



**Ministry of Housing
and Urban Affairs**
Government of India

Pune City Data Officer: Driving Data Driven Governance in Municipal Systems – A Case Study

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Abstract

The [Smart Cities Mission](#) was launched by the Ministry of Housing and Urban Affairs(MoHUA) in 2015 with a view to cater to the staggering rise of urbanization in India through an Area Based Development(ABD) approach, implemented through creation of a Special Purpose Vehicle(SPV).

Pune Smart City Development Corporation Limited(PSCDCL), the SPV for the city of Pune, in association with Pune Municipal Corporation(PMC) have effectively leveraged the resources provided under the Mission to become a frontrunner in the Smart Cities Mission cohort, through implementation of several award winning digital transformation initiatives such as:

- i. An integrated Business Intelligence platform, with seamless two-way flow of information for most departments within the Corporation;
- ii. A fully operational Integrated Command and Control Centre(ICCC) with embedded IoT enabled devices capturing real time insights for multiple departments such as Environment, Water & Sanitation and Waste Management;
- iii. An active technology enabled citizen's grievance redressal system; and
- iv. An updated [Open Data Portal](#) under the [Open Government Data](#) norms of the Govt. of India¹

Given the importance of furthering the case of data driven governance in creating a truly 'smart' city, Pune was one of the first cities to sign up for the City Data for India Initiative, an initiative by [Tata Trusts](#) to empower and enable Indian cities to use data as their new currency of planning and development, through delivery of the first international standard on city data, the [ISO 37120](#) framework - Indicators for City Services and Quality of Life.

[Pune was the first Indian city to be certified Platinum](#), the highest level of certification in the process. Post certification, to cater to the gaps in the data management and engagement strategies of the ULB, the Trusts deputed **India's first City Data Officer** to PMC in partnership with Tata Consultancy Services(TCS). The CDO is a unique leadership role within the city administration, and works with the senior city leadership to tap the potential of municipal datasets to drive data driven decision making, and to seed the data culture within and beyond the Corporation.

The current case study captures the learnings and experiences of the first year of deputation of the CDO in Pune. The experiences have been built in to the institutionalization of the role in the Smart City HR Guidelines, which mandates the nomination of a CDO in each of the 100 Smart Cities in India.

¹ Further reading material on the experiences of implementing the Open Data Policy in Pune can be found here.

1. The Challenge

Governance systems in urban India have interacted far more with technology enabled systems and emergence of data than rural administrations. This has been on account of targeted Government of India run urban development programmes such as Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Jawaharlal Nehru National Urban Renewal Mission (JNNURM) and Smart Cities Mission (SCM), with specific budgetary allocations on technology upgradation and integration. In addition, the nationwide initiatives such as the National e-Governance Plan (NeGP), have given way to the more recent Digital India Initiative. A basis assessment of such technology systems and initiatives, and the state of data in Indian ULBs reveal the following:

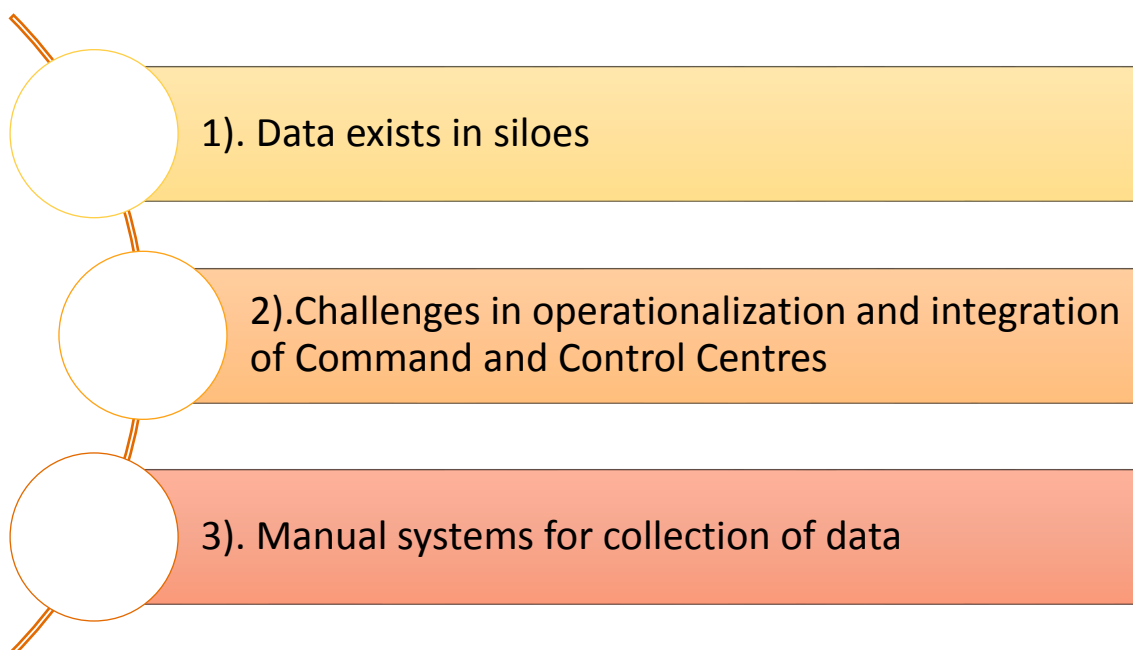


Figure 1: State of Data in ULBs

1).With legacy systems operating in silos and lack of system integrators, the data collected and maintained, is non-standardized and resides in separate databases, reducing operational efficiency of the system at large.

2). Some of the identified Smart Cities have deployed ICCCs, with a view to act as Master System Integrators (MSIs) to streamline technology and functional operations of an ULB, across all functional service delivery departments in a city. Operationalization of ICCCs has been a challenge, with gaps in the connecting bridges between the ICCC and relevant ULB department.

3).Deployment of dashboards at the municipal level for data integration and visualization, while the departmental functionaries continue to use manual systems for collection of data. This has been the case in Tier II and III cities, and Nagar Panchayats, with limited capacities and budgets to implement technology systems, historically leading to a collation of unreliable data sets, with no validation and audit systems in place. This affects the data culture and performance monitoring of the Urban Local Bodies(ULB) adversely.

In the private sector, this role is typically fulfilled by the Chief Data Officer(CDO) – a pivotal member of the C – Suite for organizations worldwide, helping them navigate today’s disruptive, dynamic, data intensive world. According to the Chief Data Officer Playbook developed by IBM (2015), a CDO is primarily responsible for the enterprise wide management and use of data as a strategic and competitive asset of the organization. This is done in a 3 pronged manner – as a data integrator, business optimizer and market innovator, measured in terms of the impact on data management, organizational efficiency and agility, business outcomes, profitability and revenues.

CDOs in the private sector are now rife, especially in customer facing businesses, and make for a compelling case in the industry, as research shows that organizations with CDOs are more business driven, analytically mature and outperform their peers.

In the case of limited capacities within governance setups, in this case, Urban Local Bodies, to cater to the unmet yet critical data needs, both from the perspective of better administration and service delivery, and to ensure transparency and accountability in functional and budgetary operations, it becomes imperative to put in place a dedicated resource within the ULB with a view to drive the data engagement and management strategies of the corporation.

2. The Solution

2.1 Dedicated Resource to support Indian Cities on Data Management

In line with PMC's foresight in hiring a dedicated City Data Officer(CDO) beyond the existing consultancies and vendors providing technology support to the Corporation, Tata Trusts partnered with Tata Consultancy Services(TCS) to depute a resource with the right mix of attitude, experiences and willingness to work towards systems strengthening.

The role had no set frameworks and guidelines to start with. One was aware that it was a highly experimental role which would require innovation, creativity and a penchant to work in systems with significant bureaucratic and political undertones. With consensus on the overall mandate of the role - of enabling efficient, transparent and accountable service delivery and governance - in October 2017, the first CDO in the country was deputed to PMC.

2.2 Implementation Modalities

The CDO was required to have relevant experience in the domains of Information Technology, Handling of Data Systems and Project Management. Previous leadership experience was essential, and a prior experience of working with or handling government systems was required.

The CDO was placed in the IT Department of PMC, to ensure a working alignment with the technology systems and decision making platforms run by the IT HOD; and was directly reporting to the Municipal Commissioner. The role involved close coordination with the Heads of Departments within the Corporation, and with the designated nodal officers of each of the departments². The role of the CDO was mandated as per existing ULB norms, and was also required to work with members of the Smart City SPV, the Integrated Command and Control Centre and departments external to the ULB.

The Key Responsibility Areas(KRAs) of the CDO for the first year (on immediate priority and in the long term) included the following:

Immediate Priority

- To promote data usage in alignment with the ULB's Open Data Vision and Open Data Initiative
- To formulate the Data Management and Engagement Strategy of the ULB.
- To advise the ULB and its departments on the utility and value of maintaining an inventory of standardized datasets, and supporting the concerned officials in doing so.
- Responsible for aggregation and validation of internal and external data sets, and produce insights through application of data analytics frameworks. To proactively use data driven insights for promotion of effective urban governance.
- To review and provide feedback on existing data dashboards and maintain accuracy levels in line with the ULB's vision. To regularly update the features and data sets on the City Open Data Portal.

² Basis the National Data Sharing and Accessibility Policy(NDSAP) guidelines.

Long Term

- To facilitate use, reuse and redistribute of Open Data (An ULB collects, processes and generates a large amount of data in its day-to-day functioning. But a large quantum of government data remains inaccessible to citizens, civil society, although most of such data may be non-sensitive in nature and could be used by public for social, economic and developmental purposes).
- To work with Government Agencies to design and develop an annual roadmap for nurturing and institutionalizing a data driven culture at the ULB.
- Define Standards for Data Collection and Management for respective departments and ensure associated compliances.
- To demonstrate and promote the value of data analytics; and leverage support from government and non-government stakeholders towards showcasing the same.
- To identify, optimize and integrate information systems & external resources (Datamarts, Datasets and Databases) and tools (Platform, APIs) for data visualization and advanced analytics.
- To support the data needs of the ULB and its departments towards certification by various agencies such as World Council on City Data(WCCD), Resilient Cities, Census etc; and regular data requirements of the govt such as the Livability Standards, Ease of Living, RTI, Census Survey, NSSO, Election Data etc.

2.3 Buckets of Functioning

The buckets of functioning of the CDO are categorized below:

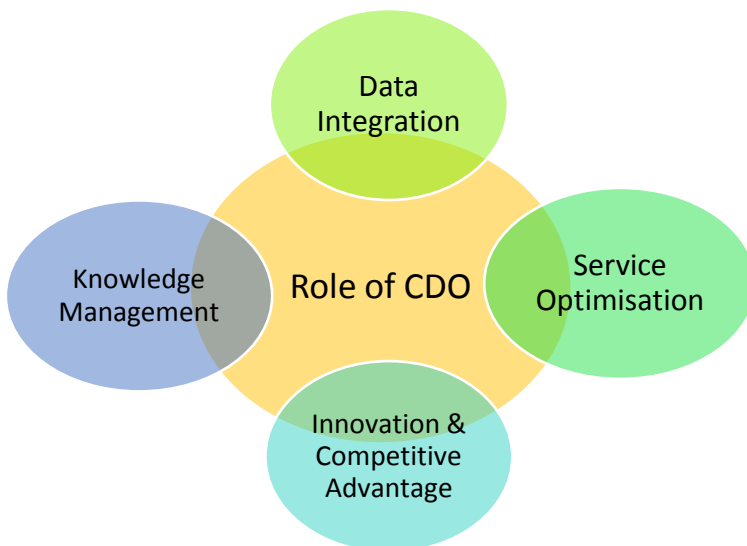


Figure 2 Role of CDO

Service Optimization:

- Improve operational efficiency and agility within ULB

Data Integration:

- Aggregate and validate internal and external data sets
- Produce insights through application of data analytics frameworks
- Build a digital transformation roadmap built on the 3 pillars of data governance, data quality and data integration
- Build an open data roadmap through the Open Data Government of India Policy
- Proactively promote data driven insights for promotion of effective urban governance

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- Provide technical expertise on service optimization parameters related to digital citizen services and employee workflows within the corporation
 - Track service delivery parameters through available decision support systems
 - Capacitate mid to senior level ULB officials on tenets of technology usage for effective urban governance and to improve their existing data management processes

Innovation & Competitive Advantage:

- Promote research & innovation through the Open Data Portal
- Use data as an asset for ULB – monetization roadmap (eg: Infrastructure Investment Indexing, Modelling and Analytics)
- Work with public and private entities to enable usage of data for public service delivery projects

Knowledge Management:

- Represent the ULB at conferences through presentations and research papers to ensure a steady flow of knowledge creation

3. The Impact

The CDO in Pune is currently in the second year of appointment. The impact articulated in the first year includes:

- One of the key achievements of the CDO has been to effectively populate the Open Data Portal (with approximately 450 datasets) under the Open Data Policy of the Government of India. This was done not only to increase the number of data sets, but also with a view of increasing the value and depth of the data sets.
- The activation of the Open Data Portal led to the setting up of an informal City Data Alliance, with members from private sector entities, academic and research organizations and civil society organizations coming into the fore, actively contributing datasets/feeds to the Portal, and facilitating hackathons and challenges to further research on the open data.
- Advisory support provided for streamlining of vendor managed datasets/feeds including critical aspects of data monetization, licensing and ownership.
- Capacity Building of departmental officials on data standards, and streamlining of data sources through the implementation of benchmarking exercises such as the ISO 37120 and the Livability Standards.
- Several research papers have been published in association with IEEE, Pune University, NIMHANS and COEP.
- A year after the deputation of the first CDO in Pune, appointment of a CDO has been included in the Human Resource guidelines for Smart Cities

4. Lessons Learned

1. Given that a part of the brief was to enhance the “data culture” of PMC, the CDO was actively involved in populating the ISO 37120 data sets for Year 2, which not only helped the resource to get fully embedded into the culture and working of the ULB (a mindset shift for private sector professionals), but also get a sense of the quality and availability of data sets within PMC. This greatly helped the implementation of the Livability standards driven by MoHUA at a later stage, given the overlap between both exercises.
2. It became increasingly evident that people management and change management skills were equally critical to a CDO’s functioning, as are the technology and data handling skillsets. So is being able to bridge the language of governance and that of data and technology, and being able to translate between the two is the critical skill set. A major part of the day to day work of the CDO involves liasoning with departmental officials to collect, sanitize and use data with a fresh approach, in a manner which is more aligned to planning and impact measurement.
3. One of the key achievements of the CDO was to effectively populate the Open Data Portal (with approximately 350 datasets) under the Open Data Policy of the Gol. This was done not only to increase the number of data sets, but also with a view of increasing the value and depth of the data sets (data availability for linked parameters).
4. Capacity building of municipal officials was a continual part of the CDO’s role – to hand hold officials to improve, refine and revamp their existing data management processes in line with the governance mandate of the corporation.
5. A component which evolved during the first year of engagement, was to involve citizen’s groups, civil society organizations, academia, research entities and corporates to participate in the data transformation journey of the corporation. This came in the form of research projects, hackathons, and data sharing by NGOs/CSOs from previous projects (slum level data, GIS data, ward level asset maps).
6. It will be worthwhile to note that every ULB is at a different state of maturity on the data and analytics value chain. This mandates a certain level of fluidity to the CDO engagement framework, to be able to add value to the city’s data enabled governance journey as is, while envisioning a short and medium term plan for the city.
7. It takes a minimum of two years to demonstrate the complete set of possibilities associated with a new position such as a CDO. The first year is geared at understanding the state of data and building departmental inroads while fulfilling certain low hanging expectations of the corporation, while the second year looks at more intensive and productive forms of engagement.

Abbreviations

- PMC – Pune Municipal Corporation
- ICCC- Integrated Command and Control Centre
- IOT- Internet of Things
- CDO – City Data Officer
- ULB- Urban Local Body
- TCS- Tata Consultancy Services
- AMRUT- Atal Mission for Rejuvenation and Urban Transformation
- JNNURM- Jawaharlal Nehru National Urban Renewal Mission
- SCM- Smart Cities Mission
- NeGP- National e-Governance Plan
- MSI- Master System Integrators
- ISO - International Organization for Standardization

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Figure 2: Role of CDO