be much more secure than banks. Since we are running on online transaction processing environment, we typically have to be flexible enough on the side of IT infrastructure. The payments industry has large applications and eventually we look at an underlying infrastructure which is flexible. We were looking at an on-prem cloud, wherein the challenges we face are from the perspectives that are essential for faster growth in the market. To address these issues, an on-premise cloud was required for our servers. Eventually it is very important to decide on building on-premise cloud keeping in mind flexibility and how fast can things be provisioned."

Replying to a question on the parameters to decide for not going onto cloud, and what makes on-premise cloud so attractive, he adds, "We don't want to control things, but at the same time, the sensitivity of the information and how matured are we to look at the cloud option - it's very important. We host information of a lot customers and banks' customers, and unfortunately at this time we don't have the ability to go on public cloud. In the wake of some recent incidents, there was panic all across, so one has to build a more robust and controlled environment."

Whereas, for ICICI Bank, it's about the return on investment (RoI). Abhijit explains, "Security-wise there has been a good journey and cloud should be reasonably more secure according to me. Both Azure and AWS will have their own benefits and now we also have Oracle cloud coming on-premise as well as publicly. So it's a difficult decision to choose one, however, we primarily go by RoI. Some work loads will continue to need different infrastructure. Many of the transactions we do in financial services are heavy in nature. As hardware will progress, more threats will come, and more processing capacities will come, things will change slowly, but right now some work loads certainly need a unique platform."

Shanmugam points out that a lot of states like Andhra Pradesh have started improvising their facilities; for instance Andhra Pradesh. On-premise is subject to services that are being provided. It is no longer an enabler, it's a differentiator. A good thing is that governments are also coming up with a lot of things in rural India.

The word 'on-premise' is being heard more often now. With Nutanix's experience with Indian customers, Gupta shares, "The customer will obviously go as per his needs. As an OEM, we should provide a solution which meets the requirements of customers from work perspective, whether it's a private cloud solution or a public cloud solution. From Nutanix's perspective, we offer hybrid solution."

One of the challenge areas of on-premise cloud is managing unpredictable work load. For instance, an e-commerce company may look at public cloud in times of influx of transactions. Sharing thoughts on that, Singh says, "We have been able to handle work load and will continue in future as well. In the design, we have kept a provision that we should have 10x volume resiliency. In an e-commerce case, it's during the payment phase where transactions are held. All those transactions turning into sales are causing a choke in banks that are serving as payment gateways. Huge volumes come in, and the kind of latency that we have to give is not very easy. But so far, we have been able to manage this nicely." Whereas Lohar comments, "In banks we have multiple systems; for instance internet banking. Whenever we design systems, we keep a provision, and now the adoption of virtualization is really helping."

Despite matured solutions such as virtualization, automation and more, organizations can't be certain on what uncertainties may come tomorrow. Commenting on the same, Raj adds, "One is provisioning of infrastructure based on needs, time. It's all about doing the right provisioning of infrastructure, which should be as quick as possible. While we are provisioning our infrastructure on an environment, that environment has to give good performance and it should also be easy to manage. Managing servers and data centers is another issue."

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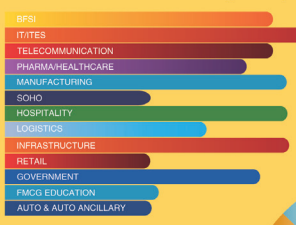

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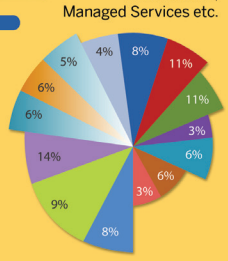

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