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# 1. Introduction

## 1.1. OVERVIEW

Indian Smart Cities are leveraging both established and emerging technologies in Governance. Data is at the core of this new thinking around technology as an enabler to drive growth. The push for data-driven governance currently has intense interest at all levels of the government. Specifically, cities are seeking new ways to create greater public value from data and enable data-driven governance and policy making at the local level. They are looking to leverage data generated by systems and processes for generating business intelligence and improving their operational efficiency.

Data is an asset which needs to be exploited with full potential for the larger public good. This is possible by investing in the building blocks of the data ecosystem i.e. People, Process and Platform as outlined in our flagship initiative – DataSmart Cities Strategy. The Smart Cities Mission launched the DataSmart Cities Strategy in February 2019, as a roadmap for harnessing the potential of data to address complex urban challenges across 100 Cities. To successfully implement this initiative, the Data Maturity Assessment Framework was also launched to encourage cities to strengthen their data infrastructure and facilitate them in assessing their readiness and maturity on data.

Data Maturity Assessment Framework (DMAF) concluded its first cycle of assessment in December 2019, post the extensive stakeholder feedback and consultation with subject matter experts for framing and finalizing of the questionnaire. We saw a high participation of 99 cities at the end of first cycle of DMAF. The results of the assessment were announced in the Third Apex Conference of Smart Cities held in January 2020 in Vishakhapatnam, Andhra Pradesh.

DMAF consists of 2 pillars – Systemic Maturity and Sectoral Maturity pillar and the first cycle focused on assessing cities on five key components of the Systemic Maturity pillar – Policy, People, Process, Technology and Outcomes. Several capacity building activities were conducted for the City Data Officers to ensure compliance and successful completion of the first cycle. In this assessment cycle, a number of cities made efforts towards achieving a high score, and we would like to acknowledge their efforts in becoming 'DataSmart'.

DMAF seeks to encourage cities to plan and incorporate actions on data initiatives, that will help them improve their position from the first cycle of DMAF. These actions have strong linkages with various components of the DataSmart Cities strategy that aims to inculcate a 'culture of data' in cities. It is advised that cities should continue their efforts towards improving their data maturity through different data initiatives vis. formulating city data policies, capacity building, allocation of finances for data, uploading datasets / APIs that cover multiple domains, etc. Maturity in the components of the systemic pillar will help these cities build a solid foundation which will serve as the base for cities to create an effective data ecosystem. Once the cities reach a common minimum threshold, they will be assessed on their sectoral readiness of data, i.e. the sectoral maturity pillar.



In the second cycle of DMAF, we continue to focus on the Systemic Maturity pillar so as to aid complete institutionalisation of an able data culture in the 100 smart cities prior to moving further and focussing on components that are a part of the Sectoral pillar. Weightages for both pillars and its respective components are dynamic and will change with each assessment cycle keeping in mind cities' performances in the previous cycle.

It is indeed inspiring and motivating for us to learn how our Smart Cities are embracing this initiative wholeheartedly. Going forward, the cities need to identify the gaps and work on these gap areas in the next cycle to get certified. Cities are encouraged to improve their position by the end of next cycle. Our team, under the leadership of the Mission Data Officer would be closely working with these cities to help them achieve our shared vision.

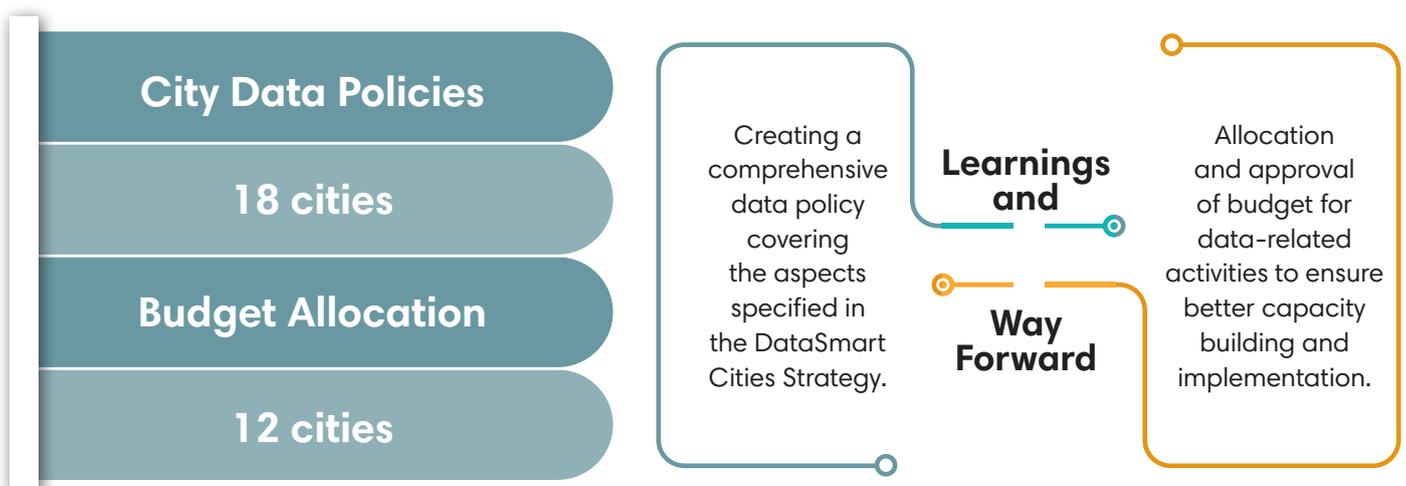
## 1.2. KEY LEARNINGS FROM DMAF CYCLE I

The first cycle of DMAF helped us in understanding our current level of readiness towards becoming DataSmart. It is heartening to see that the cities have actively begun their efforts in various components of the Data strategy. However, the path to being DataSmart is a journey and cities are yet to achieve their full potential. Despite a very high participation of 99 cities, it was observed and analysed that cities have fallen behind in achieving a higher score as they have been unable to provide relevant data despite their active stature in multiple components of the assessment. The overall results indicate that significant effort needs to be made towards improving and evolving the status on the Systemic Maturity pillar.

Below we highlight some key insights on the performance of our 100 Smart Cities in the first cycle of DMAF and key learnings from the exercise.

## Policy

While cities have started making efforts in devising their city data policies, majority of cities are yet to create a city-wide policy covering various aspects of data governance.



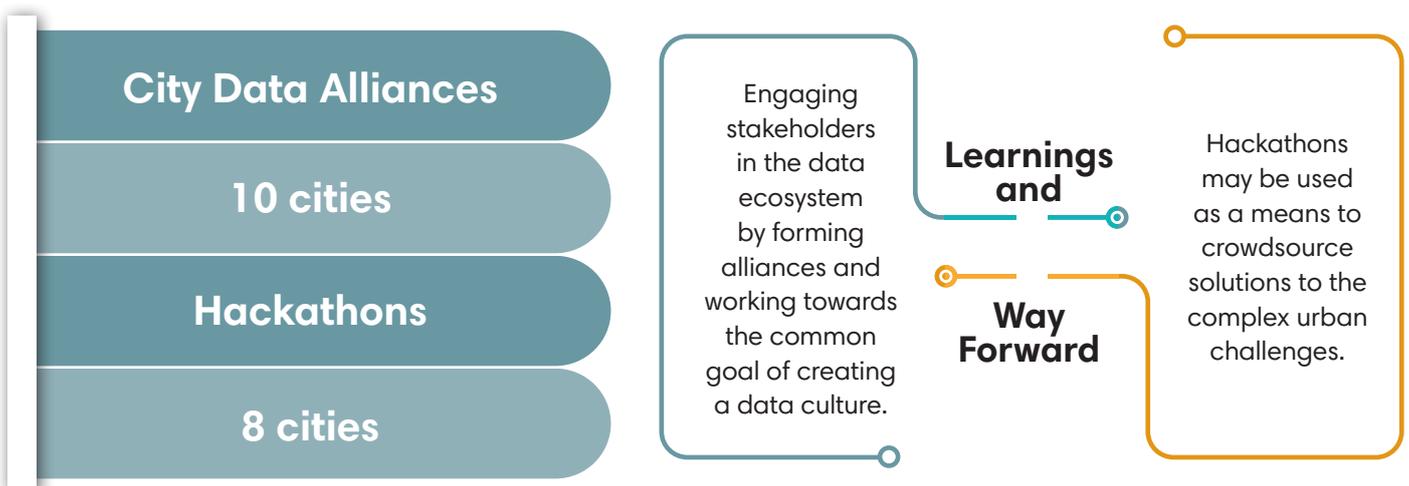
## People

The People component has seen maximum traction in the 1st cycle of DMAF as cities have started putting in place a team of data officials. It is important to assign them well defined roles and responsibilities for maximum outputs.



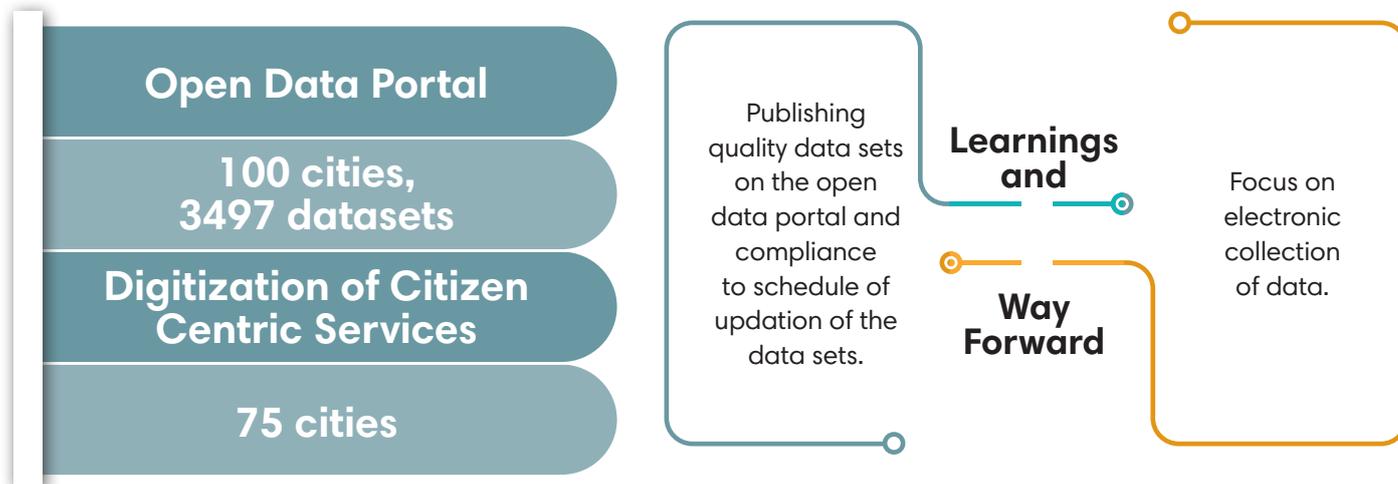
## Process

Processes for formulation of alliances, conducting hackathons and identifying use cases need to be strengthened in order to streamline the efforts being made in the data ecosystem for data collection and publishing.



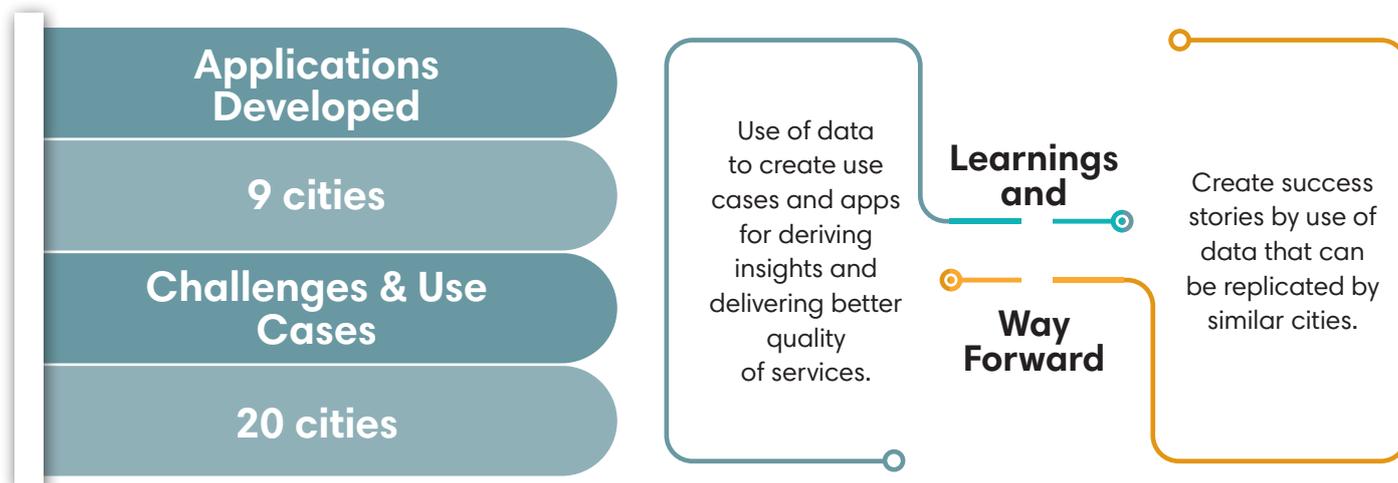
## Technology

The component of technology has fared better than most other components, as the cities have been able to publish datasets on the Open Data Portal and also have established processes for electronic data collection.



## Outcomes

Despite extensive collection of datasets in cities, majority of the cities have not been able to analyse and deduce desired outcomes for their cities.



# 2. DMAF Cycle 2- the Framework

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.

## 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 cycle. For more details regarding each of the pillars, kindly refer to the DMAF 2019 document.

As with DMAF Cycle I, in this cycle of DMAF we will be focussing on the Systemic Maturity pillar. This will help measure the ability of cities to implement the DataSmart Cities strategy from the perspectives of people, processes, technology, policies, and outcomes at the city level.

***The components of the Systemic Maturity pillar aim to capture the cities' maturity and readiness on:***



### Policy:

Existence of robust policy mechanisms in the city around data governance, empowerment, protection, collaboration and innovation.



### People:

Presence of empowered city officials with the capacity to guide the development of city data policies, manage data governance, drive inter-departmental and inter-agency data exchange and to build city data alliances.



### Process:

Effectiveness of the city's processes around data collection, usage, management, security, privacy, empowerment, collaboration, and innovation.



### Technology:

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.



### Outcomes:

Quality of outcomes around data driven governance, ease of living, ease of doing business, collaboration and innovation in the city.



Maturity in the components of the Systemic pillar will help these cities build a solid foundation which will serve as the base for them to create an effective data ecosystem. Once the cities reach a common minimum threshold, they will be assessed on their sectoral readiness of data, i.e. the sectoral maturity pillar. By the end of the second cycle, it is envisaged to get maximum cities certified on the Systemic Maturity pillar and explore the sectoral pillar for the next iteration.

## 2.2. 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 and number of datasets published on the Open Data Portal will be step marking. 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 cities. 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 maximum marking and each “no” answer will result in the minimum marking (of 0) allocated for that question.

**Step marking** - Some indicators’ scores are finalized based on a range of values. For example, the score for number of datasets published by a city will fall in steps of values from <30 datasets, 31 - 50 datasets, 51 - 70 datasets, 71 - 100 datasets, and 101 or more datasets, based on which the scoring is done.

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

where  $W_c$  is the weightage allocated for the component within each pillar. In DMAF Cycle 2, the components’ weightages have been detailed in Section 4.2.



**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.

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

In DMAF Cycle 2, weightage for Systemic Maturity pillar is 100% and weightage for Sectoral Maturity pillar is 0%.

### 2.3. ASSESSMENT PROCESS

The assessments and certifications i.e. DMAF Cycle 2 are measures to help cities calibrate their data policy, strategy and their implementation of DataSmart Cities initiatives. DMAF assessment is primarily intended to be a self-evaluation tool for cities to assess their maturity level of data evolution. The assessment process will be as follows:

- At the beginning of the assessment cycle, the DMAF 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 DMAF data portal.
- During the review and verification phase, in cases where the information submitted by cities is not supported by requisite documentation, the scores may be adjusted in accordance with the verification.
- DAM Unit at the Ministry will finalize the results basis discussions with an internal evaluation committee and publish the results and final certifications.



# 3. DMAF Cycle 2

The second cycle of DMAF will commence from mid-2020. The entire cycle, including declaration of final results is expected to complete within six months from the date of commencement. 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 in comparison to the results in DMAF Cycle I.

## 3.1. FOCUS OF THE ASSESSMENT

In the second 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:

- Budget allocation for data initiatives
- Appointment/nomination of key officials with clearly defined roles and responsibilities and their capacity building
- Formation of City Data Alliances
- Identification and classification of key municipal datasets
- Introduction of data analytics capabilities
- Development of a city data policy with supporting budgetary allocations
- Development of data stories and use cases in the city

## 3.2. 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%	5
		Process	25%	4
		Technology	20%	5
		Outcome	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 may change with each assessment cycle.

### 3.3. LIST OF INDICATORS AND SCORE CALCULATION

#### Systematic Maturity Pillar

Component	Score of Indicator	Component Score
Policy	1.a Approval of City Data Policy	1.a + 1.b + 1.c + 1.d
	1.b City Data Policy components	
	1.c Budget for data-related initiatives (2019-2020)	
	1.d Budget for data-related initiatives (2020-2021)	
People	2.a City Data Officer	2.a + 2.b + 2.c + 2.d + 2.e
	2.b Appointment of Data Coordinators	
	2.c Data Team	
	2.d Capacity Building1	
	2.e Capacity Building2	
Process	3.a City Data Alliances	3.a + 3.b + 3.c + 3.d
	3.b Data Hackathons / Data Challenges	
	3.c Solving urban challenges using available datasets	
	3.d Analytics capability	
Technology	4.a Sensors for collection of data	4.a + 4.b + 4.c + 4.d + 4.e
	4.b Number of datasets	
	4.c Schedule of updating of datasets on Open Data Portal	
	4.d Number of APIs	
	4.e Spatial readiness	
Outcomes	5.a Data Stories/Blogs	5.a + 5.b + 5.c + 5.d
	5.b Data related use cases	
	5.c Development of portal/applications	
	5.d Alerts & notifications	

- Systemic Maturity Pillar Score:  $0.2 \times \text{Policy} + 0.25 \times \text{People} + 0.25 \times \text{Process} + 0.2 \times \text{Technology} + 0.1 \times \text{Outcomes}$
- Sectoral Maturity Pillar: N/A for second cycle
- Calculation for City DMAF Score (second cycle):  $(\text{Systemic Maturity Pillar Score}) \times 100\%$



### 3.4. CERTIFICATION LEVELS

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

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

Cities with a DMAF Score of less than 50 will not be certified and shall be considered as Beginners in Data Maturity Assessment.



# 4. Indicator Definitions

## SYSTEMIC MATURITY PILLAR

The definitions of the indicators being computed in the current (2nd) assessment cycle are given below:

### 1.a Approval of City Data Policy

Pillar	Component
Systemic Maturity	Policy

<b>Question</b>	Has the city formally approved the City Data Policy?
<b>Method</b>	Binary Marking
<b>Scoring</b>	Yes – 30 No – 0
<b>Supporting Documents</b>	Letter of Approval/ Circulation of City Data Policy signed by Municipal Commissioner/ Gazetted Notification for City Data Policy
<b>Guidance / Additional details</b>	For details on City Data Policy, refer to section 2.7.9 of the DataSmart Cities Strategy

### 1.b City Data Policy components

Pillar	Component
Systemic Maturity	Policy

<b>Question</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 and Privacy 1.b.6 - SoP for data collection 1.b.7 - SoP for electronic data collection 1.b.8 - SoP for data processing and cleaning 1.b.9 - SoP for quality assessment of datasets 1.b.10 - SoP for data publishing as per Open Data Norms 1.b.11 - SoP for engaging stakeholders to assess the data needs 1.b.12 - SoP for data collection, processing and analysis for on field survey 1.b.13 - Do the Processes defined include provisions for data analysis
<b>Method</b>	Binary Marking



<b>Scoring</b>	<p>Maximum Marks – 30 Minimum Marks – 0</p> <p>Scoring will be done for each of the sections as mentioned below:</p> <ul style="list-style-type: none"> <li>• Data classification Yes – 4, No – 0</li> <li>• Data Categorization Yes – 3, No – 0</li> <li>• Data Flow / Approval Framework Yes – 3, No – 0</li> <li>• Data Archival and Retention Yes – 3, No – 0</li> <li>• Data Security and Privacy Yes – 4, No – 0</li> <li>• Guidelines - Is there any SoP for data collection? Yes – 2, No – 0</li> <li>• Guidelines - Is there any SoP for electronic data collection? Yes – 2, No – 0</li> <li>• Guidelines - Is there any SoP for data processing and cleaning? Yes – 2, No – 0</li> <li>• Guidelines - Is there any SoP for data for quality assessment of datasets? Yes – 2, No – 0</li> <li>• Guidelines - Is there any SoP for data publishing as per Open Data Norms? Yes – 2, No – 0</li> <li>• Guidelines - Is there any SoP for engaging stakeholders to assess the data needs? Yes – 1, No – 0</li> <li>• Guidelines - Is there any SoP for data collection, processing and analysis for on field Survey? Yes – 1, No – 0</li> <li>• Guidelines - Do the Processes defined include provisions for data analysis? Yes – 1, No – 0</li> </ul>
<b>Supporting Documents</b>	Copy of City Data Policy
<b>Guidance / Additional details</b>	The City Data Policy must preferably have the mentioned sections, SOPs and guidelines for setting up an inclusive data ecosystem at the city level. For further details, please refer to the National Data Sharing and Accessibility Policy (NDSAP) and sections 2.7.11-2.7.12 of the DataSmart Cities Strategy

### 1.c Budget for data-related initiatives (2019-2020)

Pillar	Component
Systemic Maturity	Policy

<b>Question</b>	Has the city/municipality earmarked budget in its Annual Budget 2019-20 for data-related initiatives/ activities?
<b>Method</b>	Percentage
<b>Scoring</b>	<p>Maximum Marks – 20 Minimum Marks – 0</p> <ol style="list-style-type: none"> <li>1. No budget - 0</li> <li>2. Percentage budget spent on data initiatives in 2019-2020 * 10</li> <li>3. Percentage of allocated budget for data activities - proportional marking out of 10</li> </ol>
<b>Supporting Documents</b>	Declaration signed by Municipal Commissioner containing Approved Budget 2019-20 and actual amount spent for data initiatives for the implementation of City Data Policy, Change Management and Capacity Building associated with data initiatives, as well as the total Municipal Budget for FY 2019-2020
<b>Guidance / Additional details</b>	Includes any budget that the smart city has earmarked for: implementation of activities specified in the City Data Policy, other data related activities including trainings, workshops etc. to build capacities for data handling



### 1.d Budget for data-related initiatives (2020-2021)

Pillar	Component
Systemic Maturity	Policy

<b>Question</b>	Has the city/municipality earmarked budget in its Annual Budget 2020-21 for data-related initiatives/ activities?
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 20 Minimum Marks – 0  Percentage of allocated budget for data activities - proportional marking out of 20
<b>Supporting Documents</b>	Declaration signed by Municipal Commissioner containing Draft/Approved Budget 2020-21 for data initiatives for the implementation of City Data Policy, Change Management and Capacity Building associated with data initiatives, as well as the total Municipal Budget for FY 2020-2021
<b>Guidance / Additional details</b>	Includes any budget that the smart city has earmarked for: implementation of activities specified in the City Data Policy, other data related activities including trainings, workshops etc. to build capacities for data handling

### 2.a City Data Officer

Pillar	Component
Systemic Maturity	People

<b>Question</b>	Does your city currently have City Data Officer?
<b>Method</b>	Percentage
<b>Scoring</b>	Maximum Marks – 30 Minimum Marks – 0  1. CDO appointed, but not full-time - 10 2. Full time CDO but not as per Job Description - 20 3. Full time CDO as per Job Description - 30
<b>Supporting Documents</b>	1. Appointment letter signed by Municipal Commissioner 2. A declaration from the Municipal Commissioner
<b>Guidance / Additional details</b>	Appointment of City Data Officer in consonance with the Section 2.7.3 of DataSmart Cities Strategy



## 2.b Appointment of Data Coordinators

Pillar	Component
Systemic Maturity	People

<b>Question</b>	What is the percentage of Departments which have appointed Data Coordinators?
<b>Method</b>	Percentage
<b>Scoring</b>	Maximum Marks – 20 Minimum Marks – 0  Score = Percentage of Departments with Data Coordinators * 20
<b>Supporting Documents</b>	Declaration signed by the Municipal Commissioner stating the Departments and the mapped Data Coordinators.
<b>Guidance / Additional details</b>	Appointment of Data Coordinators in Government Departments in consonance with the DataSmart Cities Strategy. The purpose of the question is to gauge if there is a data coordinator in every department. In case there is more than one data coordinator in one department, it will count as one for calculation purpose.

## 2.c Data Team

Pillar	Component
Systemic Maturity	People

<b>Question</b>	What are the number of members in your data team with their roles and responsibilities? (including Data Scientists, Architect, Analyst, open data expert, interns, outreach experts, and excluding CDO, data coordinators, data champions)
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 20 Minimum Marks – 0  0 members - 0 1 - 5 members - 10 6 or more members - 20
<b>Supporting Documents</b>	Declaration signed by Municipal Commissioner stating Departments and mapped team members and their roles and responsibilities
<b>Guidance / Additional details</b>	Includes all other team members in the data initiative. The expertise brought by the additional team members will add to the strength of the data initiatives



## 2.d Capacity Building - Ministry initiative

Pillar	Component
Systemic Maturity	People

<b>Question</b>	How many trainings or workshops on data has the city attended over WebEx to build capacity of its data team for executing the DataSmart Cities Strategy from 15th August 2019 onwards?
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 15 Minimum Marks – 0  0 Trainings - 0 1 - 2 Trainings - 5 3 - 4 Trainings - 10 5 or more - 15
<b>Supporting Documents</b>	Document specifying the status of trainings attended by the cities. (conducted by the Ministry)
<b>Guidance / Additional details</b>	Includes all trainings, workshops, VCs etc. for officers

## 2.e Capacity Building - City initiative

Pillar	Component
Systemic Maturity	People

<b>Question</b>	How many trainings or workshops on data has the city conducted to build capacity of its data team for executing the DataSmart Cities Strategy from 15th August 2019 onwards?
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 15 Minimum Marks – 0  0 Trainings - 0 1 - 2 Trainings - 5 3 - 4 Trainings - 10 5 or more - 15
<b>Supporting Documents</b>	Document specifying the status of trainings attended by the cities. (conducted by the Ministry)
<b>Guidance / Additional details</b>	Includes all trainings, workshops, VCs etc. for officers



### 3.a City Data Alliances

Pillar	Component
Systemic Maturity	Process

<b>Question</b>	How many data-related alliances has the city formed as envisaged in the DataSmart City Strategy?
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks - 30 Minimum Marks - 0  0 Alliance - 0 1-2 Alliances - 10 3-4 Alliances - 20 5 or more Alliances - 30
<b>Supporting Documents</b>	1. Declaration signed by the Municipal Commissioner stating the list of stakeholders (across Government, Industry, Academia and Community)  2. MoUs signed with stakeholders to form various alliances.
<b>Guidance / Additional details</b>	Any partnerships/MoU signed, and alliances formed for the City Data Alliance in consonance with section 2.7.7 of the DataSmart Cities Strategy

### 3.b Data Hackathons / Data Challenges

Pillar	Component
Systemic Maturity	Process

<b>Question</b>	Has your city conducted Data Hackathon event/Data Challenge for stakeholders (e.g. Academia, students, research institutes, Start-ups etc.) to help solve city issues through data?
<b>Method</b>	Binary Marking
<b>Scoring</b>	Maximum Marks - 20 Minimum Marks - 0
<b>Supporting Documents</b>	Listing of events/challenges with details of stakeholders and outcomes signed by Municipal Commissioner.
<b>Guidance / Additional details</b>	Events conducted in the city encouraging innovation/ collaboration/ problem solving



### 3.c Solving Urban Challenges using Available Datasets

Pillar	Component
Systemic Maturity	Process

<b>Question</b>	How many urban challenges (e.g. traffic patterns, safety etc.) has the city identified and attempted to get insights using the available data?
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 30 Minimum Marks – 0  0 urban challenges – 0 1 – 2 urban challenges – 10 3 – 4 urban challenges – 20 5 or more urban challenges – 30
<b>Supporting Documents</b>	Template to be filled and signed by Municipal Commissioner – Challenge, Role of data in identifying the challenge, Impact etc.
<b>Guidance / Additional details</b>	City to identify top urban problem areas and how data was used in identifying/ analysing these problems

### 3.d Analytics capability

Pillar	Component
Systemic Maturity	Process

<b>Question</b>	What kind of analytics are being practiced at the city level? - Descriptive - Diagnostic - Predictive - Prescriptive
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 20 Minimum Marks – 0  Any one – 5 Any two – 10 Any three – 15 All four – 20
<b>Supporting Documents</b>	Template to be filled and signed by Municipal Commissioner stating the data utilized, analysis conducted, results achieved, and the type of analytics used.
<b>Guidance / Additional details</b>	Type of analytics: Descriptive Analytics tells you what happened in the past. Diagnostic Analytics helps you understand why something happened in the past. Predictive Analytics predicts what is most likely to happen in the future. Prescriptive Analytics recommends actions you can take to affect those outcomes.



#### 4.a Sensors for collection of data

Pillar	Component
Systemic Maturity	Technology

<b>Question</b>	Does your city have sensors/field devices that collect data at source?
<b>Method</b>	Binary Marking
<b>Scoring</b>	Min Marks - 0 Max Marks - 10
<b>Supporting Documents</b>	Mention mapping of number of sensor devices to departments signed by the Municipal Commissioner along with the shape file with Latitude & Longitude
<b>Guidance / Additional details</b>	Sensor / field devices may include measurement of (but not limited to) - <ul style="list-style-type: none"> <li>- Pollution Management</li> <li>- Traffic Management</li> <li>- Waste Management</li> <li>- Smart Street Lights</li> <li>- Water Leakage Management</li> </ul>

#### 4.b Number of datasets

Pillar	Component
Systemic Maturity	Technology

<b>Question</b>	What is the total number of machine readable datasets published by the city on the Open Data Portal?
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 30 Minimum Marks – 0  <30 datasets - 0 31 - 50 datasets - 15 51 - 70 datasets - 20 71 - 100 datasets - 25 101 or more datasets - 30
<b>Supporting Documents</b>	Screenshot of the number of datasets published on the Open Data Portal.
<b>Guidance / Additional details</b>	Machine readable formats are: <ul style="list-style-type: none"> <li>- CSV (Comma separated Values)</li> <li>- XLS (spread sheet- Excel)</li> <li>- ODS (Open Document Formats for Spreadsheets)</li> <li>- XML (Extensive Mark-up Language)</li> <li>- RDF (Resources Description Framework)</li> <li>- KML (Keyhole Mark-up Language used for Maps)</li> <li>- GML (Geography Mark-up Language)</li> <li>- RSS/ATOM (Fast changing data e.g. hourly/daily)</li> </ul>



#### 4.c Schedule of Updating of Datasets on Open Data Portal

Pillar	Component
Systemic Maturity	Technology

<b>Question</b>	How many datasets has the city updated on the Open Data Portal as per the schedule?
<b>Method</b>	Percentage
<b>Scoring</b>	Maximum Marks – 30 Minimum Marks – 0  Score = Percentage Compliance*30
<b>Supporting Documents</b>	1. Compliance of updating schedule 2. Screenshot of old and updated dataset on the Open Data Portal
<b>Guidance / Additional details</b>	An updating schedule needs to be prepared against each catalogue/ resource published in Open Data Portal by the city

#### 4.d Number of APIs

Pillar	Component
Systemic Maturity	Technology

<b>Question</b>	How many APIs does the city have for integrating its datasets with the Open Data Portal?
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 10 Minimum Marks – 0  0 API - 0 1-5 APIs - 3 6-10 APIs - 5 11 or more APIs - 10
<b>Supporting Documents</b>	Screenshot of the APIs published on the Open Data Portal.
<b>Guidance / Additional details</b>	Includes any API published on open data portal developed for data integration



## 4.e Spatial readiness

Pillar	Component
Systemic Maturity	Technology

<b>Question</b>	How many city layers (such as roads, water bodies, properties etc.) are mapped on GIS?
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 20 Minimum Marks – 0  0 GIS layers - 0 1 - 3 GIS layers - 10 4 - 6 GIS layers - 15 7 or more GIS layers - 20
<b>Supporting Documents</b>	Declaration with multiple options of GIS attributes along with shape files signed by Municipal Commissioner.
<b>Guidance / Additional details</b>	GIS refers to the spatial data that city may create. Data may be in the form of shape files

## 5.a Data Stories/Blogs

Pillar	Component
Systemic Maturity	Outcomes

<b>Question</b>	How many data stories/Blogs has your city published on the Open Data Portal?
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 30 Minimum Marks – 0  0 Data stories/blogs - 0 1 - 2 Data stories/blogs - 10 3 - 4 Data stories/blogs - 20 5 or more Data stories/blogs - 30
<b>Supporting Documents</b>	Screenshot of Data Stories/Blogs published on the Open Data Portal
<b>Guidance / Additional details</b>	Data stories highlighting the success stories of city using data should be uploaded on the blogs section of the open data portal



## 5.b Data related use cases

Pillar	Component
Systemic Maturity	Outcomes

<b>Question</b>	How many use cases/SoPs of data is the city working on?
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 30 Minimum Marks – 0  0 use cases - 0 1 - 2 use cases - 10 3 - 4 use cases - 20 5 or more use cases - 30
<b>Supporting Documents</b>	List of key use cases with detailed description of problem, idea, application of data, datasets being used.
<b>Guidance / Additional details</b>	Use cases here are defined in response to the top urban challenges. Has the city solutioned any concept / developed a prototype / is currently deploying a new solution to tackle these urban challenges?

## 5.c Development of portal/applications

Pillar	Component
Systemic Maturity	Outcomes

<b>Question</b>	How many services are being delivered through applications on the basis of the city's datasets?
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 20 Minimum Marks – 0  0 services - 0 1 - 2 services - 5 3 - 4 services - 10 5 - 6 services - 15 7 or more services - 20
<b>Supporting Documents</b>	List of apps with a description of use cases, number of downloads, active users and key features
<b>Guidance / Additional details</b>	Identify the apps developed by the city which are in market to help aid the data led activities.  Against each app, give description, datasets used, active users and key features demonstrated by app.  In case the city has an integrated App, the number of services provided by using city's datasets may be entered.



## 5.d Alerts &amp; notifications

Pillar	Component
Systemic Maturity	Outcomes

<b>Question</b>	Is the city sending service alerts to at least 1% of its citizens? (traffic, disaster, health, water, electricity, environment, etc.)
<b>Method</b>	Step Marking
<b>Scoring</b>	Maximum Marks – 20 Minimum Marks – 0  0 alerts - 0 1 - 2 alerts - 5 3 - 4 alerts - 10 5 - 6 alerts - 15 7 or more alerts - 20
<b>Supporting Documents</b>	List of alerts signed by Municipal Commissioner.
<b>Guidance / Additional details</b>	Alerts may be via ICCC or any other system being used by the city for sending notifications to the citizens







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