

DATA MATURITY ASSESSMENT FRAMEWORK

Design & Methodology



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MESSAGE



Durga Shanker Mishra

Secretary, MoHUA

City Governments deal with a large number of complex issues that require integrated approaches to resolve. To tackle these challenges, Government, citizens, academia and industry work together and play a significant role in the functioning of cities. These organizations are custodians of different types of datasets that hold a part of the solution to urban challenges. In order to leverage data generated by systems and processes deployed in cities the Ministry through its Smart Cities Mission has framed the DataSmart Cities Strategy, which lays down the basic premise, foundational pillars and suggested roadmap for cities to improve their readiness for intelligent use of data in addressing complex urban challenges.

As part of the DataSmart Strategy's focus on "People, Process and Platform", this Data Maturity Assessment Framework has been prepared to drive effective use of data by our cities, and to help city leaders in structuring their approach to building a collaborative data ecosystem. As India's cities grow in their ability to leverage data, we will continue to evolve this Assessment Framework through its twin pillars of 'Systemic' and 'Sectoral' maturity to support cities in the most relevant manner possible in the context of their current maturity levels.

With this framework, we will be able to promote a spirit of competitive benchmarking amongst the 100 Smart Cities that will enable them to assess themselves at varying degrees of data maturity with respect to a standardized framework covering aspects of enabling policies, governance structures, data

management, capacity building, and stakeholder engagement. This will also play an enabling role in furthering innovation, collaboration, co-creation and research.

I feel that over time, this Assessment Framework will empower cities with the necessary technical and functional guidance coupled with facilitation of peer learning, to become truly DataSmart. The assessment of cities will foster a culture of data and drive innovation in India's Smart Cities through a spirit of collaboration and healthy competition. I envisage that the Framework will also help cities to better prepare in periodic self-evaluation through important key urban performance indicator sets proposed by the Government of India such as 'Ease of Living Index' and 'Municipal Performance Index'

I commend the Smart Cities Mission team for recognizing the need for such a guiding document and creating a thoughtful and structured approach to assist city Administration. I am confident that in the years to come, this framework will act as the benchmark for cities in India and globally to measure and calibrate their data strategies.

PREFACE



Kunal Kumar

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The Data Maturity Assessment Framework has been designed around certain fundamental principles, with the intention of helping cities undergo a process of self-evaluation, of individual goal-setting, and getting themselves ready to embrace a data culture that is suited to their needs and requirements. The principles below reflect the spirit in which the DMAF is being prepared and shed light on why DMAF is structured in the current manner.

The first is minimalism. The idea is for cities to be thoughtful about what data they collect, why they are collecting it and how they will use it. DMAF respects that cities have limited bandwidth to address the myriad issues they deal with daily. Therefore, the idea of minimalism is to ensure that cities collect only that data which can help improve their functioning and provide them with critical insights for the policy-making process.

A second principle is honest self-evaluation. Embedding a data culture in a city is not intended to be a top-down exercise - instead, the idea is for cities to reflect on why data is important to them, and to evaluate where they stand with regards to data availability and what they need to do, to get themselves to their goals. The framework is designed to pinpoint the critical elements of a comprehensive data strategy and to give cities a template against which they can evaluate and measure themselves.

The third is a focus on readiness versus evaluation, or on thinking of data collection as a process versus an outcome. With this in mind, the purpose of DataSmart Cities is not to put cities under pressure to collect data over two

years but to get them ready to have a long-term culture of data collection. Therefore the focus will be on getting them prepared for longer-term, even if that takes some cities longer than others. Consequently, the first part of DMAF does not try to measure city achievements in the short term. While DMAF will specify certain data points that cities should collect, the real focus is on setting up streamlined processes to collect data, vs on the collection of the data itself. An appropriate data collection process will pay dividends in the long-term.

Finally, a fourth principle is the quality of Data Governance. The idea of framing a city data policy is to help cities understand, at the outset, the responsibilities that come with collecting vast quantities of data, and to help them navigate issues of data privacy and anonymisation. A City Data Policy is critical to retain the trust between the city administration and its citizens, so citizens are comfortable that the city data collection exercise is to their long-term benefit.

DMAF is designed to give cities a roadmap to help them think about the foundational components of their strategy. The focus on trainings and workshops comes from the understanding that this is new territory for all cities, and it is worth investing the time up front to put in place the right people, policies, technologies and processes to yield the best outcomes.

While working with the team to develop DMAF, my experience as a city commissioner and the shared experiences of the Smart City Commissioners and CEOs helped in selecting the relevant indicators that constitute this framework. The team has endeavoured to create a framework calibrated to the realities of India's cities. I thank the Working Group constituted for this task for the excellent efforts in converging their expertise in urban areas to build this framework.

Definitions

Terms	Definition
Data	Facts and statistics collected together for reference or analysis.
Data Set	A collection of related sets of information that is composed of separate elements but can be manipulated as a unit by a computer
DAM Unit	Data Analytics and Management Unit
Meta Data	Data about data
MDO	Mission Data Officer
Open Data License	The Open Database License (ODbL) is a copyleft (“share alike”) license agreement intended to allow users to freely share, modify, and use a database while maintaining this same freedom for others.
SCDA	Smart Cities Data Alliance
Open Standards	An open standard is a standard that is publicly available and has various rights to use associated with it and may also have various properties of how it was designed (e.g., open process).
SCDN	Smart Cities Data Network
Open Government	Open government is the governing doctrine which holds that citizens have the right to access the documents and proceedings of the government to allow for effective public oversight.
OGD	Open Government Data
Negative List	List of Prohibitive datasets/feeds
NDSAP	National Data Sharing and Accessibility Policy
SPV	Special Purpose Vehicle
Data Agencies	Agencies which are consumers and suppliers of public data.
DMAF	Data Maturity Assessment Framework



Introduction

1.1 Emergence of DataSmart Cities

India, according to United Nation's estimates, is going to be one of the three front-runner countries likely to have highest contribution to the growth of the urban population in the world. India's urban population was 37.7 crore (31%) in 2011 census. This is projected to increase to 60 crore (40%) by 2030 and over 80 crore (50%) by 2050. As per 2011 census, urban India contributed 63% to the country's GDP. This is projected to grow to over 75 percent by 2030 and more than 80 percent by 2050. Growing urban population creates a huge challenge to the civic infrastructure and services like sanitation, water, sewage, housing, electricity, public transport, etc. At the same time, with an increasingly engaged citizenry and civil society, the expectations for enhanced accountability from city governments have risen manifold.

Since the launch of the Smart Cities Mission in 2015, there is a growing awareness regarding use of digital technologies to address urban challenges. However, application of technologies in problem-solving needs a robust data system which acts as a backbone of the full cycle of decision-making, i.e. from problem identification and solution design to monitoring of outcomes and necessary course-corrections. Hence, the future of Governance is data-driven and Indian cities are beginning to adopt this change in their functioning. Moreover, data itself pose challenges in its own life-cycle of generation to application. Therefore, bringing data in 'focus' tends to achieve a two-fold objective. One, it creates a culture of 'Digital Leadership' in cities which strives to make use of data to achieve its goal, and two, it helps create pertinent conversations towards creating enablers for a robust system of data.

Recognising the need of the hour, the Ministry of Housing and Urban Affairs (MoHUA) has released the DataSmart Cities Strategy document which lays down the basic premise, foundational pillars and suggested roadmap for cities to improve their readiness for intelligent use of data in addressing complex urban challenges. With the aim of imbibing a strong data culture in cities and across all tiers of governance, the three foundational pillars of PEOPLE, PROCESS and PLATFORM will improve data exchange in cities through open innovation and co-creation.

This document presents a framework known as Data Maturity Assessment Framework (DMAF) and a methodology for a challenged self-evaluation through DMAF. It is intended as a guidance for city governments to help them assess their readiness in becoming DataSmart Cities. The objective is to help cities emerge as 'Digital Leaders' in a paradigm of data-driven governance.

1.2 Intent Of Data Maturity Assessment Framework

A strive towards data-driven governance brings two important aspects to focus, i.e., data as a process; and data for achieving outcomes. The first refers to a robust data governance mechanism along with the supporting institutional structures. The second refers to the availability of data itself, and its usage in decision-making.

The intent of DMAF is to provide a comprehensive yet pragmatic set of indicators to help cities assess their preparedness in both these aspects. DMAF based assessment focuses on **“People, Process and Platform”** approach in all Smart Cities as outlined in the DataSmart Cities Strategy.

It seeks to promote a spirit of competitive benchmarking amongst the 100 identified Smart Cities that will enable them to assess themselves at varying degrees of data maturity with respect to a standardized framework covering aspects of enabling policies, governance structures, data management, capacity building, and stakeholder engagement. The Data Maturity Assessment Framework and

associated evaluation will be carried out in the cities on an evolving basis at regular frequency, to allow cities to increase their understanding of data governance principles and institutionalize associated practices, leading to effective decision making and citizen centric delivery of services. This will also play an enabling role in furthering innovation, collaboration, co-creation and research.

The Framework strives to empower cities with the necessary technical and functional guidance coupled with facilitation of peer learning, to become truly DataSmart. The assessment of cities against DMAF will foster a culture of data and drive innovation in India’s Smart Cities through a spirit of collaboration and healthy competition.

As an intermediate outcome, it is envisaged that DMAF will help cities to be better prepared in periodic self-evaluation through important key urban performance indicator sets proposed by the Government of India (such as ‘Ease of Living Index’ and ‘Municipal Performance Index’).



The Framework



As stated in its intent, DMAF aspires to help cities to strategically focus on unlocking the power of urban data in key urban sectors for enhanced decision making, improved efficiency and greater collaboration and innovation with the urban ecosystem. Cities will be able to utilize the challenge to identify successful approaches and key learnings in a structured manner and connect with each other to replicate relevant approaches. Over time, it will engender a robust, data-driven innovation ecosystem that will help cities solve key urban challenges in a context-sensitive manner.

2.1 Key Pillars

DMAF comprises two key pillars - vis. Systemic Maturity and Sectoral Maturity. The Assessment Framework may include elements from both pillars depending on the maturity levels of cities and the stage of the challenge. Over time, the weightage of each pillar in the scoring methodology and certification process will shift in order to motivate and incentivize cities to first build foundational systems and then focus on achieving depth in key urban sectors as they implement the DataSmart Cities Strategy.

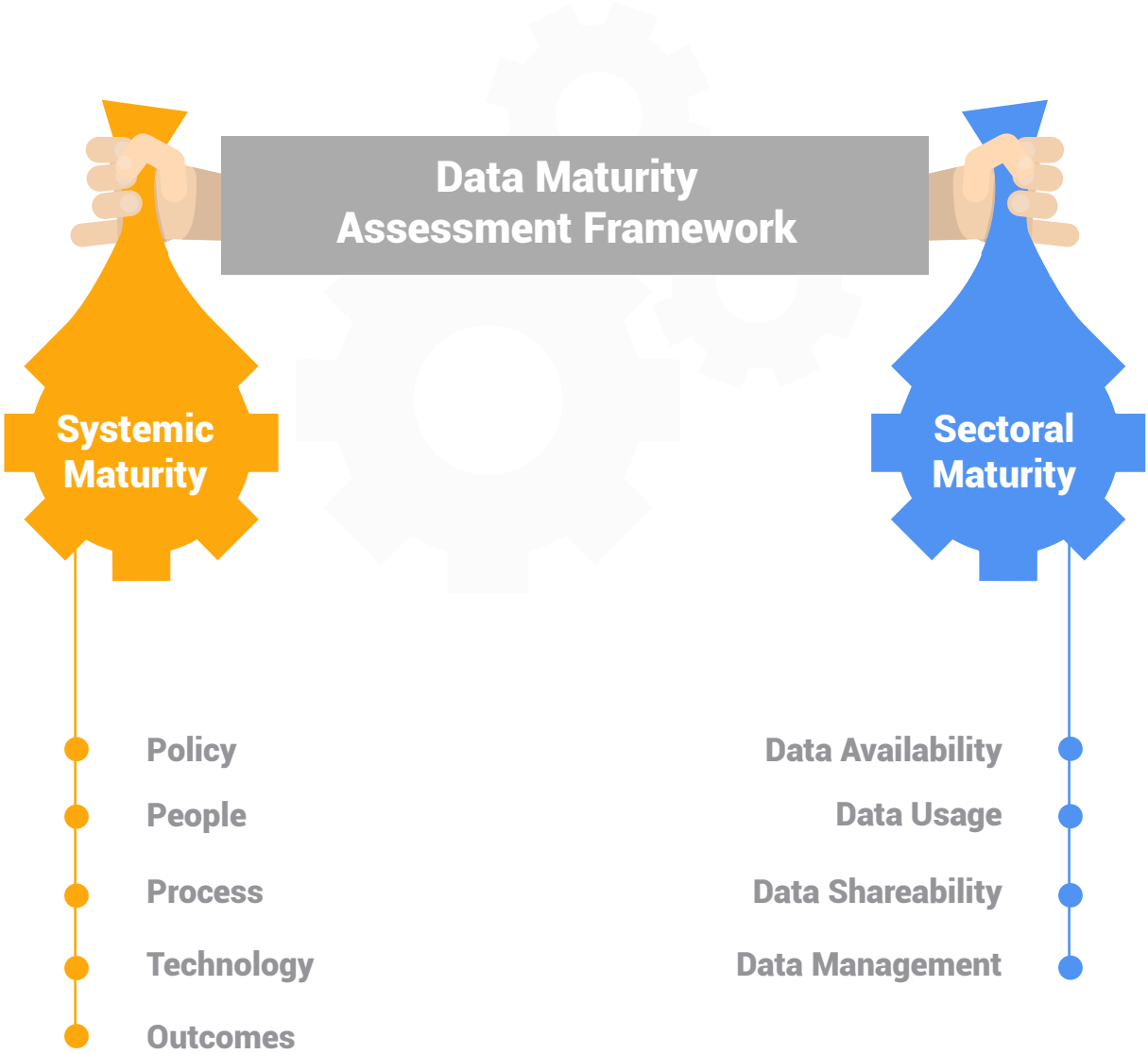


Figure 1: The Data Maturity Assessment Framework

1. Systemic Maturity :

Systemic Maturity measures the ability of cities to implement the DataSmart Cities strategy from the perspectives of people, processes, technology, policies, and outcomes at the city level. This pillar is the foundational cornerstone of a city's ability to ensure effective data governance, enhanced usage of data in decision-making processes, and drive cities towards better interdepartmental, interagency and systemic collaboration.



1.1. Policy: This component assesses the existence of robust policy mechanisms in the city around data governance, empowerment, protection, collaboration and innovation. It also includes the presence of necessary budgetary allocations to operationalize the policy.

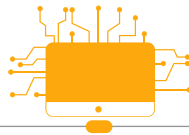


1.2. People: This component assesses the presence of empowered city officials with the capacity to guide the development of city data policies, manage data governance, drive interdepartmental and inter-agency data exchange and to build city data alliances



1.5

Outcomes: This component assesses the quality of outcomes around data driven governance, ease of living, ease of doing business, collaboration and innovation in the city.



1.4

Technology: This component assesses the quality and robustness of the city's information and communications technology infrastructure including digital platforms, sensors, IoT devices, data exchanges, big data and artificial intelligence.



1.3

Processes: This component assesses the effectiveness of the city's processes around data collection, usage, management, security, privacy, empowerment, collaboration, and innovation

2. Sectoral Maturity :

Sectoral Maturity measures the ability of cities to harness the power of data by focusing on availability, usage, sharing and control management of data in key urban sectors. This pillar recognizes that while data is the underlying language with which cities can identify, analyse and solve urban challenges, solutions are sector specific and hence the effectiveness with which problems are solved is a function of the maturity of data systems, governance, resources and collaborations in each sector.



2.1

Availability: This component measures the availability of real-time, reliable, systemic data in each sector that is geospatially enriched and integrated with key functions and processes.



2.2

Usage: This component measures the effective usage of data to drive decision making, improve service delivery, manage departmental functioning, foster inter-agency cooperation and ecosystem collaboration.



2.3

Shareability: This component measures the existence of data sharing processes, anonymization and machine readability of data sets and publication of open data in keeping with the City Data Policy and/or NDSAP guidelines.



2.4

Management: This component measures the existence of effective structures, systems and processes to manage data access and controls over departmental and sectoral data sets, robust backup and retention policies and continuity plans to deal with data loss and / or systems failure.

While, initially the DMAF will include 2 pillars, 9 components and a total of 45 indicators, as cities mature in their ability to harness the power of data, DMAF will evolve to keep pace with their needs. The list of Indicators under DMAF are listed in Annexure 1 and 2.

2.2 Guiding Principles

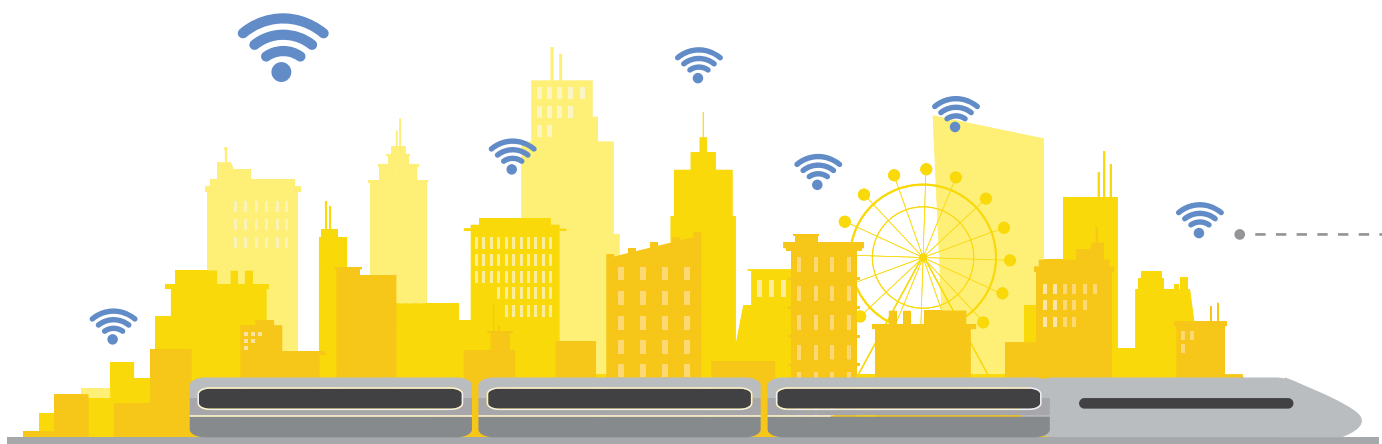
In line with the spirit of DMAF as expressed through its intent, following three principles guide the design of assessment methodology and indicators.

Context Relevant Assessment: It is important to ensure that DMAF is context relevant to the current state of Smart City evolution across India. It should support their efforts to consolidate existing efforts and successes while planting the seeds of their future growth trajectories. Thus, each cycle of assessment will need to be calibrated to provide the right balance between effective and relevant evaluation and setting aspirational targets for future development of the city's data culture.

Engendering Self Reflection: Assessments will only be of value when they will be able to provide cities the

tools and inputs required for their growth. Therefore, assessments under the framework will be carefully calibrated to enable city officials realize the existing gaps in their data ecosystem, and to make effective decisions aimed towards closing these gaps in a sustainable manner.

Supporting Effective Planning for DataSmart Cities Strategy Implementation: It is important to ensure that as the DataSmart Cities Strategy unfolds and evolves over time, cities are equipped to implement it effectively in their context. Thus, assessments under DMAF will always be geared towards enabling the necessary planning and resourcing efforts for cities to implement the strategy in a holistic manner to derive its intended benefits.





2.3 Scoring Methods and Normalization

The data that is collected for the various indicators across the framework will be obtained in varied units. For instance, the presence of elements in the City Data Policy like data classification, data categorization, data flow and approval frameworks would be measured as a binary yes or no, while the appointment of Data Coordinators in departments would be measured as a percentage of actual appointment/nominations to the number of departments. Each of these indicators will have a different scoring mechanism.

Scoring Methods

Percentage

Since cities vary in population sizes and economic strength, most indicators need to be weighed for comparability. For instance, total number of departments with electronic data collection processes needs to be weighed against the total number of departments in the city administration. These indicators will, therefore, take the form of percentages.

Binary

Some indicators take the form of yes or no questions in the municipalities. For instance, the indicator assessing if the city data policy has been approved takes a similar form. For such a question, each “yes” answer will result in a marking of 1 and each “no” answer will result in a marking of 0.

Relative Grading

Some indicators have no fixed benchmarking or optimal value. For instance, it is difficult to fix the optimal number of city data alliance partners in a city. In such cases, 80% of the highest number will be taken as a benchmark and each city will be scored based on the achievement against this benchmark in a graded manner.

Aggregation

The aggregation methodology of the Framework is based on three elements vis. indicators, components and pillars.

Component Scores

Each indicator under a component will be assigned a weightage in the assessment framework for each cycle. The component values are calculated by summing the weighted scores using the following formula:

$$\text{Component} = \sum (W_i * \text{indicator})$$

Pillar Scores

The scores of the component under each pillar will be aggregated to arrive at the pillar score. This will be calculated using the following formula:

$$\text{Pillar} = \sum (W_c * \text{Component Scores})$$

DMAF Score

The DMAF Score will be the weighted average of each pillar. At the beginning of each assessment cycle the weight of the pillars for that cycle will be defined by the Assessment Framework for that cycle.

$$\text{DMAF Score} = W_{\text{SystemicMaturity}} * \text{Systemic Maturity Score} + W_{\text{SectoralMaturity}} * \text{Sectoral Maturity Score}$$

Assessing Data Maturity



Assessments under DMAF will rely on self-evaluation by city officials against the framework and indicators published by the Data Analytics and Management Unit (DAM Unit). The DAM Unit, as envisaged in the DataSmart Cities Strategy will be constituted within the Smart Cities Mission office. It will support the Mission Data Officer in implementing the DataSmart Cities strategy. DAM Unit would be constituted of relevant experts in legal framework, data science, data analytics, communications, and other relevant fields. The cell would act as a key support structure to the Mission Data Officer to evolve the strategy over time, create capacity building within the smart cities ecosystem, coordinate with different stakeholders, advise on legal frameworks, and create data analytics capabilities within the mission. The DAM Unit will provide coordination, implementation, monitoring, and hand-holding support to Smart Cities. It will create a dedicated portal for cities to undertake the process of assessment as detailed in the DMAF.

3.1 Assessment Process

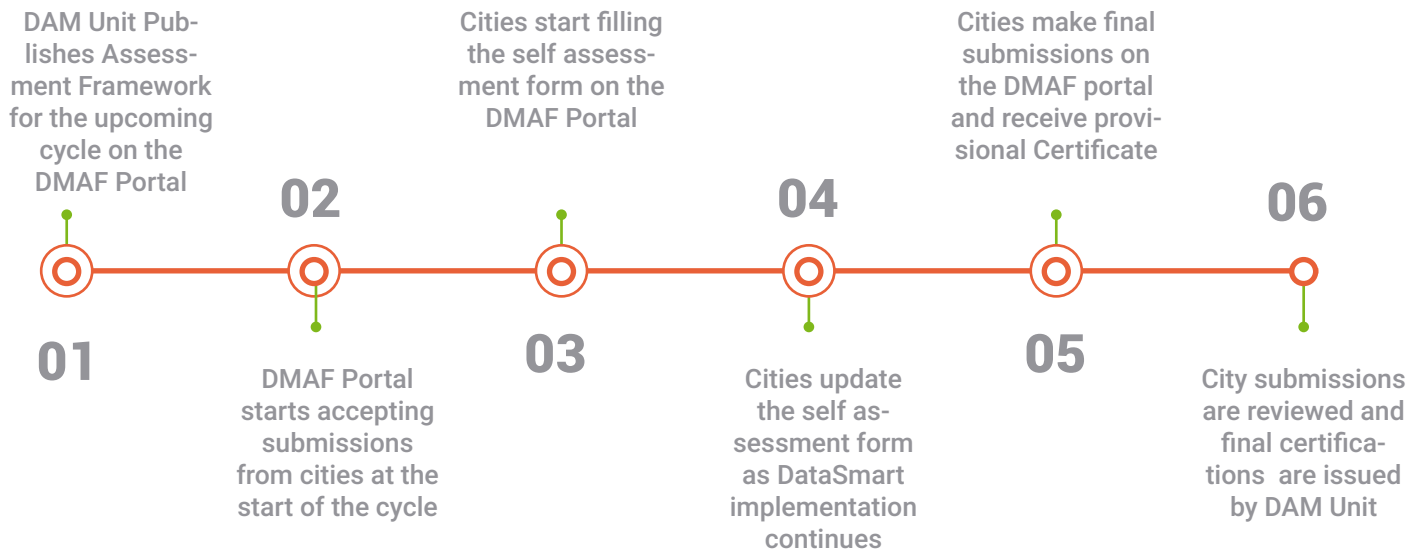


Figure 2: DMAF Assessment Process

The DAM Unit will publish the Assessment Framework for each cycle ahead of the commencement of the assessment cycle on the DMAF portal. At the beginning of the assessment cycle, the portal will start accepting submissions from cities to participate in the assessment cycle.

Each city will be able to participate and share necessary data, information templates, supporting documents as indicated on the assessment framework portal. As the city continues its implementation of the DataSmart Cities strategy, it may edit its submission multiple times during the challenge period until it is ready to make the final submission or the final day of the challenge period. At this point, the information submitted will be finalized and cannot be modified. On submission, cities receive a provisional certification from the DMAF portal.

In cases where the self-assessment is not supported

by requisite documentation, the assessment scores may be adjusted in accordance with the verification protocol. The final certifications are issued by the DAM Unit after review.

Each cycle of assessment will build on the previous cycle's framework, with a focus on shifting the goalposts for cities to evolve towards greater data maturity levels. This will enable cities and the Mission to adopt a tiered approach in implementing DMAF by collectively pursuing higher levels of achievements in each cycle.

It is important to note that while cities may be at different levels at a point in time, and may make progress at different paces, the DMAF assessment is primarily intended to be a self-evaluation tool for cities. The assessments and certifications therefore are measures to help cities calibrate their data policy, strategy and their implementation of DataSmart Cities initiatives.

3.2 Certification Mechanism

DMAF will enable city managers to assess their maturity on use of data for empowering their cities. The assessment results will be in the form of certification levels – starting from ‘Initiator’, ‘Explorer’, ‘Enabled’, and ‘Connected’ in increasing order, as described in the assessment framework for the assessment period.

Certification levels will be defined before the beginning of each assessment cycle and will be an evolution of the previous cycle’s assessment framework. Thus, a city that is assessed at a Connected level in the first cycle will have to continue to push forward with its efforts in subsequent cycles in order to retain its original certification level.

Relative Weightage of DMAF Pillars over multiple assessment cycles

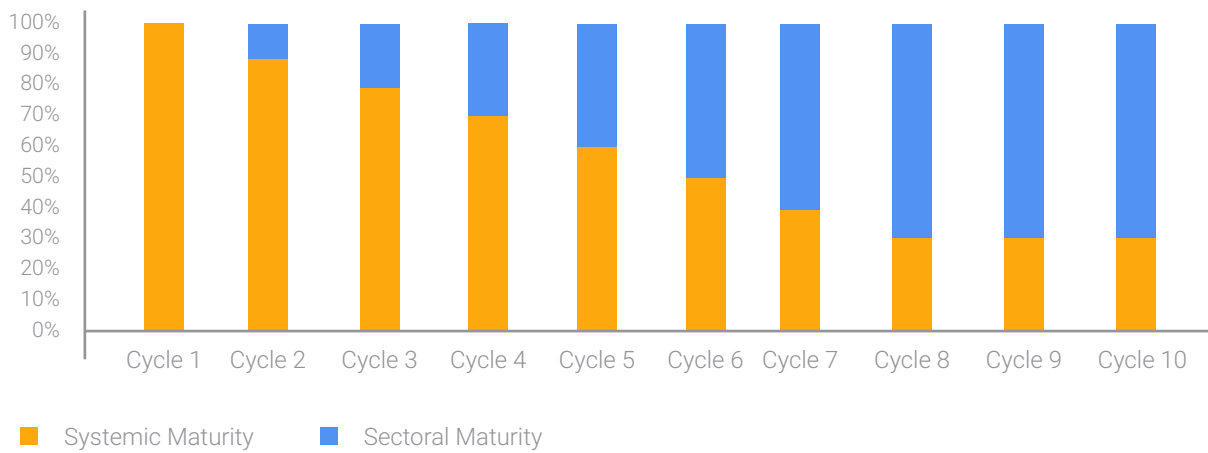


Figure 3: Relative Weightage of DMAF pillars over multiple assessment cycles (indicative)

In the first cycle of the Challenge, focus of the framework will entirely be on the Systemic Maturity pillar, with subsequent cycles introducing the Sectoral Maturity pillar. As cities begin to grow on systemic maturity and come at par with each other, in subsequent cycles, the weightage assigned to Systemic Maturity pillar will be reduced in comparison to the preceding cycle, gradually reaching a minimum weight not below 30%.

Simultaneously, the Sectoral Maturity pillar will become more detailed and span across more sectors in each subsequent cycle, thus ensuring a holistic implementation of the DataSmart Cities strategy. This approach will ensure that cities are constantly motivated and incentivized to innovate and strengthen their adoption of the strategy to drive improved outcomes for all stakeholders.

3.3 Assessment Results

DMAF will enable city managers to assess their maturity on use of data for empowering their cities. The assessment results will be in the form of certification levels- starting from 'Initiator', 'Explorer', 'Enabled', and 'Connected' in increasing order, as described in the framework for the assessment period.

Cities will be invited by the DAM Unit to share their learnings with other cities through workshops, and video conferences and other online/offline platforms, so that other cities may benefit from their experiences.

3.4 Expectations from Cities

Through DMAF, cities will benefit by:

- Performing honest self-evaluations in the spirit of successfully adapting and implementing the DataSmart Cities strategy in their context.
- Work with other peer cities and the DAM Unit with regard to the assessment framework and help evolve it over time.
- Focusing on building preparedness and capabilities to implement the DataSmart Cities strategy in a sustainable manner.

3.5 Responsibilities of the DAM Unit

The DAM Unit will coordinate the execution of DataSmart Cities Challenge from the Ministry's office. It will provide cities the following areas of support during the process:

- Host capacity building sessions like Webinars with Experts, facilitating peer-to-peer learning to share best practices and approaches in implementing the DataSmart Cities Strategy.
- Issue guiding documents in the form of draft model policies, frameworks, guidelines, recommendations and use cases to support cities in the implementation of the DataSmart Cities Strategy in keeping with the focus areas of the current assessment cycle.
- Support cities with suggested strategies, approaches and access to experts and partners that are matched to their existing certification levels.

DMAF: Cycle I

1st March To 15th May 2019



The inaugural self-assessment cycle of DMAF will commence from 1st of March 2019 and will run till 15th of May 2019. The final results of the cycle will be announced on or before 31st May 2019. All Smart Cities are invited to participate in DMAF assessment process to self-evaluate their current data maturity levels in order to better calibrate their implementation of the DataSmart Cities strategy.

4.1 Focus of Assessment

At the inaugural cycle, the Framework will focus on measuring the systemic maturity of cities to implement the DataSmart Cities strategy and serve as a baseline for the cities to measure their progress in subsequent cycles. Key areas of assessment in this cycle include:

- Appointment/nomination of key officials with clearly defined roles and responsibilities
- Formation of City Data Alliances
- Identification and classification of key municipal data sets
- Development of a draft city data policy with supporting budgetary allocations

4.2 Pillar and Component Weightages

In this cycle, the following Pillar and Component Weightages will be applicable:

Pillar	Pillar Weightage	Component	Component Weightage	Number of Indicators
Systemic Maturity	100%	Policy	20%	4
		People	25%	6
		Process	25%	5
		Technology	20%	7
		Outcomes	10%	4
Sectoral Maturity	0%	Data Availability	40%	4
		Data Usage	30%	6
		Data Shareability	15%	4
		Data Management	15%	5

The weightage assigned against each pillar and component is indicative and will change with each assessment cycle. The complete list of indicators under each pillar is included in the appendix.

4.3 List of Indicators and Score Calculation

Systemic Maturity Pillar

Component	Score of Indicator	Component Score
Policy	Approval of City Data Policy (1.a)	1.a + 1.b + 1.c + 1.d
	Components of City Data Policy (1.b)	
	Allocation of City Budgets (1.c)	
	Approval of Budget (1.d)	
People	Appointment of City Data Officer (2.a)	2.a + 2.b + 2.c.2 + 2.d + 2.e + 2.f
	Appointment of Data Co-ordinators (2.b)	
	Roles and Responsibilities of Data Co-ordinators (2.c.2)	
	Additional Team Members for Data Initiatives and Activities (2.d)	
	Trainings and Workshops to Build Capacity (2.e)	
	Percentage of Officials Trained to Implement DataSmart Cities Strategy (2.f)	
Process	Formation of City Data Alliance (3.a)	3.a + 3.b + 3.c + 3.d + 3.e
	Innovation Hackathon Events/Co-Creation Challenges/Data Challenges for Academia and Students (3.b)	
	Solving Urban Challenges using Available Datasets (3.c)	
	Identification of additional datasets for answering policy questions (3.d)	
	Access to training infrastructure (3.e)	
Technology	Active Open Data Portal (4.a)	4.a + 4.b + 4.c + 4.d + 4.e + 4.g + 4.h
	Electronic Collection of Data (4.b)	
	Machine Readable Data Sets on OGD Portal (4.c)	
	Schedule of Updation of Datasets on OGD Portal (4.d)	
	Compliance with Schedule of Updation of Data Sets on OGD Portal (4.e)	
	Availability of Sensors/Field Devices to capture data (4.g)	
	Digitization of Citizen Centric Services (4.h)	
Outcomes	Positive Citizen Engagement Outcomes (5.a)	5.a + 5.b + 5.c + 5.d
	Development of Applications on the City ODP (5.b)	
	Data related use cases (5.c)	
	Key Urban Challenges Addressed (5.d)	

Systemic Maturity Pillar Score: $0.2 * \text{Policy} + 0.25 * \text{People} + 0.25 * \text{Process} + 0.2 * \text{Technology} + 0.1 * \text{Outcomes}$

Sectoral Maturity Pillar: N/A for first cycle.

City DMAF Score: (Systemic Maturity Pillar Score)*100% (for first cycle)



4.4 Certification Levels

For this cycle, the certification levels for cities are defined as described in the below table:

Certification Level	DMAF Score Achieved
Connected	Above 85
Enabler	75 – 84
Explorer	60 – 74
Initiator	50 – 59

Cities with a DMAF Score below 50 will not be awarded a certification.

4.5 Indicator Definitions

Systemic Maturity Pillar

The definitions of the indicators being computed in the current assessment cycle are given below:

1.a. Approval of City Data Policy



Pillar **Component**
 Systemic Maturity Policy

Question	Has the city formally approved the city data policy?
Method	Binary Marking (Y/N)
Scoring	Yes – 20% No – 0%
Supporting Documents	Upload City Data Policy (with gazetted notification)

1.b. Components of City Data Policy



Pillar **Component**
 Systemic Maturity Policy

Question	Does the City Data Policy have the following section/components:	
	1.b.1 Data Classification	
	1.b.2 Data Categorization	
	1.b.3 Data Flow / Approval Framework	
	1.b.4 Data Archival and Retention	
	1.b.5 Data Security	
	1.b.6 Guidelines - Is there any SoP for data collection?	
	1.b.7 Guidelines - Is there any SoP for electronic data collection?	
	1.b.8 Guidelines - Is there any SoP for data processing and cleaning?	
	1.b.9 Guidelines - Is there any SoP for data for quality assessment of data sets?	
	1.b.10 Guidelines - Is there any SoP for data publishing as per Open Data Norms?	
	1.b.11 Guidelines - Is there any SoP for engaging stakeholders to assess the data needs?	
	1.b.12 Guidelines - Is there any SoP for data collection, processing and analysis for on field Survey?	
	1.b.12 Guidelines - Is there any SoP for data collection, processing and analysis for on field Survey?	
1.b.13 Guidelines - Do the Processes defined include provisions for data analysis?		
Method	Binary Marking (Y/N)	
Scoring	For each sub-section scores will be assigned as below:	
	Data classification	Yes – 4%, No – 0%
	Data Categorization	Yes – 3%, No – 0%
	Data Flow / Approval Framework	Yes – 3%, No – 0%
	Data Archival and Retention	Yes – 3%, No – 0%
	Data Security	Yes – 4%, No – 0%
	Guidelines - Is there any SoP for data collection?	Yes – 2%, No – 0%
	Guidelines - Is there any SoP for electronic data collection?	Yes – 2%, No – 0%
	Guidelines - Is there any SoP for data processing and cleaning?	Yes – 2%, No – 0%
	Guidelines - Is there any SoP for data for quality assessment of data sets?	Yes – 2%, No – 0%
	Guidelines - Is there any SoP for data publishing as per Open Data Norms?	Yes – 2%, No – 0%

	Guidelines - Is there any SoP for engaging stakeholders to assess the data needs?	Yes – 1%, No – 0%
	Guidelines - Is there any SoP for data collection, processing and analysis for on field Survey?	Yes – 1%, No – 0%
	Guidelines - Do the Processes defined include provisions for data analysis?	Yes – 1%, No – 0%
	Total	30%

Supporting Documents	Upload City Data Policy (with gazetted notification), with references to sections/components/guidelines stated in the indicator.
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1.c. Allocation of City Budgets



Pillar

Systemic Maturity



Component

Policy

Question	Has the city allocated budgets for:	
	1.c.1 Implementation of the City Data Policy	
	1.c.2 Change Management and Capacity Building	
Method	Binary Marking (Y/N)	
Scoring	Budget Allocated For:	
	Implementation of the City Data Policy	Yes – 5%, No – 0%
	Change Management and Capacity Building	Yes – 5%, No – 0%
	Total	10%
Supporting Documents	Upload draft/approved budgets for the following:	
	<ul style="list-style-type: none"> ● Implementation of City Data Policy ● Change Management and Capacity Building associated with CDP implementation 	

1.d. Approval of Budget



Pillar **Component**
 Systemic Maturity Policy

Question	<p>Please cite the total approved budget for FY 2019-20.</p> <p>1.d.1 Implementation of the City Data Policy</p> <p>1.d.2 Change Management and Capacity Building</p> <p>1.d.3 Overall City Budget</p>							
Method	<p>Relative Grading:</p> <ol style="list-style-type: none"> Budget figures will be converted into percentages using the following formula: $(\text{Approved Allocation} / \text{Overall Budget Approved}) * 100\%$ After conversion the highest allocation percentage will be determined and the benchmark will be set at 80% of that figure For each city points will be calculated as per the below formula: $(\text{Allocation} / \text{Benchmark}) * 100$ Note – For Cities where the points are computed to be higher than 100 the maximum points awarded will be 100 							
Scoring	<p>The final score will be calculated as below:</p> <p>1.d.1 Implementation of City Data Policy – Points Scored * 20%</p> <p>1.d.2 Change Management & Capacity Building – Points Scored * 20%</p> <table border="1" data-bbox="573 1255 1472 1455"> <tr> <td data-bbox="573 1255 1024 1314">Implementation of City Data Policy</td> <td data-bbox="1032 1255 1472 1314">20%</td> </tr> <tr> <td data-bbox="573 1318 1024 1394">Change Management & Capacity Building</td> <td data-bbox="1032 1318 1472 1394">20%</td> </tr> <tr> <td data-bbox="573 1398 1024 1455">Total</td> <td data-bbox="1032 1398 1472 1455">40%</td> </tr> </table>		Implementation of City Data Policy	20%	Change Management & Capacity Building	20%	Total	40%
Implementation of City Data Policy	20%							
Change Management & Capacity Building	20%							
Total	40%							
Supporting Documents	<p>Overall City Budget as Approved Budget Allocation for:</p> <ul style="list-style-type: none"> ● Implementation of City Data Policy ● Change Management and Capacity Building 							

2.a. Appointment of City Data Officers



Pillar Systemic Maturity
Component People

Question	Has the city appointed a City Data Officer?
Method	Binary Marking (Y/N)
Scoring	Yes – 20% No – 0%
Supporting Documents	Submission of CDO Appointment Circular/Gazette Order.

2.b. Appointment of Data Co-ordinators



Pillar Systemic Maturity
Component People

Question	What is the percentage of Departments with Data Coordinators Appointed?
Method	Percentage: Numerator: Number of Data Coordinators Appointed Denominator: Number of Departments in the ULB
Scoring	Final Score: Percentage of Departments with Data Coordinators * 30%
Supporting Documents	<ul style="list-style-type: none"> Submission of Departmental List with Municipal Commissioner’s signature. Submission of formal GR issued by Municipal Commissioner, copy to all departments.

2.c. Important Government departments (other than ULBs) responsible for delivering basic urban services



Pillar Systemic Maturity
Component People

Question	List the 10 most important government departments (other than the ULB) responsible for delivering basic urban services e.g. electricity, water, gas, transport, issue of licenses etc. in the city
Scoring	This indicator is not scored
Supporting Documents	Submission of list of departments in the city administration

2.d. Roles and Responsibilities of Data Co-ordinators



Pillar Systemic Maturity **Component** People

Question	How many Data Co-ordinators have been assigned well-defined roles & responsibilities?
Method	Percentage: Numerator: Number of Data Coordinators with roles and responsibilities defined Denominator: Total Number of Data Coordinators
Scoring	Final Score: Percentage of Data Coordinators with roles and responsibilities defined * 5%
Supporting Documents	Submission of formally approved roles and responsibilities of Data Co-ordinators.

2.e. Additional Team Members for Data Initiatives & Activities



Pillar Systemic Maturity **Component** People

Question	Number of additional team members (other than the CDO and Data coordinators) dedicated to Data initiatives and activities? e.g. Data Scientists / Architect /Analyst / Engineer / Evangelist / Statistician, Database Administrative, Business Analyst, Data & Analytics Manager, or any other role/position related to data).
Method	Relative Grading: 1. The highest number of additional team members will be determined and the benchmark will be set at 80% of that figure. 2. For each city points will be calculated as per the below formula: (Team Members/Benchmark)*100 Note – For Cities where the points are computed to be higher than 100 the maximum points awarded will be 100
Scoring	The final score will be calculated as below: Points Scored * 5%
Supporting Documents	Submission of listing of additional team members with roles and responsibilities approved by Municipal Commissioner.

2.f. Trainings and Workshops to Build Capacity



Pillar

Systemic Maturity



Component

People

Question	Has the city organised any training or workshops (by internal or external trainers) to build capacity to execute the DataSmart Cities Strategy?
Method	Binary Marking (Y/N)
Scoring	Yes – 20% No – 0%
Supporting Documents	List of Trainings organized with, topics dates and no. of officials trained to be shared.

2.g % of Officials Trained to Implement DataSmart Cities Strategy



Pillar

Systemic Maturity



Component

People

Question	How many people has the city trained in the training / workshops (by internal or external trainers) to build capacity for implementing CDP / DataSmart Cities Strategy?
Method	Percentage: Numerator: Number of Officials Trained to Implement DataSmart Cities Strategy Denominator: CDO from 2.a + DCs from 2.b + DCs from 2.c + Additional Team Members from 2.d
Scoring	Final Score: Percentage of Officials Trained * 20%
Supporting Documents	List of Trainings organized with topics, dates, names and numbers of officials trained to be shared.

3.a Formation of Smart City Data Alliance (SCDA)



Pillar

Component

Systemic Maturity

Process



Question	Has the Municipality formed the City Data Alliance (CDA) for data sharing as envisaged in the DataSmart City Strategy, at city level?
Method	Binary Marking (Y/N)
Scoring	Yes – 30% No – 0%
Supporting Documents	Submission of approved guidelines for CDA formulation and functioning.

3.b Innovation Hackathon events/ Co-creation challenges or Data Challenges for Academia



Pillar

Component

Systemic Maturity

Process



Question	Has your city conducted Innovation Hackathon events / Co-creation challenges / Data Challenges for Academia and Students?
Method	Binary Marking (Y/N)
Scoring	Yes – 20% No – 0%
Supporting Documents	Listing of events/challenges with details of stakeholders and outcomes.

3.c Solving Urban Challenges using Available Datasets



Pillar

Component

Systemic Maturity

Process

Question	Has the city identified its top 5 urban challenges (e.g. traffic patterns, safety) and attempted to get more insight into the problems using the available data?
Method	Binary Marking (Y/N)
Scoring	Yes – 10% No – 0%
Supporting Documents	Upload report on the policy questions identified, analysis conducted and insights revealed.

3.d Identification of Additional Datasets for answering policy questions



Pillar

Component

Systemic Maturity

Process

Question	Has the city been able to identify additional datasets that may be helpful in understanding its key policy questions?
Method	Binary Marking (Y/N)
Scoring	Yes – 10% No – 0%
Supporting Documents	Upload a listing of policy questions and relevant datasets identified.

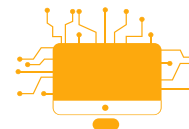
3.e. Access to Training Infrastructure



Pillar **Component**
 Systemic Maturity **Process**

Question	Does the city have access to training infrastructure? For example: <ul style="list-style-type: none"> ● WebEx/VC/NULP ● Classrooms / Conference rooms fitted with projector and lateral connections, white board
Method	Binary Marking (Y/N)
Scoring	Yes – 30% No – 0%
Supporting Documents	Submission of training infrastructure listing accessible to the city basis suggested segregations.

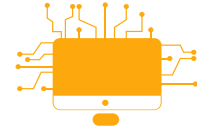
4.a Active Open Data Portal



Pillar **Component**
 Systemic Maturity **Technology**

Question	Does the city have an active open data portal?
Method	Binary Marking (Y/N)
Scoring	Yes – 20% No – 0%
Supporting Documents	Submission of city ODP link.

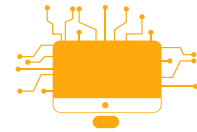
4.b. Electronic Collection of Data



Pillar **Component**
 Systemic Maturity Technology

Question	For how many departments out of 2.b.1 and 2.c does the city have electronic collection of data?
Method	Percentage: Numerator: Number of ULB Departments and other government departments with electronic data collection processes Denominator: Total number of ULB departments and other government departments
Scoring	Final Score: Percentage of Departments with Electronic Collection of Data * 10%
Supporting Documents	Submission of list of city departments with electronic data collection mediums with dataset attributes and frequency of update.

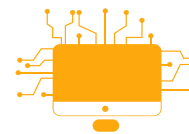
4.c. Machine Readable Datasets on OGD Portal



Pillar **Component**
 Systemic Maturity Technology

Question	What is the number of machine readable datasets that the city has made available on the Open Data Portal?
Method	Relative Grading: 1. The highest number of machine readable data sets will be determined and the benchmark will be set at 80% of that figure. 2. For each city points will be calculated as per the below formula: (number of Machine Readable Data Sets/Benchmark)*100 <i>Note – For Cities where the points are computed to be higher than 100 the maximum points awarded will be 100</i>
Scoring	The final score will be calculated as below: Points Scored * 20%
Supporting Documents	Submission of list of data sources/datasets, with attributes covered and disaggregation levels, with associated links on ODP.

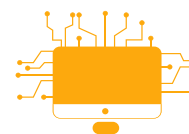
4.d. Updation of Datasets on OGD Portal



Pillar **Component**
 Systemic Maturity Technology

Question	Has the city prepared a schedule of updation for its data sets on the OGD portal?
Method	Binary Marking (Y/N)
Scoring	Yes – 5% No – 0%
Supporting Documents	Submission of approved updation schedule for ODP.

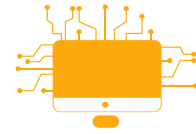
4.e. Level of Compliance on Updation of Datasets on OGD Portal



Pillar **Component**
 Systemic Maturity Technology

Question	What is the level of compliance with the schedule of updation?
Method	Percentage: Numerator: Number of Data Sets uploaded as per the schedule of updation Denominator: Total Number of Data Sets to be uploaded
Scoring	Final Score: Percentage Compliance*15% <i>Note: Cities scoring a Percentage Compliance below 75% will be automatically awarded a Score of 0 on this indicator</i>
Supporting Documents	Submission of actual updation against schedule for ODP for FY 18-19 and FY 19-20.

4.f. Availability of Sensors/Field Devices to Capture Data



Pillar

Systemic Maturity

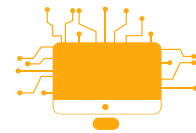


Component

Technology

Question	Does the city have sensors/field devices to capture the data at the source in a city?
Method	Binary Marking (Y/N)
Scoring	Yes – 10% No – 0%
Supporting Documents	Submission of listing of sensors/field devices mapped to departments and data attributes being collected.

4.g. Digitisation of Citizen Centric Services



Pillar

Systemic Maturity



Component

Technology

Question	Has the city digitized its citizen centric services?
Method	Binary Marking (Y/N)
Scoring	Yes – 20% No – 0%
Supporting Documents	Submission of listing of digitized services with department details and process owners.

5.a. Positive Citizen Engagement Outcomes



Pillar **Component**
 Systemic Maturity Outcomes

Question	Has the city's work on data led to positive citizen's engagement outcomes? Has it opened up avenues for engagement and analysis not available before? List the number and types of outcomes
Method	Relative Grading: 1. The highest number of positive citizen outcomes will be determined and the benchmark will be set at 80% of that figure. 2. For each city points will be calculated as per the below formula: $(\text{number of Positive Citizen Outcomes}/\text{Benchmark}) * 100$ <i>Note – For Cities where the points are computed to be higher than 100 the maximum points awarded will be 100</i>
Scoring	The final score will be calculated as below: Points Scored * 25%
Supporting Documents	Submission of a report detailing the number and type of positive citizen outcomes achieved, the role played by data and supporting case studies/success stories. (minimum 750 words)

5.b Development of Applications for the City ODP



Pillar **Component**
 Systemic Maturity Outcomes

Question	Have any apps have been developed on the basis of the city's open data portal?
Method	Relative Grading: 1. The highest number of apps developed will be determined and the benchmark will be set at 80% of that figure 2. For each city points will be calculated as per the below formula: $(\text{Number of Apps developed basis the open data portal}/\text{Benchmark}) * 100$ <i>Note – For Cities where the points are computed to be higher than 100 the maximum points awarded will be 100</i>
Scoring	The final score will be calculated as below: Points Scored * 25%
Supporting Documents	List of apps with a description of use cases, number of downloads, active users and key features (minimum 500 words)

5.c. Data Related Use Cases



Pillar



Component

Systemic Maturity

Outcomes

Question	What use cases of data is the city working on? Please also state the current of each use case from one of the below - a) Concept b) Solution Prototyping c) Pilot Deployment d) Full Scale Deployment
Method	Relative Grading: 1. The highest number of use cases being worked on will be determined and the benchmark will be set at 80% of that figure 2. For each city points will be calculated as per the below formula: (Number of use cases being worked on/Benchmark)*100 <i>Note -For Cities where the points are computed to be higher than a the maximum points awarded will be 100</i>
Scoring	The final score will be calculated as below: Points Scored * 25%
Supporting Documents	List of key use cases with detailed description of problem, idea, application of data, datasets being used, and stage of solutioning (minimum 750 words).

5.d. Key Policy Questions Addressed



Pillar



Component

Systemic Maturity

Outcomes

Question	What are some of the key policy questions that the city is trying to address using data?
Method	Relative Grading: 1. The highest number of key policy questions being addressed will be determined and the benchmark will be set at 80% of that figure 2. For each city points will be calculated as per the below formula: (Number of key policy questions being addressed/Benchmark)*100 <i>Note – For Cities where the points are computed to be higher than 100 the maximum points awarded will be 100</i>
Scoring	The final score will be calculated as below: Points Scored * 25%
Supporting Documents	List of key policy questions with detailed description of analysis and solution approach, datasets being used and initial results (minimum 750 words)

Sectoral Maturity Pillar

Note: These indicators are not being assessed in the first assessment cycle of the DMAF. The required supporting documentation will be defined as the sectoral maturity pillar is introduced in subsequent rounds in accordance with the predominantly available data systems at the time.

1.a. Availability of Electronic Data Collection Process



Pillar **Component**
 Sectoral Maturity Data Availability

Question	Does the city have an approved process and mechanism for electronic data collection at a departmental level?
Method	Binary Marking (Y/N)

1.b. Availability of Real Time Data



Pillar **Component**
 Sectoral Maturity Data Availability

Question	Has the city provisioned for collection and access to real time data feeds at a departmental level?
Method	Percentage
Numerator	Number of data feeds for which real time data collection is enabled
Denominator	Number of data feeds for top priority departments identified by the city in the Systemic Maturity pillar

1.c. Availability of Spatial/Geo-tagged Data



Pillar **Component**
 Sectoral Maturity Data Availability

Question	Has the city provisioned for collection and dissemination of spatial/geo-tagged data?
Method	Binary Marking (Y/N)

1.d. Data Feed Integration with Command and Control Centre



Pillar

Component

Sectoral Maturity

Data Availability

Question	Has the city enabled integration of data feeds with the Integrated Command and Control Centre?
Method	Binary Marking (Y/N)

2.a. Availability and Accessibility of Online MIS



Pillar

Component

Sectoral Maturity

Data Usage

Question	Has the department provisioned for an Online Management Information System(MIS) for its datasets? Has it been made available to relevant stakeholders?
Method	Binary Marking (Y/N)

2.b. Employee Access to KPI linked Dashboard



Pillar

Component

Sectoral Maturity

Data Usage

Question	Has the department provided access to a KPI linked dashboard for all employees?
Method	Binary Marking (Y/N)

2.c. Management Access to Executive Information System(EIS) Dashboard



Pillar **Component**
 Sectoral Maturity Data Usage

Question	Has the city enabled access of the online KPI linked EIS dashboard to its middle and top level management?(Department HoDs, Zone/Ward Head, Additional Municipal Commissioner & CEOs)
Method	Binary Marking (Y/N)

2.d. Enabling Inter-Departmental Data Usage



Pillar **Component**
 Sectoral Maturity Data Usage

Question	Has the city enabled data sharing at an inter-departmental level?
Method	Binary Marking (Y/N)

2.e. Enabling Ecosystem Based Data Sharing



Pillar **Component**
 Sectoral Maturity Data Usage

Question	Has the city enabled data sharing with external agencies? (State Government Departments, Central Government Departments, Research Agencies and Startups)
Method	Binary Marking (Y/N)

2.f. Implementation of Data Analytics



Pillar **Component**
 Sectoral Maturity Data Usage

Question	Has the city used data analytics to generate visualizations and insights from available data sets/feeds?
Method	Binary Marking (Y/N)

3.a. Implementation of Data Analytics



Pillar **Component**
 Sectoral Maturity Data Shareability

Question	Has the department defined a process for sharing data with internal and external stakeholders?
Method	Binary Marking (Y/N)

3.b. Data Set Publication on Smart Cities Mission Open Data Portal



Pillar **Component**
 Sectoral Maturity Data Shareability

Question	Has the department published its relevant data sets on the Smart Cities Mission Open Data Portal?
Method	Binary Marking (Y/N)

4.a. Departmental Data Categorization Matrix



Pillar **Component**
 Sectoral Maturity Management

Question	Has the department defined a data categorization matrix for its data sets as per the City Data Policy/NDSAP?
Method	Binary Marking (Y/N)

4.b. Departmental Data Control Matrix



Pillar **Component**
 Sectoral Maturity Management

Question	Has the department defined a data control matrix for its data sets identifying ownership and responsibility over specific data elements?
Method	Binary Marking (Y/N)

4.c. SoP defined for Departmental Data Management





Pillar **Component**
 Sectoral Maturity Management


Question	Has the department defined SoPs for managing departmental data (collection, validation, sharing and archival etc.)?
Method	Binary Marking (Y/N)


Annexure 1


Systemic Pillar- Data Maturity Assessment Framework - Cycle 1 – 1st March 2019 to 15th May 2019

S.No	Components	Weightage	Question	Key Performance Indicators	Verification Parameters
I	 Policy	20%	1.a	Has the city formally approved its City Data Policy (CDP)?	Upload: 1. City data policy (with gazetted notification) 2. Budgets and 3. Guidelines
			1.b	Does the City Data Policy have the following section / components -	
			1.b.1	- Data Classification	
			1.b.2	- Data Categorization	
			1.b.3	- Data Flow / Approval Framework	
			1.b.4	- Data Archival and Retention	
			1.b.5	- Data Security	
			1.b.6	- Guidelines - Is there any SoP for data collection?	
			1.b.7	- Guidelines - Is there any SoP for electronic data collection?	
			1.b.8	- Guidelines - Is there any SoP for data processing and cleaning?	
			1.b.9	- Guidelines - Is there any SoP for data for quality assessment of data sets?	
			1.b.10	- Guidelines - Is there any SoP for data publishing as per Open Data Norms?	
			1.b.11	- Guidelines - Is there any SoP for engaging stakeholders to assess the data needs?	
			1.b.12	- Guidelines - Is there any SoP for data collection, processing and analysis for on field Survey?	
			1.b.13	- Guidelines - Do the Processes defined include provisions for data analysis?	
			1.c	Has the city allocated budgets for:	
			1.c.1	(a) Implementation of the City Data Policy / DataSmart Strategy	
1.c.2	(b) Change Management and Capacity Building for data initiatives				
1.d	Please cite the total approved budget for FY 2019-20 for				
1.d.1	(a) Implementation of the City Data Policy / DataSmart Strategy				
1.d.2	(b) Change Management and Capacity Building for data initiatives				
1.d.3	(c) Overall City Budget				





			1.e	What are the city's top 5 priority areas with respect to implementation of CDP as outlined in the DataSmart Cities strategy?	Submission of Priority Area Report approved by the city administration
II.	 People	25%	2.a	Has the city appointed a City Data Officer?	Submission of CDO Appointment Circular/ GO
			2.b.1	How many Departments are there in the municipality?	Submission of Departmental List with Municipal Commissioner's signature
			2.b.2	--Out of the departments in 2.b.1 , how many have appointed Data Co-ordinators?	Submission of formal GR issued by Municipal Commissioner copy to all departments
			2.c	List the 10 most important government departments (other than the ULB) responsible for delivering basic urban services e.g. electricity, water, gas, transport, issue of licenses etc. in the city	Submission of list of departments in the city administration
			2.c.2	--How many of the departments in 2.c have appointed Data Co-ordinators?	Submission of Data Coordinator Mapping to City Departments
			2.d	How many Data Co-ordinators between 2.b.1 and 2.c have been assigned well-defined roles & responsibilities?	Formally approved roles and responsibilities of Data Coordinators to be submitted.
			2.e	Total Strength of Data team (other than CDO and Data Coordinators) for implementing DataSmart Cities Strategy (e.g. Data Scientists / Architect /Analyst / Engineer / Evangelist / Statistician, Database Administrative, Business Analyst, Data & Analytics Manager, or any other role/position related to data).	Submission of listing of additional team members with roles and responsibilities approved by the Commissioner to be shared.
			2.f	Has the city organised any training / workshops (by internal or external trainers) to build capacity for implementing CDP / DataSmart Cities Strategy?	List of Trainings Organized with dates and no. of officials trained to be shared.
			2.f.1	If yes, how many trainings?	
			2.g	If yes, how many people have been trained?	

III.	 Process	25%	3.a	Has the Municipality formed the City Data Alliance (CDA) for data sharing as envisaged in the DataSmart Cities Strategy, at city level.	Submission of approved guidelines for CDA formulation and functioning
			3.a.1	If yes, when was it formed?	
			3.a.2	Who are the members/ constituents?	Submission of list of onboarded CDA stakeholders with roles basis the suggested segregation
			3.a.2.1	- Industry Private Players/Startups and Incubators	
			3.a.2.2	- Universities and colleges	
			3.a.2.3	- Innovators/Think Tanks	
			3.a.2.4	- Citizens and Communities	
			3.a.2.5	- Other Government Departments? (Police, Fire, Water, Sanitation, Urban Development, etc.)	
			3.b	How many meetings of the CDA have been held so far?	Minutes of Meetings of CDA to be uploaded.
			3.c	Has your city conducted Innovation Hackathon events / Co-creation challenges / Data Challenges for Academia and Students?	Listing of events/ challenges with details of stakeholders and outcomes
			3.c.1	If yes, please provide a listing of the challenges conducted	
			3.d	Has the city identified its top 5 policy questions (e.g. traffic patterns, safety) and attempted to get more insight into the problems using the available data?	Upload report on the policy questions identified, analysis conducted and insights revealed
			3.e	Has the city been able to identify additional datasets that may be helpful in understanding its key policy questions?	Upload a listing of policy questions and relevant datasets identified.
			3.f	Does the city have access to training infrastructure?	Submission of training infrastructure listing accessible to the city basis suggested segregations
3.f.1	- WebEx/VC/NULP				
3.f.2	- Classrooms / Conference rooms fitted with projector and lateral connections, white board				

IV.	 Technology	20%	4.a	Does the city have an active open data portal?	Submission of city ODP link
			4.a.2	Has the city signed up on the Indian Urban Data Exchange(IUDX)?	Submission of city MoU/Sign Up Form with IUDX
			4.b	For how many departments out of 2.b.1 and 2.c does the city have electronic collection of data?	Submission of list of city departments with electronic data collection mediums with dataset attributes and frequency of updation
			4.c	What is the number of machine readable datasets that the city has make available on the Open Data Portal?	Submission of list of data sources/datasets, with attributes covered and disaggregation levels, with associated links on ODP
			4.d	Has the city prepared a schedule of updation for its data sets on the OGD portal?	Submission of approved updation schedule for ODP
			4.e	What is the level of compliance with the schedule of updation?	Submission of actual updation against schedule for ODP for FY 18-19 and FY 19-20
			4.f	Does the city share real time data on the open data portal through API linkages to datafeeds?	List of API linkages
			4.f.1	If yes, list the API links	
			4.g	Does the city have sensors / field devices to capture the data at the source in a city?	Submission of listing of sensors/field devices mapped to departments and data attributes being collected
			4.g.1	If so, please provide the number and department to which they belong	
			4.h	Has the city digitized its citizen centric services?	Submission of listing of digitized services with department details and process owners
			4.h.1	If yes, provide the list of services digitized with department details	
			4.i	What are the data Analytics Tools deployed by the city to enable analysis and generate visualizations?	Submission of listing of analytics tools deployed segregated department wise

V.	 Outcomes	10%	5.a	Has the city's work on data led to positive citizen's engagement outcomes? Has it opened up avenues for engagement and analysis not available before? List the number and types of outcomes	Submission of a report detailing the number and type of positive citizen outcomes achieved, the role played by data and supporting case studies/success stories. (minimum 750 words)
			5.a.1	If yes, please provide a descriptive report on how this has happened with a quantification of outcomes achieved and case studies/success stories of the same.	
			5.b	Have any apps have been developed on the basis the city's open data portal?	List of apps with a description of use cases, number of downloads, active users and key features (minimum 500 words)
			5.b.1	Please describe any apps created, the use cases/problems they address, and how many citizens use the app. Please feel free to describe any other important features of the app	
			5.c	What use cases of data is the city working on? Please also state the current of each use case from one of the below - a) Concept b) Solution Prototyping c) Pilot Deployment d) Full Scale Deployment	List of key use cases with detailed description of problem , idea, application of data, datasets being used, and stage of solutioning (minimum 750 words)
			5.d	What are some of the key policy questions that the city is trying to address using data?	List of key policy questions with detailed description of analysis and solution approach, datasets being used and initial results (minimum 750 words)

Annexure 1

Sectoral Data Maturity Pillar for [name of the sector] (Indicative)				
S. no	Component	Weightage	Question	Indicator
1	 Data Availability	40%	1.a	Availability of Electronic Data Collection Process
			1.b	Availability of Real Time Data
			1.c	Availability of Spatial/Geo-tagged Data
			1.d	Data Feed Integration with Command and Control Centre
2	 Data Usage	30%	2.a	Availability and Accessibility of Online MIS
			2.b	Employee Access to KPI linked Dashboard
			2.c	Management Access to Executive Information System(EIS) Dashboard
			2.d	Enabling Inter-Departmental Data Usage
			2.e	Enabling Ecosystem Based Data Sharing
			2.f	Applied Analytics and Data Visualisations over the Data Sets / Feeds
3	 Data Shareability	15%	3.a	Data Sharing Process Definition
			3.b	Data Set Publication on Smart Cities Mission Open Data Portal
			3.c	Sharing of Machine-Readable Data Sets
			3.4	Anonymization of Data Sets/Feeds
4	 Data Management	15%	4.a	Departmental Data Categorization Matrix
			4.b	Departmental Data Control Matrix
			4.c	SoP defined for Departmental Data Management
			4.d	Data Backup and Retention policy
			4.e	Business Continuity Plan



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