The Rise of Smart Cities

For years, Indians have been yearning for a better quality of life and infrastructure. The latest buzz on smart cities and the government's aggression ushers in hopes for a better tomorrow

Smart Cities—is the town's latest buzz. Thanks to the new government that's inking an aggressive smart city roll out that is expected to usher in a sea change in terms of how cities will look and function in future. Smart city is in the genesis phase right now and technology will play a pivotal role in manifesting a true 'smart city'. This is a story about how smart cities can alter the face of India and up the quality of life of Indians. Imagine a city where there is full potential of a connected environment with seamless facilities such as, uninterrupted power and water supply, online delivery of public services, effective public transport system, sophisticated waste management system, adequate lighting solutions, and so on. This seems quite possible after the digital India concept and it is the need of the hour to create a smarter urban infrastructure, which can improve the quality of life in the near future.

TECHNOLOGIES THAT ENABLE SMART CITIES

Smart city initiatives start with building a master plan using modern IT tools keeping in mind the population for next 5-10 years or beyond. This would mean that the utilities and citizen services are placed according to some of the best practices followed in the developed countries. Technology will play a significant role across various domains of smart city such as energy (smart grid), waste (solid waste management through vehicle tracking/

pneumatic control), water (smart metering), telecom (internet of things, gigabit internet), crisis management (unified command and control), transport (adaptive traffic management), safety (CCTV), healthcare (mHealth) and education (virtual classrooms). "A key technology to manage law and order is massive surveillance and video analytics which will deter the anti-social elements and bringing quick resolution and mobilization for forces. Smart cities will need massive telecom infrastructure and cloud /datacenter framework to make it happen," says Sajan Paul, Director Systems Engineering, India & Saarc, Juniper Networks.

With Internet of Things, mobility, and cloud computing we will see that technology will be extremely adaptable and will facilitate quick deployment of ICT components. In fact, city administrators and planners will continuously integrate a technology plan with the city development and planning initiatives, connectivity establishment will go hand in hand with water and sewer pipes as part of city design.

When translating into technology requirements, a smart city will have to offer requisite amount of compute resources, network connectivity and applications. Such technology infrastructure will need to be provided seamlessly to the citizens irrespective of which government agencies own the applications and infrastructure.

Rakesh Kaul, Partner, PwC India opines, "Technologies including location aware technology (GPS/GIS-based) in being used along with mobility, analytics and cloud. In the near future, we will see increased adoption of advanced metering, NFC, big data, internet of things for smart implementation and in future we would have machine-to-machine communication, micro grids, augmented reality, real-time parking coming in play even in India."

THE BASIC NEEDS OF THE COMMUNITY

We've been hearing how technologies can better our everyday lives, but the very basic things that residents need are simple and shorter commutes, more public spaces, and affordable housing. The theme of a smart city must be aligned with localized needs and aspirations, while retaining the culture and ethos of the city, eg,

business, tourism, pilgrimage, travel hub, etc.

"Retrofitting current cities with smart technology will make them more efficient. Just to give an example the losses in energy transmission in India amount to over 25%, if by using smart metering these losses can be reduced to 10%, the remaining 15% can be transferred to the citizens directly. Similarly, other smart technologies will help reduce the cost of operation and administration and such benefits can be directly passed over to residents by reducing prices of utilities in a city," says Kaul.

The burgeoning population and the exponentially growing middle class have far exceeded the capacity of cities beyond imagination. Smartifying a city will mean networked transportation systems which will facilitate easy integration of multiple traffic systems. Real-time communication across multiple modes of public transportation will allow easy synchronization of trains and buses thereby, ensuring a shorter commute home. Simple availability of information as to when the next bus is due on a real-time basis can allay apprehensions of passengers and prevent them from spilling over on to the roads thereby creating more traffic bottlenecks. "Smarter urban infrastructure is an essential need today otherwise daily life could come to a grinding halt," adds GH Rao, President, Engineering and R&D Services, HCL Technologies.

THE ROADBLOCKS

There are the obvious obstacles often seen with smart city initiatives. What we all need right now is how different technologies used for different aspects of smart cities will talk to each other and yet deliver the results. While urban

India is moving fast with technological advancements, the vision of 100 smart cities will require rapid technological transformation across the length and breadth of the nation. These technological advancements would also give rise to an immense magnitude of data, the security and sovereignty of which, would pose a challenge in keeping the smart cities resilient. India's cities are grappling from years of inadequate progression in physical infrastructure and justifying technology investments will pose to be a challenge. Rao says, "Although the concept of a smart city sounds really beneficial, implementing these smart systems and integrating them together so that all different systems work in unison to make the life of a common citizen easier will be a challenge."

Our traditional systems need to be converted into smart systems through cloud storage of data and remote monitoring systems which will be a major roadblock. The transformation of old infrastructure into a smart and well-connected system with real time updating ability will be the big challenge in coming up with smart cities. "As far as technology is concerned, in the brown field or the existing city scenario where retrofitting technology solutions and working with non compatible protocols and outdated systems will need innovative and indigenous solutions," says Arjun Ramaraju, Vice President & Global Head, Engineering & Construction, Wipro.

Across the globe there are many examples of smart cities who though may not be smart in the true sense of the term however have managed to overcome the obstacles of bringing together different pieces of technology and working in smooth coordination as a unified whole.

LOOKING AHEAD

Anand Navani, Country Manager, Verint Video systems, India belives, "Building on existing cities always works better than starting from scratch with regard to Delhi, the metro rail as an efficient mode of mass transport has today become a symbol of smart transport. In fact the road network in the capital is also developed along with the information and communication technology network in the city." All that is required is a linkage between these modes of transports and unity with the municipal, civic and regulatory bodies. It goes without saying that the government ambition for modernizing mid-sized cities will require precision planning, effective disbursement of budgetary funds and a large investment in infrastructure. It is very critical that our urban planners and policymakers need to plan and design cities for the future and not just for the present.

The question is: How achievable it is?