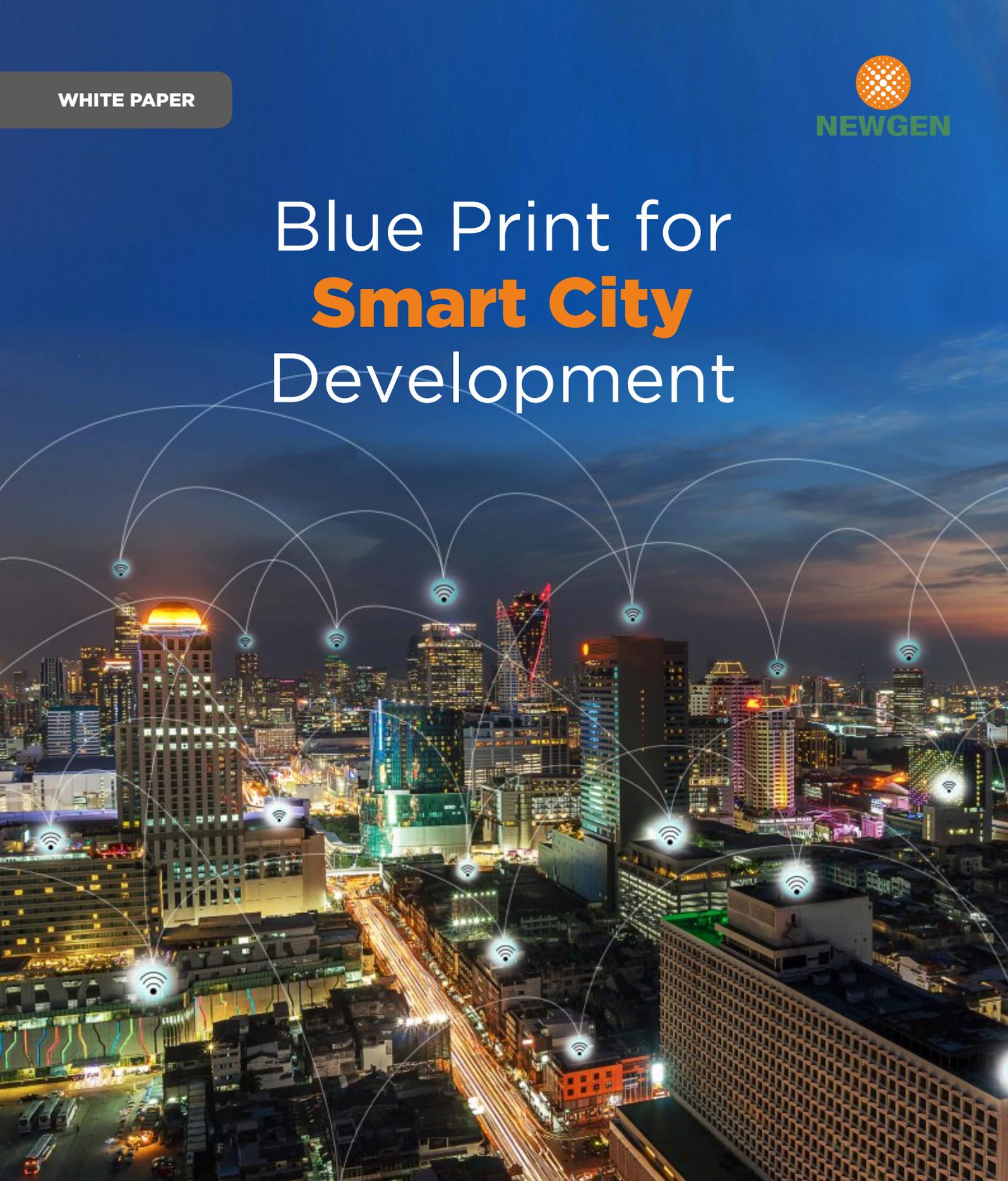


# Blue Print for **Smart City** Development



Smart cities offer sustainable economic development and an improved lifestyle by connecting its systems, processes, citizens and things. Governments face several challenges in effectively planning and implementing smart cities initiatives. Many of these challenges arise out of ineffective leverage of information and inefficient processes. This white paper proposes a blueprint that can address these challenges in smart cities initiatives by leveraging core digital technology platforms such as Business Process Management (BPM) and Enterprise Content Management (ECM).

# A great deal is happening to our cities!

Populations across the world are migrating from rural areas to urban cities in the hope of a better livelihood! Burgeoning urban population is bursting at its seams and it is transforming how we live, commute, cohabit and connect! The pressure on civic infrastructure and basic essentials, such as healthcare, education and overall governance is immense and growing with each day.



## Smart Cities: Answer to Urbanization

The challenge of urbanization can be solved when cities get smart and change the way they operate. 'Smart cities', as they are often referred to, are urban areas that create sustainable economic development and extend high quality of life to its citizens with efficient management of natural resources and participatory governance. As a result, there is open access and dissemination of information to the citizens. They rely extensively on Information and Communication technology investments that are aimed to connect all its citizens, government institutions and infrastructure for improved living.

“A smart sustainable city is an innovative city that uses ICTs and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of the present and future generations with respect to economic, social and environmental aspects.”

**Source:** International Telecommunication Union, 2014, Smart sustainable cities: An analysis of definitions, Focus Group Technical Report, available at <http://www.itu.int/en/ITU/focusgroups/ssc/Pages/default.aspx>.





## Role of Governments in Smart City

When a city is 'smart', it is a lot more than just smart technology shaping up everyday lives of city dwellers. It is the outcome of concerted efforts of local governments, industry players, technology vendors and citizen participation. Hence governments across the globe are charting out strategies and framing policies to transform world cities into smart and sustainable ones. Smart cities need smart governments to lay out favourable policies, laws and regulations.

According to United Nations ESCWA report on "The Government Summit Thought Leadership Series" February 2015 Report, there are 3 components in the ecosystem in a smart city that should be well-connected with technology to ensure a comfortable and happy life to its citizens.

### Smart City Ecosystem Components

- **Physical aspects**

Roads, bridges, schools, public places, government institutions, offices, buildings, hospitals, transportation, water-supply, waste management, electricity and so on

- **Potential for Innovation**

Innovative creative activities that are geared to sustain a smart city

- **Applications and embedded systems**

Development of applications and embedded systems to support the technologically driven city

**Source:**

The Government Summit Thought Leadership Series Smart Cities: Regional perspective, United Nations and ESCWA report



## Current Challenges in Transforming Cities into Smart Cities

Citizens are offered high quality of life, a clean and sustainable environment and a strong core infrastructure based on smart solutions in smart cities. However, cities face multiple challenges in their "smart city" objective.

## Top 6 Hurdles

### ■ Decentralised Information

Information is locked in disparate legacy systems of the existing city infrastructure. The challenge lies in bringing this to a common repository for easy access

### ■ Multi-party Collaboration

Smart cities require smooth and effective flow of information and coordination amongst the key players- industry, technology vendors, citizens, municipalities, local government, state government, central government, on multiple issues such as service delivery processes, sharing of best practices, financing etc. A lot depends on how effective is the collaboration between multiple stakeholders is

### ■ Transparency in Projects

Smart cities desire process efficiency as they rely on technologically driven big and small projects. All projects need to be completed on time with efficient tracking of status, clearances should use online processes and should be made visible to key stakeholders when required. This is an important area of concern

### ■ Documentation Management

Government projects and interfaces are heavily documented and are paper based, with manual hand-offs. This becomes yet another challenge to manage. Processes need to be efficiently managed that are in turn heavily dependent on documentation

### ■ Tracking of Benefits Disbursed during Services

Smart cities promise improved quality of life to its citizens and that refers to benefits extended to them from government beneficiary programmes. The need of the hour is to automate the processes and make information instantly available to all the concerned stakeholders- citizens and agencies- for tracking and easy audit

### ■ e-Service Delivery Channels

Smart cities are heavily dependent on municipal bodies for essential services, often referred to as utility services, such as water, electricity, issuance of birth and death certificates, marriage certificates, and so on. Citizens are promised 24X7 universal access to them and instant registration of complaints, request for new links etc. However, in most cities of the world today, the current infrastructure is not equipped to handle such requirements. There is a lack of e-service delivery channels that can empower citizens. Fixing these gaps hence becomes important



## Overcoming Challenges of Smart City projects with BPM and ECM Platforms

The services offered as a part of smart city initiative bring their unique set of problems.

A smart city project is heavily process-centric and banks on how content is being managed. With extensive involvement of several players, such as governments, citizen bodies, municipalities, transport departments, hospitals, technological vendors and industries, the solution lies in a comprehensive application that can deploy Business Process Management (BPM) and Enterprise content management on mobility framework.

BPM, with its intelligent engine which supports definition, subscription and handling of all the internal and external events triggered by sensors, devices or external applications, is all set to address the peculiar challenges of a smart city. It offers extensive capabilities to define process exceptions and trigger actions associated with events, allowing responsive and enhanced service delivery. With BPM as the underlying platform, processes can be easily and cost-effectively adopted without incurring too much analysis, simulation, effort and cost.

Also, BPM and ECM can successfully integrate with IOT Devices, core/legacy applications and ERP systems and capitalise on latest new-age disruptive technologies that citizens might embrace in future.

**Technological investments in digital platforms- ECM and BPM empowered with mobility can result in high success rates in making a city 'smart' in a short period of time.**



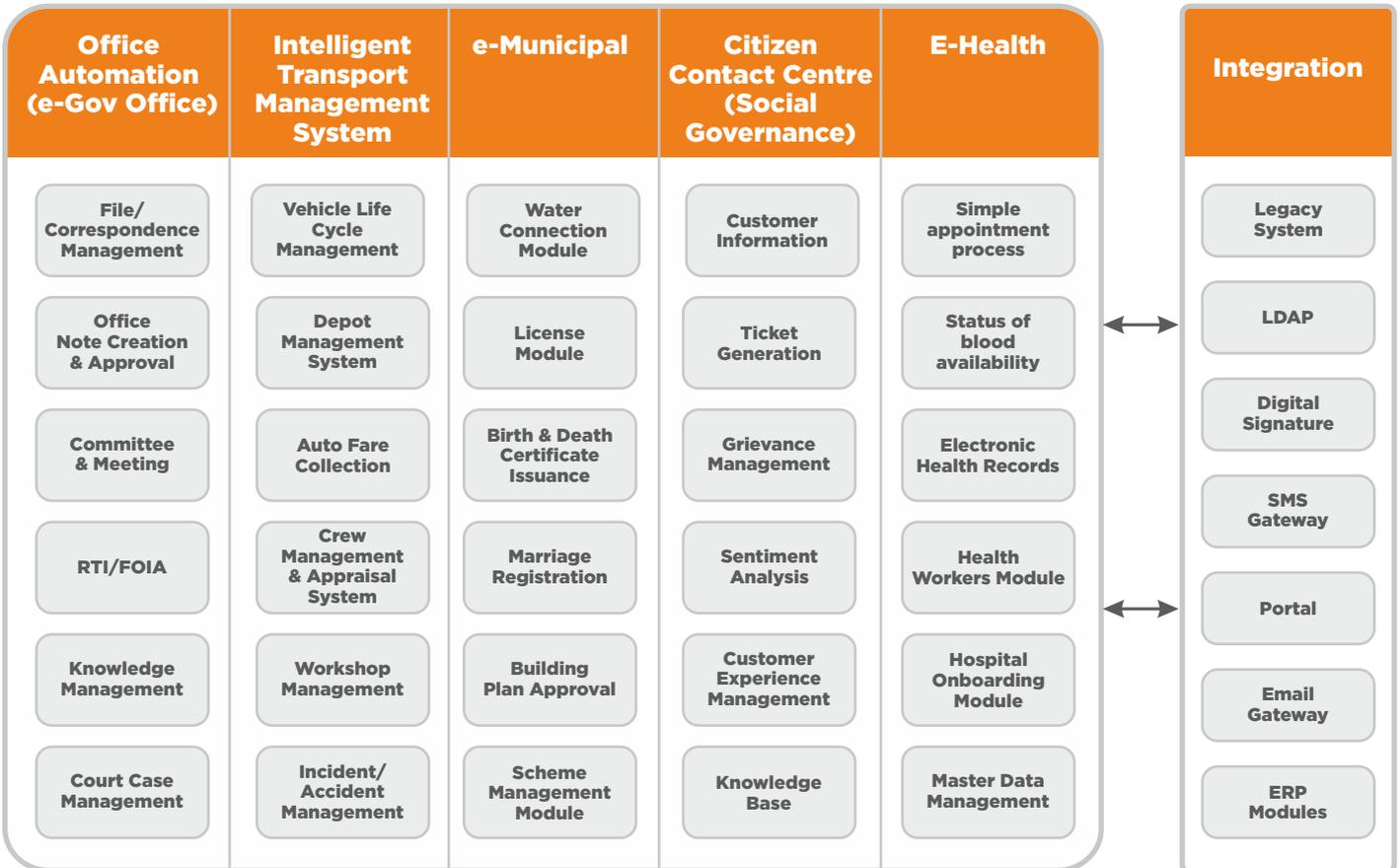
# Newgen's Blue Print for Smart City Development

Smart city projects involve integration of infrastructure and technology across multiple channels used by citizens during their interactions with the state- from health care, to transport and social welfare. The goal is to have information communication technology based automated workflows in government operations to enhance transparency and efficiency in their processes.

## Citizen Interaction Communication Channels



Citizen-Government Interaction Solutions



## Data Scanning & Digitalization

**Fig: Integrating New Age Tech - Mobility, RPA & Digital Sensing with BPM & ECM across Channels and Focus areas in Smart City Projects**



## Key focus areas in building smart cities

As local governments strive to provide affordable citizen-centric services and make information accessible to them in real-time as part of the smart city promise, it is essential to address the process-centric challenges prevailing in the critical systems and services with BPM and ECM technologies. There is a need for processes across the systems to be transparent and efficient and also work in complete synchronicity leveraging digital technologies such as BPM and ECM. Some of the key focus areas that bring real impact are health care, transport management, citizen services and government operations.

### ■ eGovernance: Office Automation in Government Departments

Governance in principle need not be very different from traditional cities. However local governments should govern in a way that they extend benefits of information & communication technology to the citizens, namely- accuracy, speed, availability of information anytime-anywhere, and sharing of resources.



### ► Process Management

For instance, in government departments decision making is largely dependent on the processing of Correspondences /Files that need to be approved by several officials in multiple departments. They are required to put notes and comments as well. Departments in government agencies have multiple committees as well that hold innumerable meetings.

Decisions taken in these meetings need to be diligently recorded and run through multi-level approval.

Smart cities necessitate that all processes are efficiently automated so that citizens experience improved service delivery. The following processes require re-engineering to improve their processes and drive collaboration, transparency and enhance efficiencies.

- Correspondence/File Management
- RTI Management
- Committee & Meeting Management
- Legislative Query Management

### ► Document Management

Document handling is a critical component of government service delivery. Government operations involve extensive exchange of documents, such as forms, correspondence, proofs of identity and address, certificates, etc. These documents play an important role in government decision-making and need to be archived for a stipulated period of time as prescribed in the retention policies. For certain decisions government officials refer to historical data and documents submitted in the past.

An efficient Enterprise Content Management (ECM) solution in smart cities can help government agencies across tiers deliver responsive citizen services, while ensuring regulatory compliance.

## ■ Intelligent Transport Management

Management of traffic flow, congestion, speed control, vehicular population, parking and tracking vehicular pollution emissions are 'smarter' in smart cities. The need is to unify and integrate all modes of transport- cars, aeroplanes, buses, trains, bicycles and even pedestrians to extend safe, clean and highly efficient mobility to citizens. For instance, in a smart city, if your car breaks down in the middle of a road, information is triggered instantly using IOT to the nearby workshop and help would appear soon. Or you might be suggested an alternate route of commute based on the traffic congestion on your regular one.



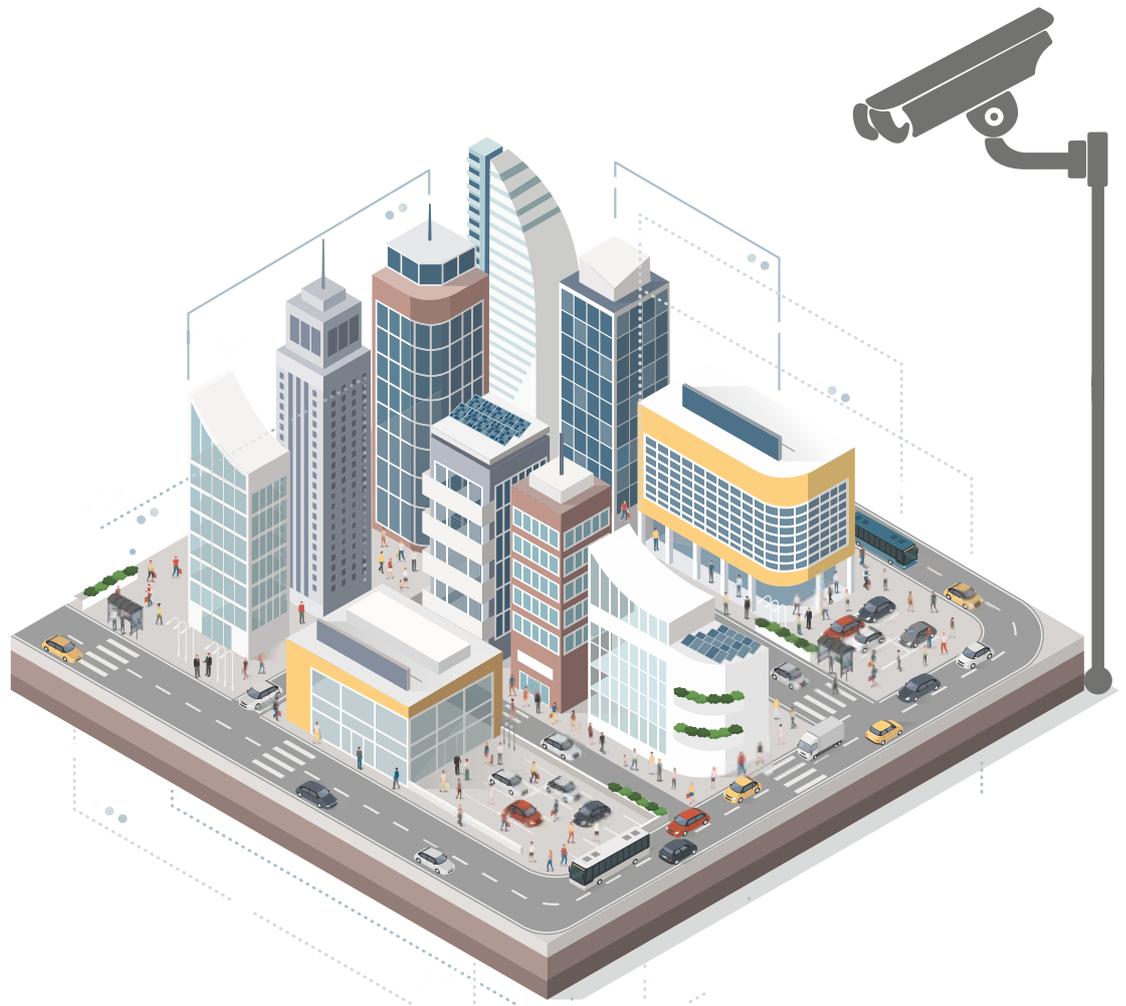
Transport management and logistical systems in smart cities are envisioned to be much 'intelligent' using robust technology platforms of Business Process Management. The architecture streamlines key processes under Transport department-

- Incident/Accident Management
- Workshop management
- Crew Management & Appraisal
- Depot Management
- Fare collection

An intelligent BPM platform successfully captures information from complex events related to logistics and transport that are successfully aggregated and new processes are initiated to streamline them.

## ■ **Social Governance: Citizen Safety, Security & Grievances across touch-points**

Smart cities are being developed to extend social governance and ensure safe and secure lives for citizens. Citizen Care & Support centers are being developed to address citizen grievances and track welfare of city-dwellers. These centres are required to be extremely connected and have automated processes to be very efficient and not delay or deny any service.



Since smart cities are citizen-centric, there is a need for faster reaction to public safety threats through real time analysis of information generated from surveillance cameras, and sensors. Apart from that, technologies are required to monitor moods and sentiments of citizens regarding their multiple interactions with government and private players. They might be sharing insights on social media platforms or in the online world.

Addressing all citizen pain-points and providing instant relief is social governance. However, this scenario of a hyperconnected city with smart technological solutions extending a happy and comfortable life to its citizens appears unbelievable. Doesn't it?

Not anymore. Certain technological platforms such as BPM that are able to leverage digital sensing technology are capable of addressing citizen queries posted on social media as well. With BPM, processes are re-engineered to streamline the following areas across all citizen touch points- Customer Experience management  
Grievance Management

## ■ e-Health for Effective Health Care

Citizens of smart cities are provisioned with access to 'smart health care'. By the term 'smart health care', the reference is to have a broader view of the city's health status, monitoring and diagnosis of medical conditions and citizen alerts for any health-related deviation on their mobile and other digital devices.

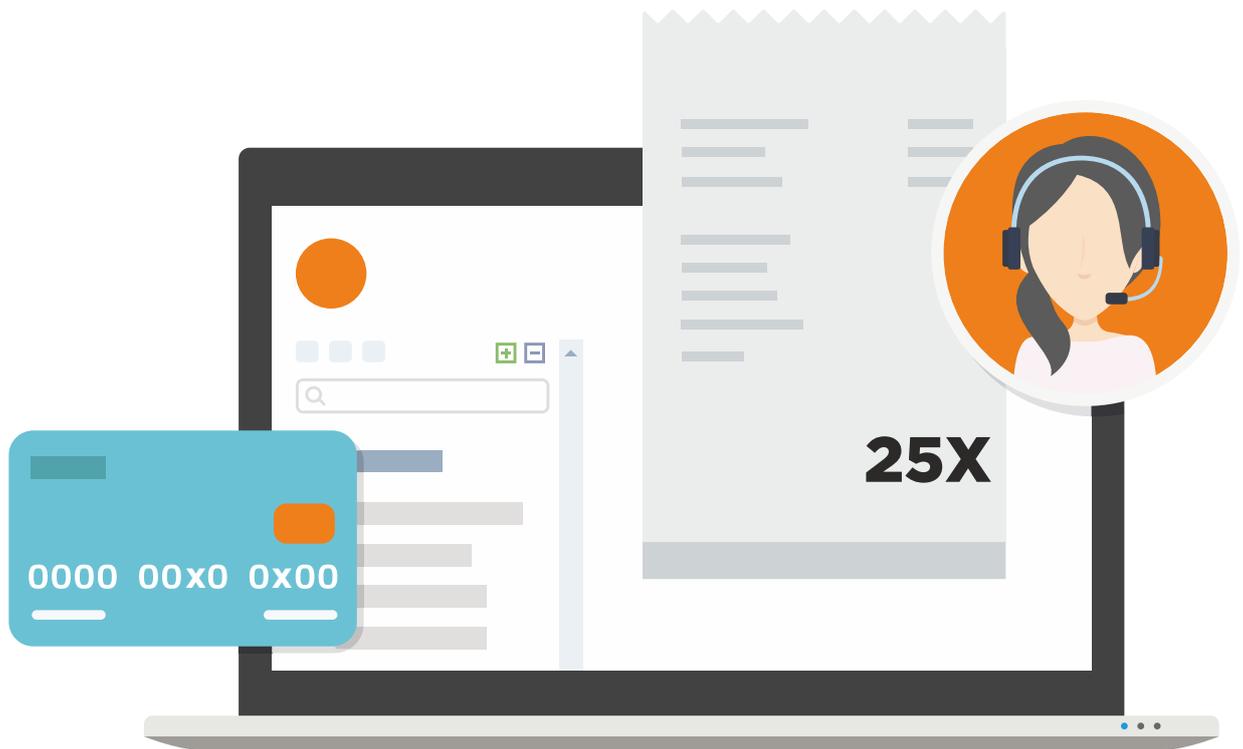
Managing Electronic health records, medical reports and disease related documents play critical roles in making health care effective to citizens in smart cities. Treatments need to be specific to and personalized for citizens. Platforms of ECM and BPM enables health care delivery as they connect devices, medical institutions, hospitals, government agencies and medical insurance players effectively. What we have are better connected citizens who are constantly engaging with health care providers and are able to track their medical conditions in the most cost-effective manner.



## ■ e-Municipal Offices for Essential Services

Citizens should have easy access to municipal records such as birth and death certificate, water and electricity bills etc. This is made possible by consolidating all records and digitizing them with a robust content management system. Services can now be offered to citizens on a single interface and they are further empowered with options to choose a service they want from a pool of services. The services can range from a simple request like Birth certificate to a complicated one like Building permit, where on site physical verification is required.

With application processes automated in municipal offices, citizens can apply for a service from the website or a local municipal centres. The complete **Approval and Scrutiny process** along with the issuing of the certificate can be done within the application itself. This common application infrastructure would enable 24X7 service delivery and easy access through kiosks, internet portals, common Service Centres (CSC), government Offices (such as Municipal Corporation etc.) and affiliated offices (such as Post Office).



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2. The Government Summit Thought Leadership Series Smart Cities: Regional perspective, United Nations and ESCWA report
3. United Nations: Economic and Social Council report; Commission on Science & technology for Development, Nineteenth Session, Geneva, May 2016 report
4. 2017 Smart Cities Index ;EasyPark Group- <https://easyparkgroup.com/smart-cities-index/>

# What Next?

Smart City initiatives are strategic and long term programmes that can only be effective when supported by a well devised architectural blue print. Newgen has been helping governments globally for two decades in their citizen-centric governance initiatives in areas including, but not limited to, transport, utilities, e-governance, and health care. We hope that the proposed blueprint, that leverages our experiences across various government initiatives, enables you to get a headstart in your smart cities programmes.

## About Newgen

Newgen Software is a vendor/provider of Business Process Management (BPM), Enterprise Content Management (ECM), Customer Communication Management (CCM), Document Management System (DMS), Workflow and Process Automation software. The company has a global footprint in over 60 countries with large, mission-critical solutions that have been deployed in Banks, Insurance firms, BPO's, Healthcare Organizations, Government and Telecom Companies.

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