

# Civic Services Suite

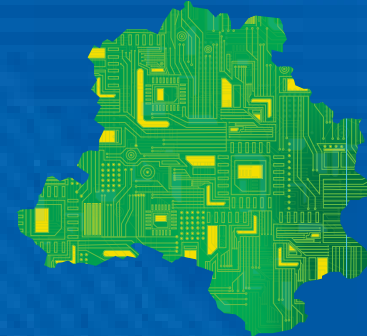
## for Municipal Corporations of Delhi

The journey started in late 2019 when South Delhi Municipal Corporation (SDMC) entrusted NIC with a fresh design, development and hosting of a suite of IT applications in the cloud computing environment for implementation across the three sister civic bodies, namely, East, North and South Delhi Municipal Corporations. These three civic bodies came into existence in 2012 after the trifurcation of the “Municipal Corporation of Delhi” (MCD), then the second largest civic body in the world after the Tokyo Metropolitan Area. Before 2019, MCD was running the entire IT ecosystem in-house with the support of the third party vendors. Over the period, with growing functional requirements and advancement in technology, the system started facing challenges with respect to data security, data sharing, data availability, application performance, upgrade, and escalation of the codebase to meet the growing requirements. Therefore, the MCD felt the need to design afresh to overcome such problems and ensure the development of a configurable, scalable, secure, re-usable, compatible system for API integration, payment services, eSign services, authentication, and common processing workflow to render seamless services to a large population.

### Suite of IT applications

The development of applications started in January 2020 and went forward during the entire COVID-19 pandemic period. Following suite of IT applications were successfully implemented across three (South, North, and East) municipal corporations:

- Unified Web Portal
- Community hall booking system
- Property Tax Return (PTR) submission
- eMutation (change ownership in property records)
- eSBM (GPS-based tracking of auto tippers & MIS)
- Registration of Birth & Death
- Attendance Mobile App (GPS enabled)
- Property Notices Issuance U/s 123 D
- Property Tax - General Amnesty Scheme
- Mobile app for payment of Tax
- Town Plans (TP) Approval System
- User Charges Collection (Mobile and Web app)
- eCarts Health Trade Licence
- Factory Trade Licence
- GTL / SL (General Trade and Storage Licences)
- Hackney Carriage Licence
- Hawker's Registration



NIC has played a pivotal role in the design, development and implementation of IT landscape of MCD civic services. It is Faceless, Cashless and Paperless system by design which has been helpful in reducing the role of middlemen and long queues in-front-of offices. Services are accessible on mobile phones as well as at CSCs to facilitate a common man at their door-steps or near to their homes. Paytm & PoS systems are also integrated for easy payments. Data-analytics dashboards and help-desks are maintained for effective monitoring of services by the administration to ensure better ecosystem, responsiveness and transparency.

- Hawking Permits
- Health Trade Licence (MHA Unified Portal Integration)
- Health Trade Licence 2.0 (other than Eatables and Lodging)
- Pet Dog Registration and Pet Shop Licence
- Tehbazari Permits Renewal
- Veterinary Trade Licence
- Dairy Licence
- PRICE – Project Information and Cost estimation (By NIC Kerala)
- Form Processing Engine (workflow for approvals)
- Payment Gateway services
- Online slip generation at Burial / Cremation grounds
- COVID-19 related information webpages

Some applications under development are Advertisement and Parking Management, Online Building Plan Approval, Land Lease Management and HTL 2.0.

### Coverage and Processing

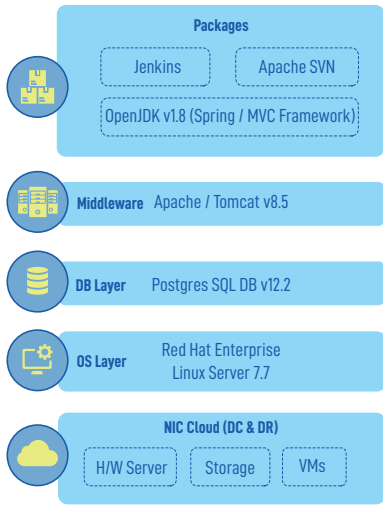
The developed applications have covered over 1.4 crore people over 3332 colonies in 272 wards among 12 zones as mentioned in the following illustration. The licensing applications, once submitted by the applicant, are automatically routed to the respective ward for processing by the concerned inspector and accordingly forwarded to the next officer in the hierarchy.

### Components and Development Platform

Applications have been designed and developed using open-source tools and are deployed on the NIC Cloud (owned by MCD) to ensure high availability on a 24 x 7 basis. Deployment instances are corporation wise. For seamless access and usability, integration of CSC Connect, payment gateway services of ICICI Bank, AXIS Bank, HDFC Bank, PayTM, and PoS has been ensured. The citizen interface is simple and intuitive. One can easily sign up and access the service from anywhere at any time by using their mobile. The processed certificates, licences, and payment receipts are available all time for download by the citizens free of cost. The MCD officials are authenticated by using PARICHAY and authorised by assigning roles in Personnel Information Management System (PIMS).

### Open Technology Stack

The technology stack for the MC-Suite of applications is detailed as:



▲ Fig. 2.1: Technology stake for in MC-Suite of Applications

- Packages: Jenkins, Apache SVN, Open JDK v1.8 (Spring / MVC)
- Middleware: Apache / Tomcat v8.5
- Database: Postgres SQL database v12.2

- Operating System: Red Hat Enterprise Linux Server 7.7
- NIC Cloud Infrastructure: (Hardware server, Storage, VMs, NAS, SAN)

### Basic Features and Benefits of MC-Suite

- Single Sign-On: Officials can authenticate themselves by using mobile OTP and Parichay. However, citizens can access it using Mobile and OTP, likely to be shifted to JanParichay
- Data Analytics Dashboards: Officials can view data and generate reports for effective monitoring of services and improvement of the ecosystem
- Helpdesk Support: Helpdesk support is available on a 24 x 7 basis. A predefined escalation matrix of officials is in place to resolve the issues in time
- Digital Payment Service: Payment gateway service is integrated with all the MC-Suite applications. Payments can be done by using a Credit / Debit card, INB, UPI, Paytm and PoS. Complete transactional data is maintained in a separate schema
- Common Form Processing and approval workflow system for all applicable applications
- SMS Alert Service: An SMS alert service is integrated for all users
- Roles Management: To authorise MCD officials

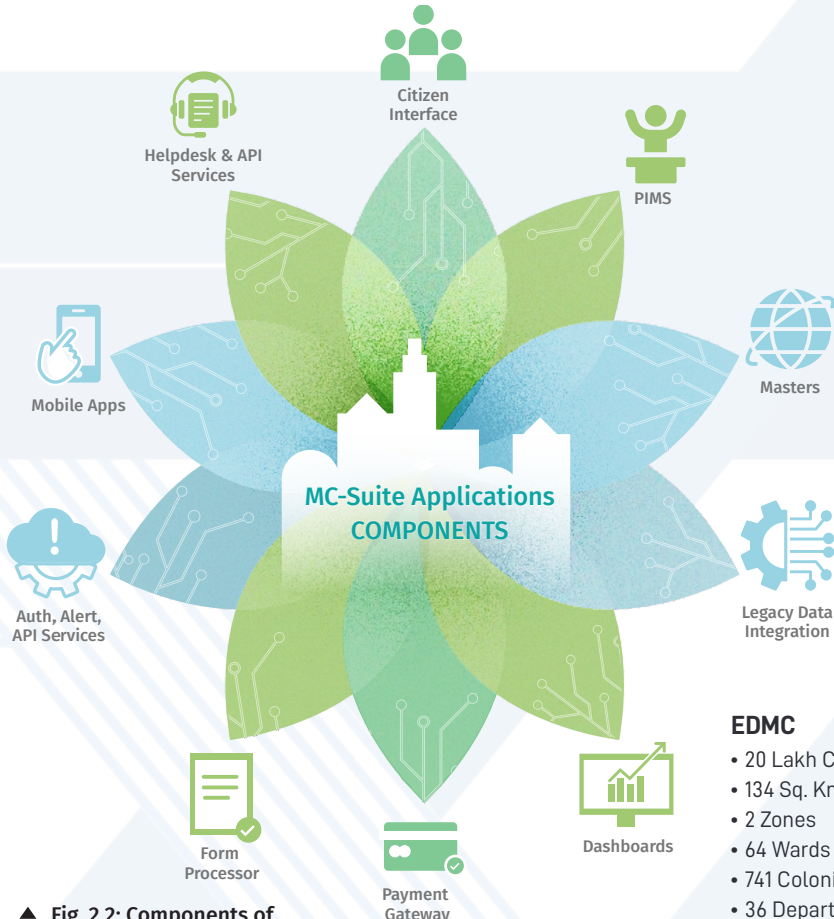
During and after COVID-19 pandemic, people are more technologically empowered and virtually-networked than ever before. Though, the challenges of revenue collection and seamless delivery of services to the citizens at their 'doorstep' have been met efficiently with the technical partnership of NIC. During COVID-19 era the team NIC in collaboration with nodal South Delhi Municipal Corporation has been developing and implementing the sustainable systems consisting of both Mobile and Web based applications for Collection of Property Tax, Registration of Birth Death, GPS enabled attendance mobile App, and other licensing applications of Factory, Veterinary, Health and General trade etc. Going forward, the NIC MCD team has almost done with the development of prestigious approval, tracking of auto tipplers, issuance of notices etc for effective monitoring of civic services for efficient and transparent governance for better echo system and 360 degree awareness & empowerment of common man. I must complement NIC for developing & maintaining the suite of IT applications during such a short span of time and replicating them across the sister Municipal Corporations of Delhi. I wish them all success in their future endeavours.



**Gyanesh Bharti, IAS**  
Commissioner, SDMC

to access particular applications as per the role assignment in PIMS

- Secure & Verifiable Features: A user needs to perform Two Factor Authentication for login using OTP and Parichay. Every document is printed with a QR code for verification
- Cloud Hosting: Besides having a secure environment, we can add and share need-based resources on the cloud.



▲ Fig. 2.2: Components of MC-Suite Application

**EDMC**

- 20 Lakh Citizens
- 134 Sq. Kms
- 2 Zones
- 64 Wards
- 741 Colonies
- 36 Departments
- 29,934 Employees

**NDMC**

- 62 Lakh Citizens
- 594 Sq. Kms
- 6 Zones
- 104 Wards
- 1168 Colonies
- 36 Departments
- 58,049 Employees

**SDMC**

- 60 Lakh Citizens
- 663 Sq. Kms
- 4 Zones
- 104 Wards
- 1423 Colonies
- 36 Departments
- 51,936 Employees



The all-pervasive and overarching influence of the world wide web has not just enabled a real-time and faithful exchange of ideas, experiences and knowledge across the globe but also offered hitherto unheard and unimaginable tools and IT solutions for better governance, efficient service delivery and launching initiatives for larger public good and technological empowerment of common man. IT solutions during COVID-19 Pandemic have acted as virtual express-ways for successful execution of our plans. The conception, development and implementation of systems by NIC for efficient delivery of services to the citizens of Delhi under jurisdiction of corporations is a progressive step in our continuous endeavour of march-

ing towards a citizen centric, responsive and transparent governance. It is my sincere hope and belief that the suite of IT applications developed by NIC will succeed in achieving its intended objectives by creating greater awareness amongst the citizens and the administration.

I heartily congratulate the National Informatics Centre (NIC) for its perseverant efforts and hard work in designing, developing and implementation of citizen centric IT applications.



**Vikas Anand, IAS**  
Commissioner, EDMC

- There is a live replication of DC site data at the DR site
- The turnaround time has been reduced
- Need based Data sharing using the API interface
- Applications are audited for any security issues and most of them are tested for QA and Performance testing

### Major Applications

Major applications of MC-Suite are briefly described here along with specific events, features and statistics of implementation in three municipal corporations of Delhi.

#### Unified Web Portal

[www.mcdonline.nic.in](http://www.mcdonline.nic.in)

Anybody can access the portal of the respective corporation to get the required information. Its contents are configurable and database-driven along with a change management facility. For

example, users can change their photos, create menus, and so on by using their credentials.

#### Registration of Birth and Death (RBD)

The application has been developed as per the RGI Act. A common person for non-institutional events can apply for a birth / death certificate from the vicinity of the home. The institutional events are registered by approved Hospitals, Nursing Homes and Clinics. More than 80 lakh legacy records were migrated to the new system for processing of birth and death certificates. Using the new application, so far 5.8 lakh birth certificates and 1.6 lakh death certificates have been issued and more than 850 hospitals are registered.

#### Property Tax Return (PTR)

PTR is submitted online by respective taxpayers on the basis of self-assessment to municipal corporations of respective areas. So far,

it is done annually. More than 13 lakh properties are registered among three corporations. The system, on the basis of applied tax calculation factors, property & owner details, calculates tax and rebates, which is paid online by the taxpayer. The tax factors and master details vary from one corporation to other. It has basic modules for UPIC generation, Legacy property search, Offline PTR submission, UPIC transfer, Tax-Payment for previous years, general amnesty schemes, eMutation, Issuance of Notices, QR code on payment slips, Taxpayers ledger and Officers login for approval.

#### Community Hall Booking

The application has been developed and is hosted for booking in 292 community halls scattered over three corporations (of which 125 are in NDMC, 97 are in SDMC and the rest 70 are in EDMC). It takes care of subsidised and reserved bookings for vulnerable citizens of the society



▲ Fig. 2.3: Unified mobile app home screen

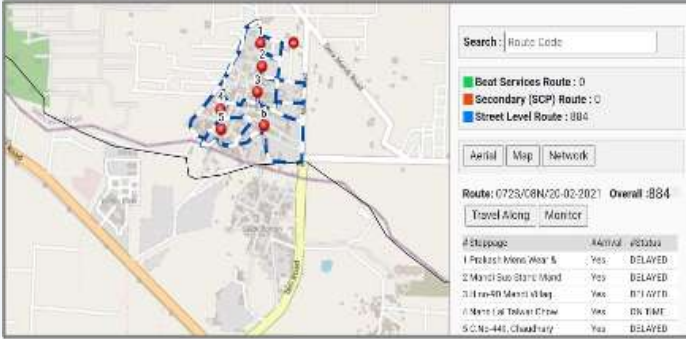
and retired / working officials of MCD. It has a workflow for approval of reserved / privileged booking. All payments are done online with a provision for refund to security and cancellation amount.

#### Attendance Mobile App

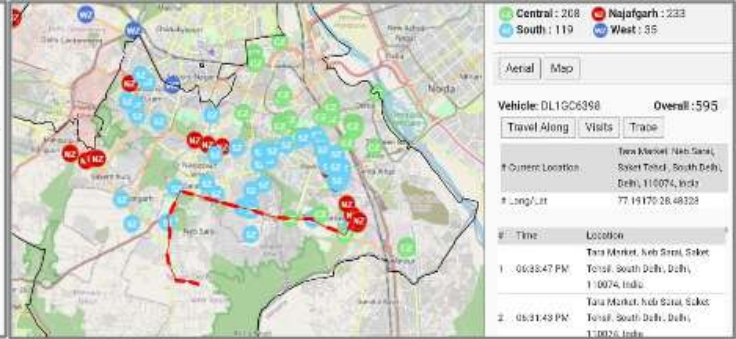
The smart app allows MCD employees to register devices based on their unique BMID. The registered employees mark their attendance using registered mobile numbers. Since the app is GPS enabled, it automatically captures the user's coordinates (latitude and longitude) along with exact date and time. The reporting officers can track the attendance of all the subordinates vis-à-vis their in or out timings. A supervisor can also mark attendance especially for "Safai Karamcharis" and those who do not have a smartphone. So far, more than one lakh employees of three corporations are registered. This mobile application is available for both the Android and iPhone users.

▼ Fig. 2.4: Launch of Mobile App for Property Tax Return by the Commissioner, MCD and DG, NIC





▲ Fig. 2.5: Route Tracking under eSBM



▲ Fig. 2.6: Vehicle Tracking

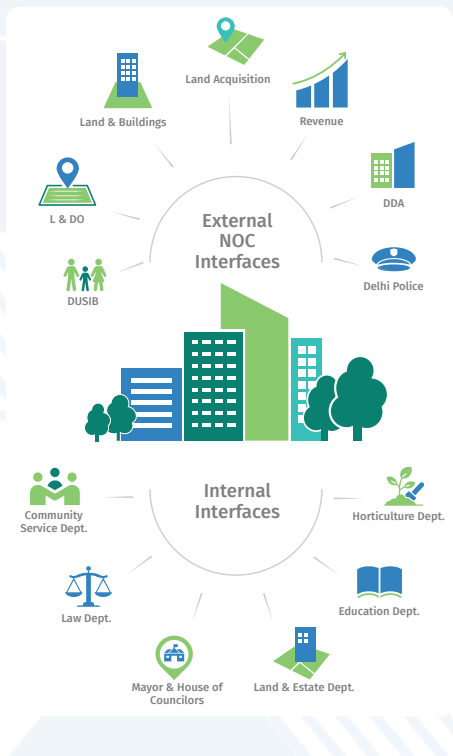
**Unified Mobile App**

All mobile apps developed independently have been made available under a single app known as Unified Mobile App. This App facilitates fetching all properties or birth / death certificates registered against a mobile number among all three corporations and one can also check and pay tax and download certificates as per requirement. Presently, four apps form the unified app.

**GPS-based Tracking of Auto Tippers under eSBM**

Under Swachh Bharat Mission (SBM), an application has been developed to track the movement of auto tippers (carrying waste) on their pre-decided routes. Tracking is done by receiving and analysing the data from GPS devices installed in the respective vehicles. Accordingly, data is analysed for penalty calculation along with report and MIS generation.

▼ Fig. 2.7: Components of Town Plan Approval System



**Pet Dog Registration**

As per the government guidelines, each dog owner is required to register their pet dog with the MCD. The MCD portal allows users to register their pet dogs online. For registration, vaccination details and a photo of the pet are mandatory. After uploading the required documents and payment of fees, a registration certificate is generated.

**Town Plan Approval System**

This is a workflow-based application that has been developed to facilitate town planning. It has an interface for architects to upload plans, pay fees, download layouts and rectify deficiencies as raised by Town Planning Officers. On the MCD interface, an officer can see modules for architect's registration approval, verification & scrutiny, approval of plans and raising of deficiency. Other Departments (for No Objection Certificate) also need to verify part of the application pertaining to them and accord approval.

**PRICE (Project Information and Cost Estimation)**

A system for Project information and Cost Estimation, customised by NIC Kerala state unit, has been successfully replicated in three municipal corporations of Delhi. The customised instances are hosted on the MCD cloud. The updation of the Delhi Schedule of Rates (DSR) 2019 for Electrical and Civil specifications, preparation of estimates, BoQ, NIT has been implemented successfully. Post-tender task of project management is in progress. Over 2400 estimates have been prepared whose AS and TS are completed.

**Suite of Licensing Applications**

There are 8 licensing applications that have been designed, developed and implemented in all three municipal corporations. The common process flow comprises application submission by traders, issuance of provisional licence, along with processes for application scrutiny, deficiencies, rectification, approvals, rejections, surrender, amendment, and renewal takes place. The sole idea is to issue a licence as soon as possible in compliance with the Ease of Doing Business. The renewal of each licence is based on legacy data, hence migration of huge legacy data

and to sync with newly designed applications has been completed. The validity of most of the licences has been made optional for 1 / 2 / 3 Financial Years duration depending on the trader's requirement. The licence has now been linked to UPIC to know and verify the property details of trade premises.

**Factory Licences**

On successful submission of application along with required documents and payment of

Collaborative development and implementation of suite of IT applications by NIC for the Municipal Corporations of Delhi is our incessant attempt and desire to consistently engage with our enlightened and noble citizenry and other esteemed stakeholders so as to achieve ever-greater levels of success and proficiency in our common goals of seamless delivery of services and collection of revenue which further enables the civic body to provide better services. Due to the unparalleled contribution of NIC and our officers in development of systems, we could improve in achieving a better echo system and transparent governance in many areas of our endeavours. Despite the challenges of the COVID-19 pandemic, we were able to achieve our goals successfully with the continuous support of NIC in development and implementation of IT applications. I firmly believe that the suite of IT applications developed and maintained by NIC will go a long way and will keep helping the corporation with efficient service delivery, transparent, and responsive governance.

**Sanjay Goel, IAS**  
Commissioner, NDMC



South Delhi Municipal Corporation (SDMC), being nodal for development and implementation of eGovernance solutions for the three corporations of Delhi has been collaborating and assisting NIC in requirement analysis and needful BPR for consistent and sustainable development by conducting inter-corporation deliberations, meetings from time to time. During the last two years NIC has designed, developed and implemented most of the applications successfully, across the three corporations. I must congratulate the entire NIC team who worked tirelessly to ensure an uneventful, smooth and seamless transition.



**A.A. Tazir, ITS**  
Addl. Commissioner (IT), SDMC

fees, a provisional licence is issued for 3 months duration, and in due course of time, its scrutiny and approval process take place. As of now, over 8000 licences have been issued and renewed.

**Veterinary Trade Licences (VTL)**

It includes 4 types of licences namely horse buggies, dairies, meat shops and meat processing units. The licences are issued to applicants who are 18 or above, on meeting conditions of distance from religious places, hygiene conditions of premises, and body test reports of the licensee. Over 3200 licences have been issued or renewed.

**General Trade / Storage Licence**

The General Trade / Storage licence (GT / SL) is required for the establishment of permitted trade activities. There are 15 trade premises and over 450 trade activities like shops, show rooms and small home industries. GT / SL system has provision for instant issuance of a licence on successful submission of an application along with required documents and payment of fees. Scrutiny, inspection, and approval processes start later in due course of time by the concerned

area inspector and other officers in the hierarchy. As of now, 25,000 licences have been issued or renewed.

**Health Trade Licence (HTL)**

The trade consists of 2 major licensing categories. First, for eatable and lodging establishments (restaurants, hotels, banquets, etc. and Second consisting of over 60 small trades related with other health aspects i.e. eCarts, SPA centres, water trolleys, chilling centres, among others. For the first type of licences, NIC has developed and maintained a portal to receive applications from traders centrally under MHA, and then such applications are downloaded at MCD backend for scrutiny, processing and issuance of licences. Over 2500 licences have been issued or renewed in this category. The second type of trade licence deals with the MC-Suite itself.

**Tehbazari (Squatting) Permits**

It is a kind of marketer sitting on the roadside selling small household goods. They have to obtain a permit (renewable annually after payment of prescribed fees) for selling goods as per the size of the squat that may be 4'x6', 8'x12' etc. Generally, these permits are issued to vulnerable people, widows, or very poor citizens to enable them to earn their survival. Presently, data for 4588 (South), 6949 (North), and 1121 (East) Tehbazari is available. The owners keep on renewing their permits every year online by simply using Mobile OTP and paying the prescribed fees. However, for the time being, the Hon'ble Supreme court has ordered not to issue new Tehbazari permits. Only renewal and mutation are permissible.

**Hackney Carriage and Hawking Permits**

Hackney Carriage refers to any wheeled vehicle pulled by an animal or a man and used for the conveyance of passengers and to carry goods. The types of hackney licences are Rickshaw puller, Cycle rickshaw and Cycle trolley. Presently, 106150 in South Delhi, 91206 in North Delhi, and 68950 in East Delhi, hackney carriages are going to be renewed. However, this permit is issued for 5 years. By the time of renewal, the rickshaw / trolley may not remain in use. Therefore, instead of renewal, new permits are issued on payment of prescribed fees online. There are only less than 400 hawking permits renewed across three

The Civic Services Suite of over 20 IT applications developed and implemented by NIC for the Municipal Corporations of Delhi is, by design, a purely faceless, cashless, and paperless solution for citizens to avail hassle-free services at anywhere, anytime. The state-of-the-art system architecture and its design help in securely and seamlessly sharing data across Government Departments. The Data-analytics & dashboards help in better monitoring across the improved ecosystem. I hope that implementation of the suite has effectively reduced turnaround time for a number of services, enabling responsive governance.



**Dr. Neeta Verma**  
Director General, NIC

corporations as per the request of the permit holders. There is no such potential in the scheme.

**e-CART Licences**

e-CART is a kind of Rehari / Rickshaw for selling packed eatables. EDMC has brought in a policy for issuance of such licences to poor people (<5 in a ward) after verification of the area by the traffic police department. The application has been developed for issuance of licences under Health Trade Licence 2.0.

**User Charges Collection**

User-charges mean payment to the respective MCD in lieu of household garbage collected by the MCD people / auto tippers. Mobile and Web based Application has been developed for collection of user charges. It is linked with the Property tax unique ID to properly map the payment with the property. Different property types (commercial, residential, non-residential, religious) have different charges as set by MCD. One can pay charges online monthly, bimonthly or as per his capacity.

**e-Mutation in Property Tax Records**

eMutation is a workflow-based application which enables the property owners to apply for change of ownership details in the property tax records. The change may be due to Sale-Purchase, Gift, Inheritance and Partition. For successful submission, required documents and prescribed fees need to be paid online. Subsequently, the concerned officers scrutinise and verify the application for approval. After the approval, applicants can download the mutation certificate and have records updated automatically.

▼ Fig. 2.8: Hon'ble Mayor & the Commissioner Launching Licensing suite at EDMC





▲ Fig. 2.9: NDMC Commissioner inaugurating integration of Property Tax Payments with PayTM

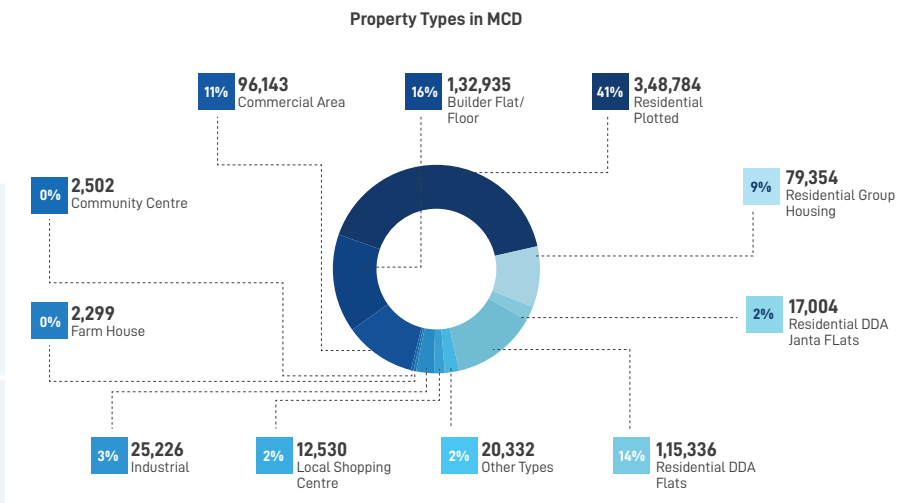
**Property Tax - General Amnesty Scheme**

At the end of each year, corporations launch an amnesty scheme for property taxpayers to pay their tax balance in one go on reduced or waived off penalty. It has increased tax collection and brought new taxpayers under tax regime. It has been successfully implemented for NDMC and other corporations are likely to follow it.

**Integration with PayTM**

Paytm has been integrated with the MC-Suite of applications for NDMC. Initially, it was linked with property tax payments. By adding this option, payment system has become fluent and transparent. More than Rs. 6,75,000 worth of payments were made through PayTM on the launch day itself.

▼ Fig. 2.10: An overview of properties covered by MCD



▼ Fig. 2.11: NIC Team behind the MC-Suite of Applications  
 Sitting (L-R) : Shri Rahul Jain (Sr. TD), Dr. Susheel Kumar (DDG & HoD), Shri Vishal Gupta (TD), Shri Nirvesh Kumar (TD) Standing (L-R) : Shri Rajeev Kumar (Sci-B), Shri Mukesh Kumar (Sci-B), Shri Raju Kumar (STA), Shri Rahul Kumar (Sci-B)



**Data Analytics Dashboard**

Every application has its separate dashboard indicating the number of applications received, processed, pending, approved, rejected according to date, zone, ward along with revenue collected. It gives a clear view and reports on performance, which helps in improving the ecosystem.

**Applications Rollout in MCD**

Major applications / products of NIC namely PRICE, Sparrow, eOffice, LIMBS, eHRMS, Appellate Tribunal, and eHospital are either implemented or under the process of implementation.

**Impacts Analysis**

- Applications are faceless in nature, no one needs to visit offices and stand in queues
- Users can access the applications 24 x 7 from anywhere
- Overall process timeline has been reduced (turnaround time)
- Online document uploading, common form process and approval workflow system
- Integration of PoS (point of sale machines) and Paytm has helped common man at doorstep payments
- Processed licences and certificates are secure and verifiable scanning QR codes
- Personal dashboard for each applicant that allows them to access and download each document

**Awards**

CSI SIG has conferred an award of recognition to the MC-Suite of applications based on their evaluation in September 2021.

**Unification of MCDs**

It is also pertinent to mention here for the readers that after a decade of trifurcation of the MCD, a bill has been passed in the Parliament to unify three civic bodies again in one. Accordingly, a mammoth task of revamping applications, processes, business logics, database systems in respect of unification shall be taken up.



**Rachna Srivastava**  
 DDG & HoG  
[rachna\\_sri@nic.in](mailto:rachna_sri@nic.in)



**Dr. Susheel Kumar**  
 DDG & HoD  
[susheel.kumar@nic.in](mailto:susheel.kumar@nic.in)

Contact for more details

Dr. Susheel Kumar  
 HoD, Municipal Corporation Informatics Division  
 NIC Hqrs., A-Block, CGO Complex, New Delhi - 110003  
 Email: susheel.kumar@nic.in, Phone: 011 24365981