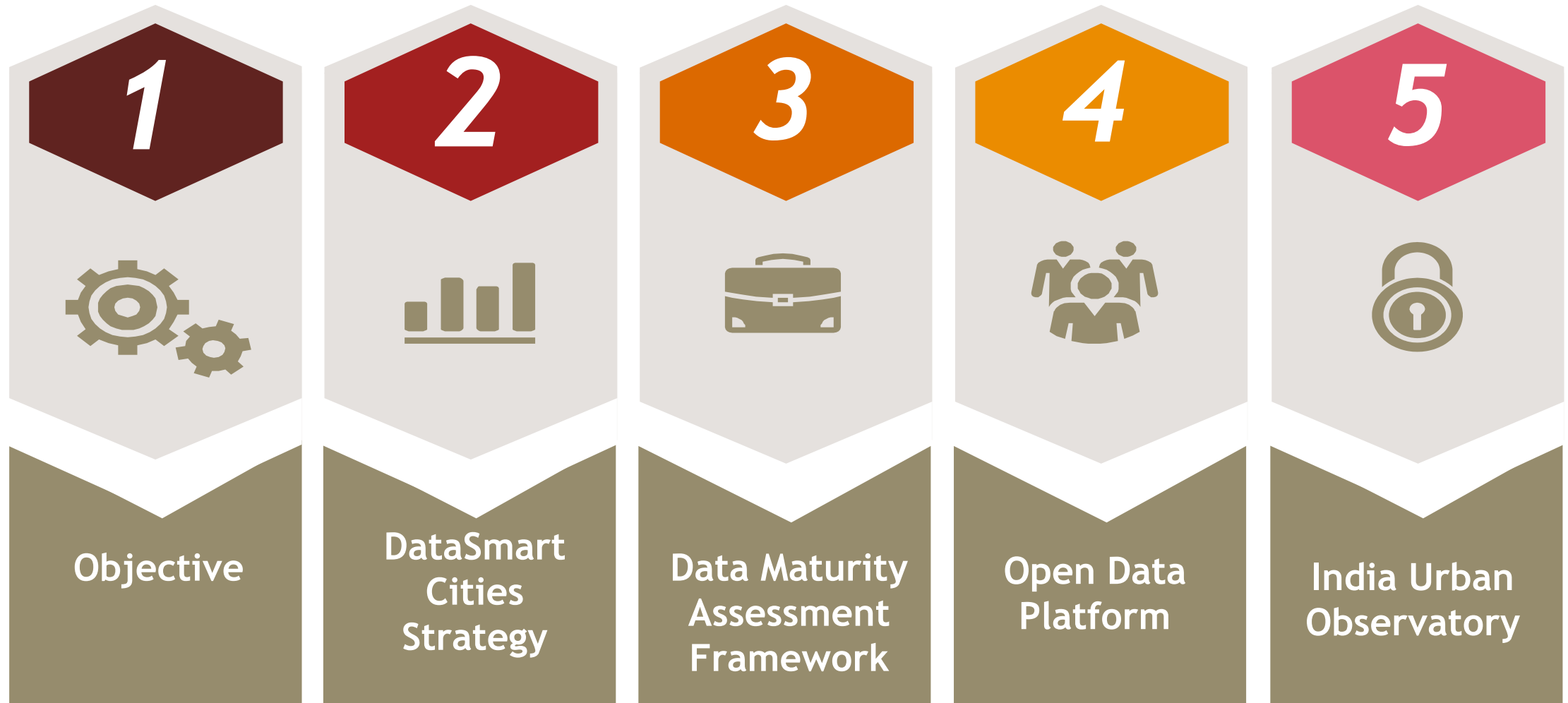


Urban Data Systems

The image features a cityscape with a network overlay of white lines and nodes. Several blue icons are overlaid on the scene: a house icon on the left, a Wi-Fi symbol in the top right, a truck icon in the bottom right, and a central circular node icon. The background shows a mix of modern high-rise buildings and greenery.

June 2019

Structure of the Presentation



Mission Projects

Liveability

Economic-ability

Sustainability

SMART CITIES

Services

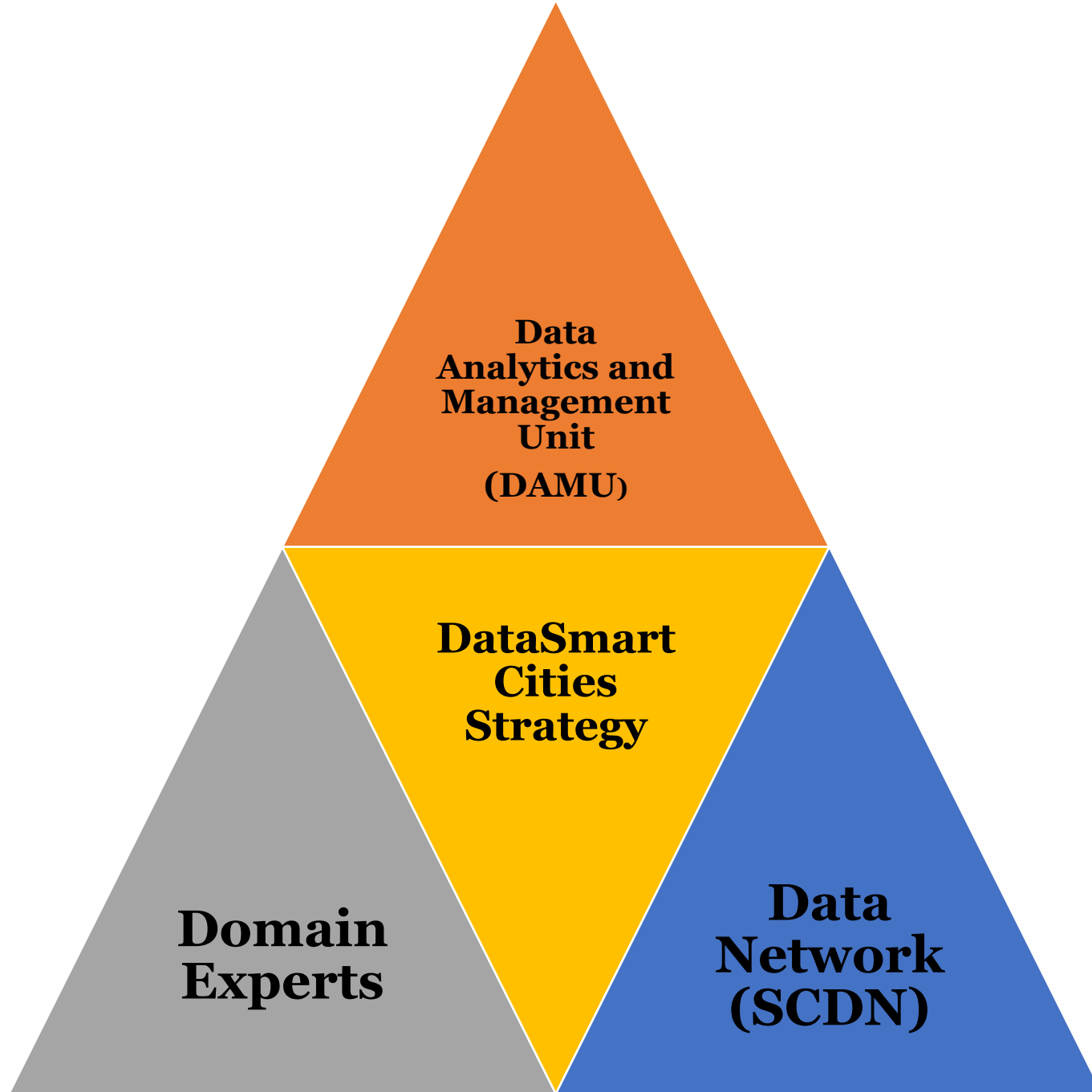
Finance

Planning

Technology

Governance

DATA



DataSmart Cities Strategy

Empowering Cities through Data

DataSmart Cities Strategy

Need for Data Strategy

Building Blocks of Data Culture

Governance Structure

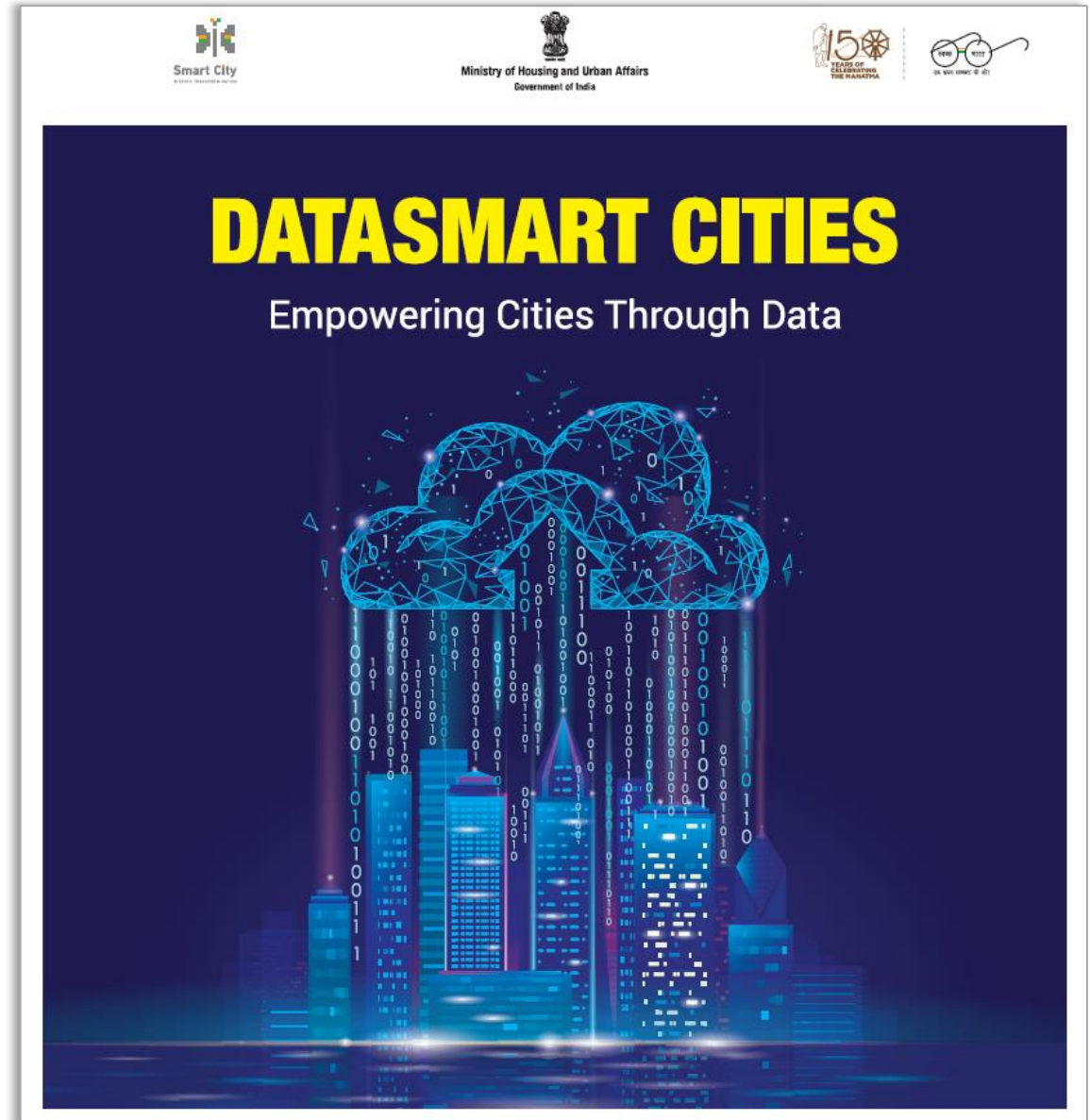
Benefits of data driven governance

City Data Policy

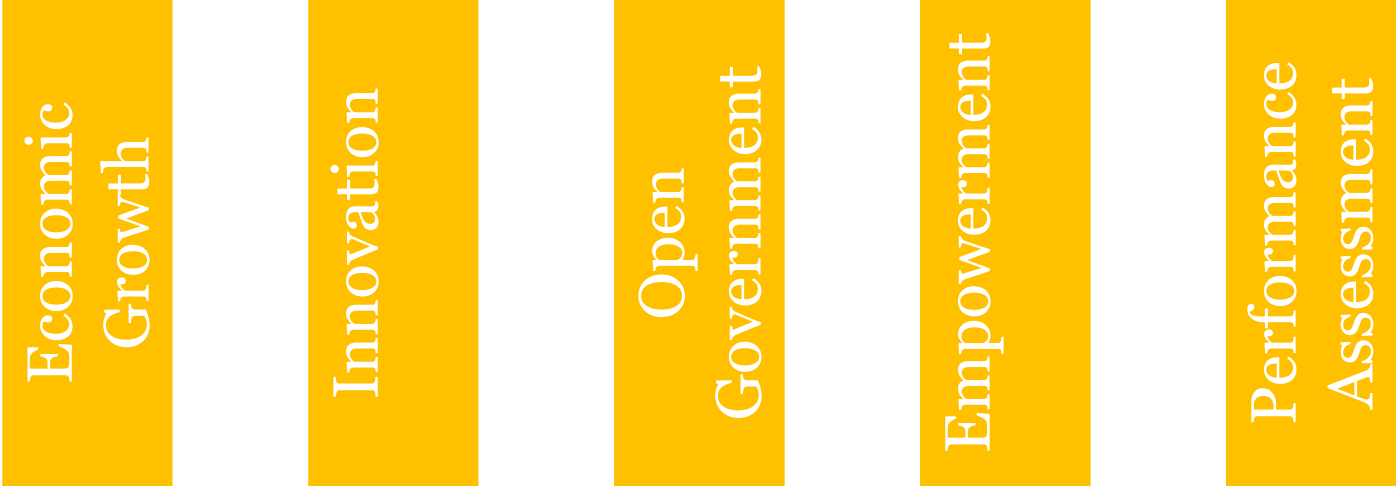
Use cases

Role of Data : Emerging Technologies

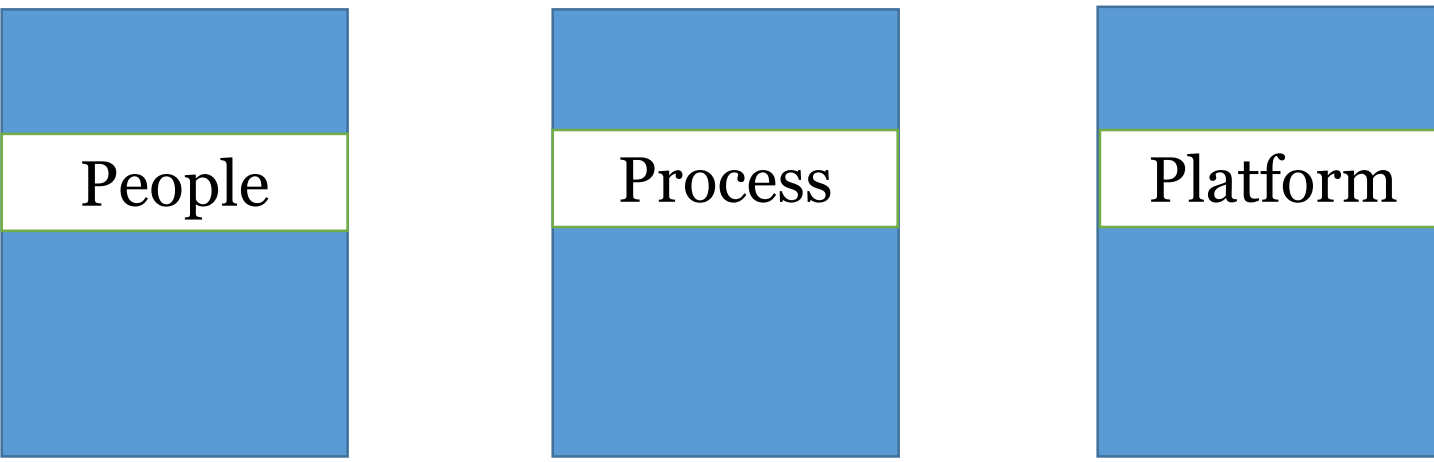
Maturity Assessment Framework



DataSmart Cities Strategy



Quadruple Helix



CITIZENS

GOVERNMENT AGENCIES

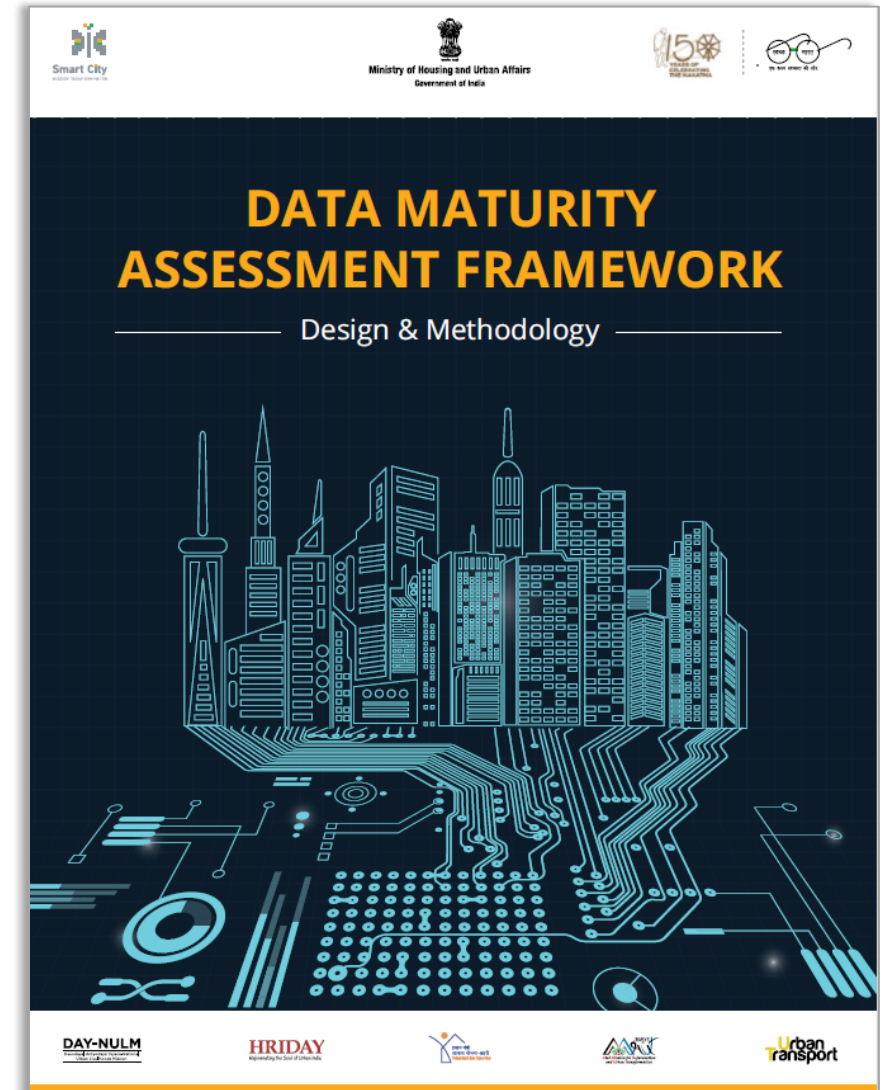
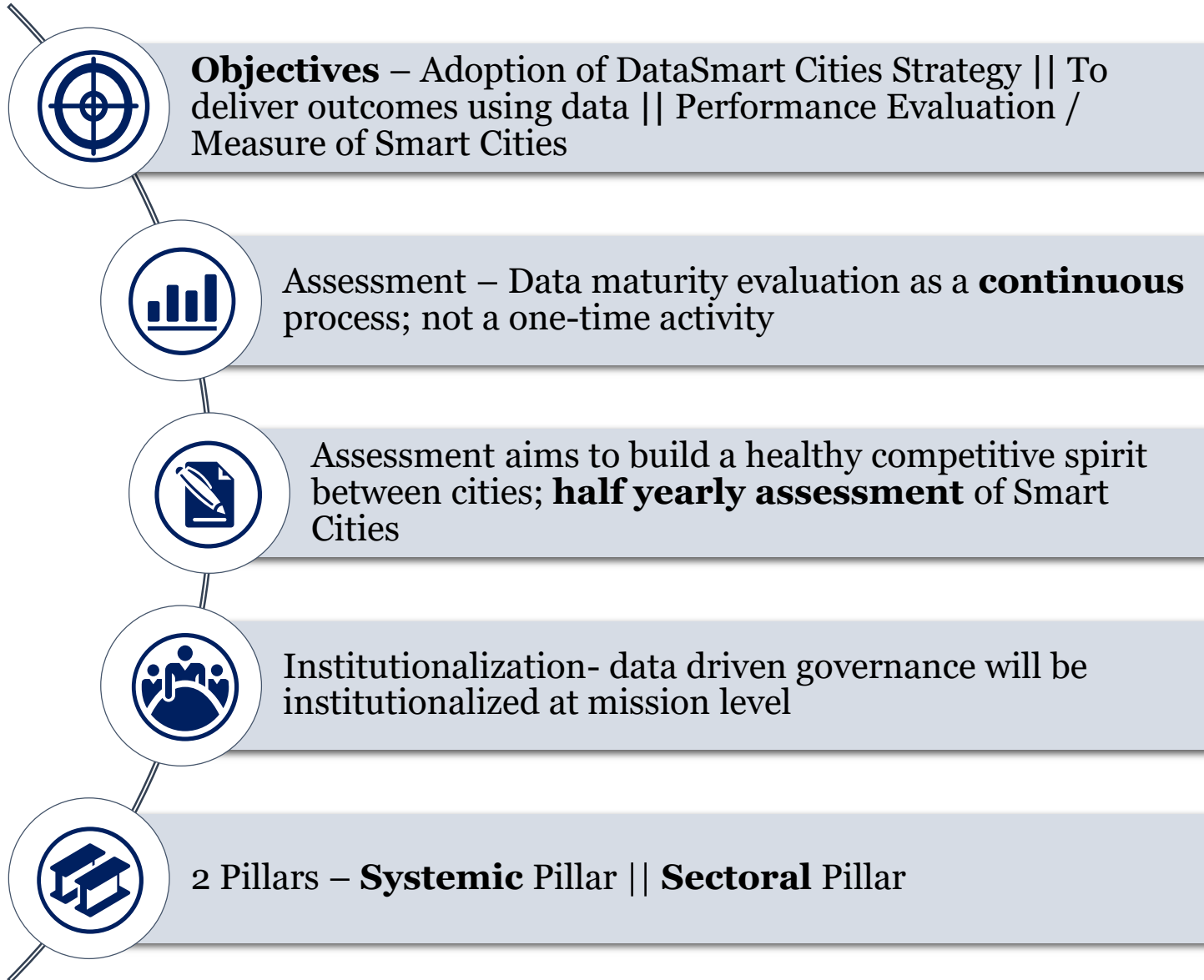
ACADEMICIAN & RESEARCHERS

START UP

VENTURE CAPITALIST

Data Maturity Assessment Framework (DMAF)

DMAF - Outline



Assessment Framework: Systemic Maturity Pillar

This Pillar 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



Policy
Weightage - 20%



People
Weightage - 25%



Process
Weightage - 25%




Technology
Weightage - 20%




Outcomes
Weightage - 10%

Assessment Framework: Sectoral Maturity Pillar

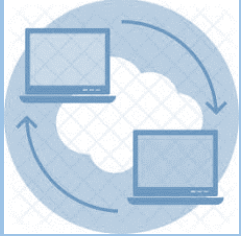
This pillar measures the ability of cities to harness the power of data by focusing on availability, usage, sharing and control management of data in key urban sectors.




Data Availability
Weightage - 40%



Data Usage
Weightage - 30%



Data Shareability
Weightage - 15%



Data Management
Weightage - 15%



Waste



Water



Transport



Traffic

First Cycle of DMAF

Pillar	Pillar Weightage for 1 st Cycle	Component	Component Weightage	No. 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 Share-ability	15%	4
		Data Management	15%	5

Open Data Portal @ Smart Cities Mission

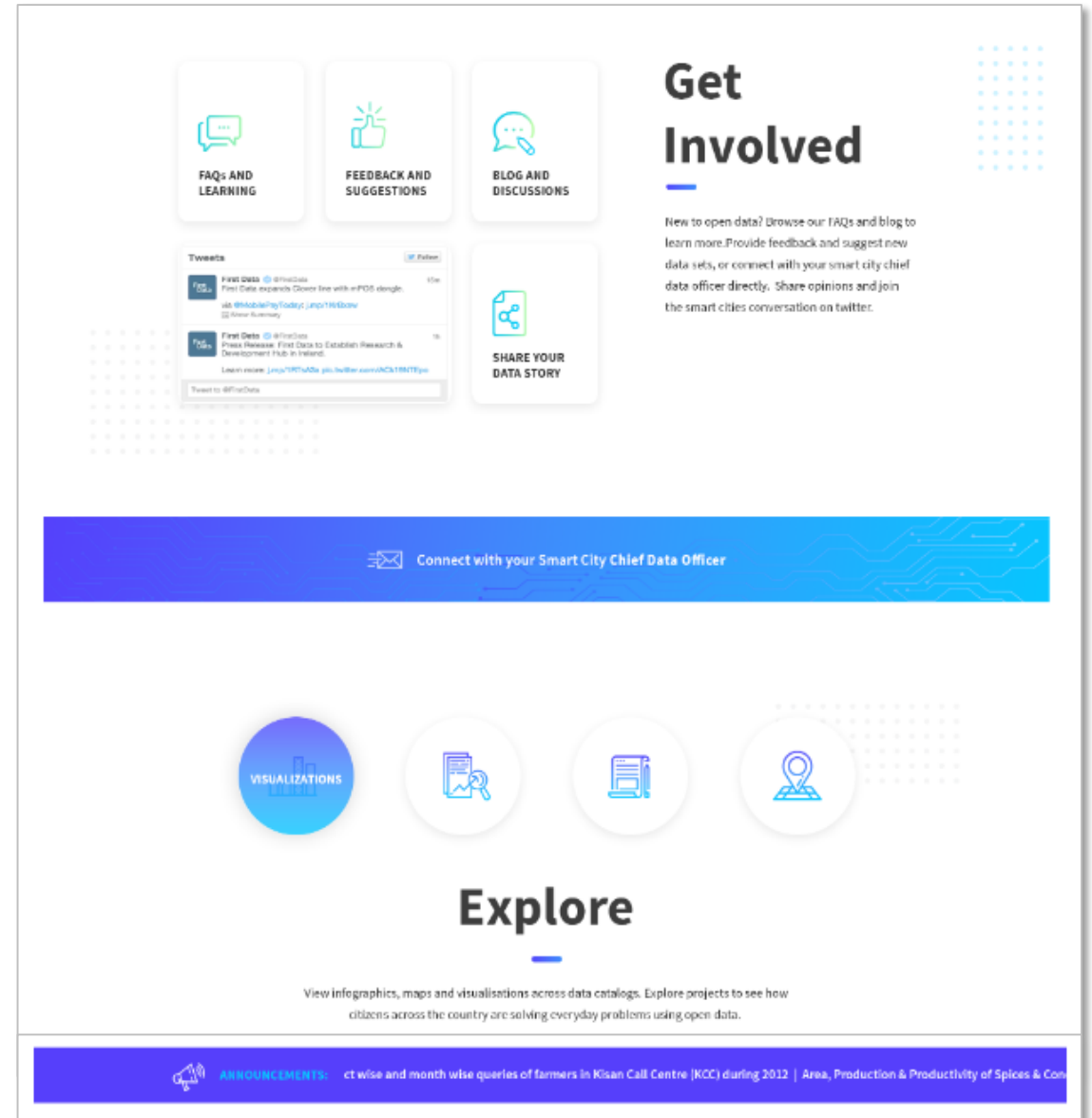
Open Data Portal: Launched on 26th February, 2019



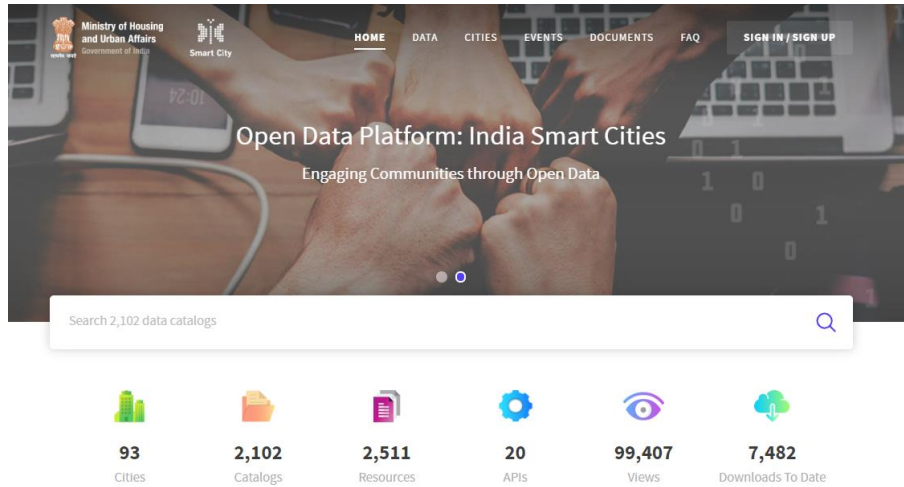
Dive into the Data

Browse over 4,000 data catalogs from 100 smart cities. Search data sets through sectors that interest you or your chosen smart city. View recently published data catalogs, as well the most popular catalogs on the portal.

- NEW DATA CATALOGS
- POPULAR DATA CATALOGS
- SEARCH BY CITIES
- SEARCH BY SECTOR



Features of Open Data Portal



Launched on
26th February,
2019



33+ Sector
categories



100 City Data
Officers



More APIs and
data feeds ..



State-of-the-
art



Real-time
Dashboard



Visualization
and Trends



Data Stories



Infographics



Blogs &
Discussions



Map Services

Status

Status today



99 cities



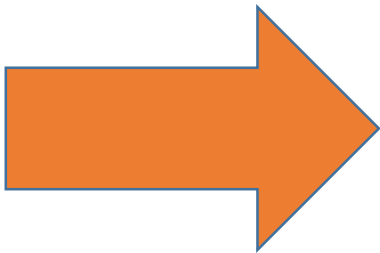
3100+ Resources



2600+ Catalogs



46 APIs



Way to Go



100 cities



5000 Resources



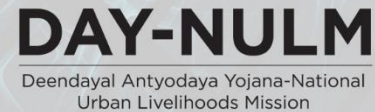
100 APIs

India Urban Observatory



Ministry of Housing and Urban Affairs
Government of India

INDIA URBAN OBSERVATORY



Smart Cities



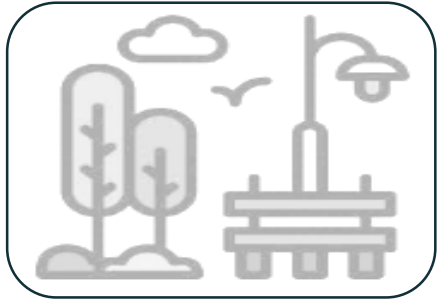
PLATFORMS

*Collective Consciousness of Humanity

- Ease of Living
- Economic Growth
- Connected
- Inclusiveness
- Safe
- Resilient
- Adaptive
- Sustainable
- Trust and Privacy
- Energy Efficient



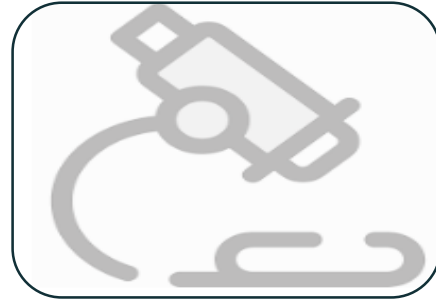
Why Urban Observatory?



Scientific modelling
of urbanization



Real time Decision
support system



Evidenced-based
Policy making



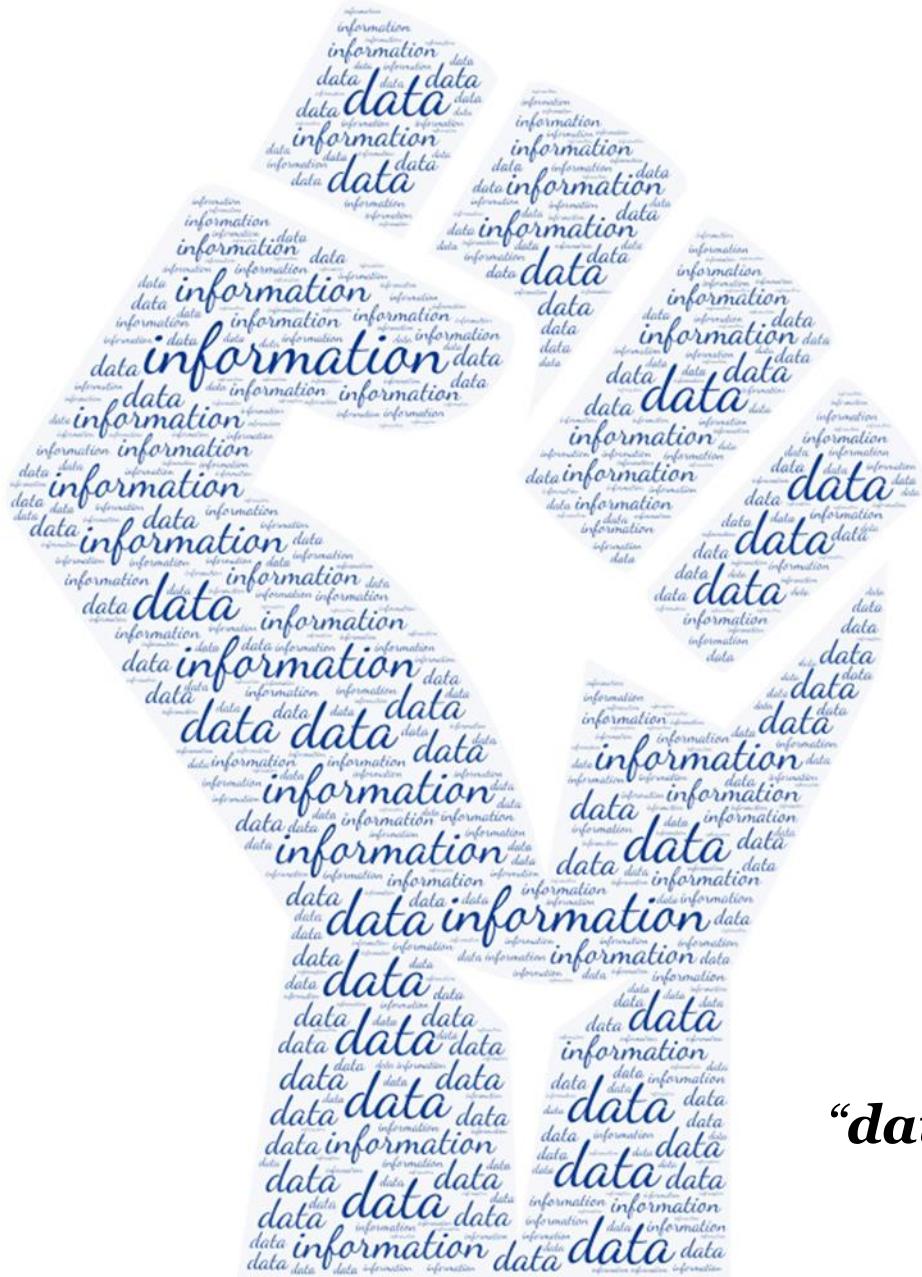
Mission/Program
Management



Promotion of
culture of data

India Urban Observatory

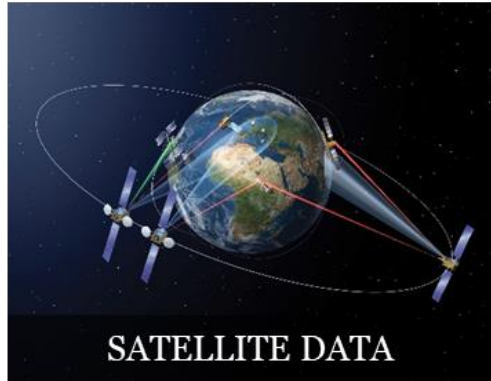




Information is Power

“data becomes information when viewed in a particular context”

DATA IS EVERYWHERE



SATELLITE DATA



SURVEILLANCE CAMERA



AIR QUALITY SENSORS



VIDEO/TRAFFIC SENSORS



MOBILE APPS



OFFICE COMPUTERS



VEHICLE GPS



DIGITIZED FILES



GOOGLE SEARCH



WIKIPEDIA



TOLL BOOTH/ PLAZA



STREET SURVEYOR

Data Sources



Government Data Sources

- From Various Ministries
- India Open Data Portal
- Smart Cities Open Data Portal
- Mission dashboards
- Archival/ real time data



Third Party Data Sources

- Research Institutes
- Think tanks
- Funding agencies
- Private Agencies
- Communities



Public Data Sources

- Data-Sets available over Web/Internet
- Crowd Sourced Data
- APIs



Real time Feeds

- Data Feeds though IUDX
- Command and Control Data feeds for aggregated data
- Satellite Images
- Mission dashboards



India Urban Observatory Supports various data types

Structured Data



Transactional data



Databases



Relational Database



Research / Experimental data inferences

Semi-structured Data



Excel files



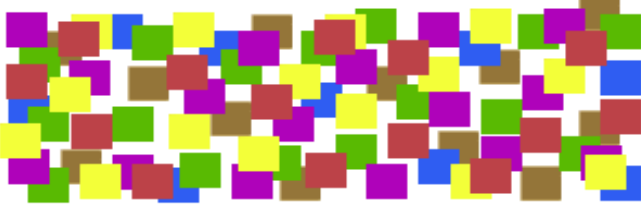
XML files




HTML files




Unstructured Data




Text files, PDF, word documents




Servers, sensors



Images



Video files

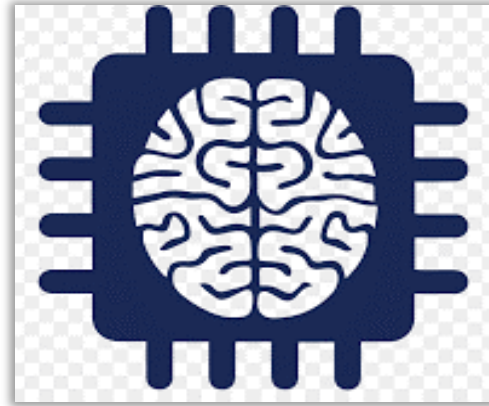


Tools available at IUO

ENABLERS



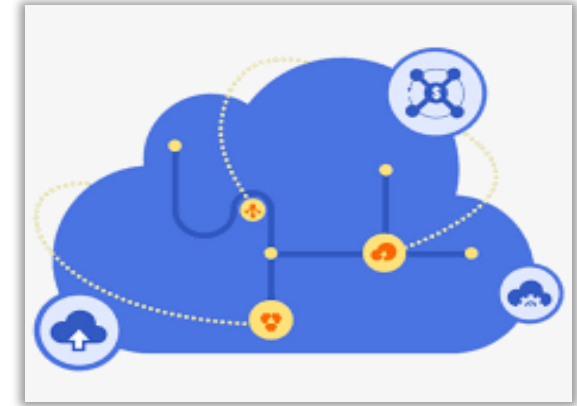
Real Time Analytics



AI & ML

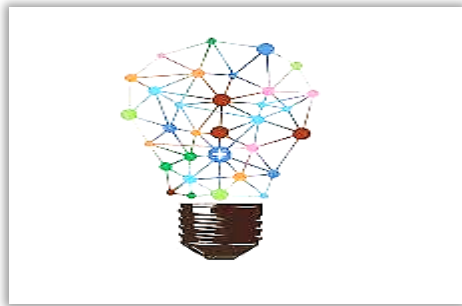


Spatial Analysis

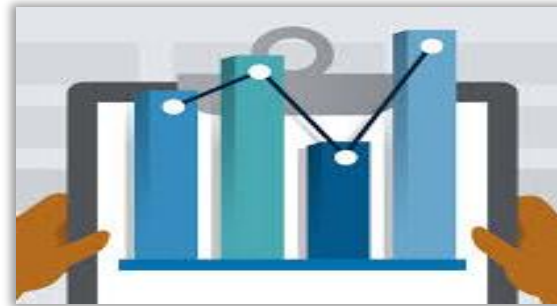


Big Data Analytics

OUTPUTS



Patterns



Trends



Combined indices



Relationships

India Urban Observatory



Possibilities

Generating Trends and Insights

- Descriptive Analytics
- Qualitative analysis
- Quantitative Analysis

Mission performance management

- Real time dashboard
- Score card
- Rankings
- KPIs
- Comparative analysis

India Urban Observatory

Data Analysis for Policy formulation/interventions

- Prescriptive
- Predictive analysis
- Diagnostic analysis

Impact assessment

- Causal Analysis
- Outcome analysis
- Socio-economic Indicators(SDG, OECD)

India Urban Observatory



National Cities Performance Framework Dashboard

Official Australian Government Website



Australian Government
Department of Infrastructure,
Regional Development and Cities

The screenshot shows the dashboard interface. At the top left is the Australian Government logo and the text 'Australian Government Department of Infrastructure, Regional Development and Cities'. Below this is the title 'National Cities Performance Framework Dashboard' and the URL 'GOV.AU Official Australian Government Website'. A navigation bar contains tabs for 'Overview', 'Context', 'Jobs & skills', 'Housing', 'Infrastructure', 'Liveability', 'Innovation', and 'Planning'. On the left, a list of cities is provided: Adelaide, Albury-Wodonga, Ballarat, Bendigo, Brisbane, Cairns, Canberra, Darwin, Geelong, Gold Coast-Tweed Heads, Hobart, and Launceston. The main content area features a cityscape background with the text 'Tracking progress and performance across Australia's largest cities' and a 'Smart Cities Plan' logo.

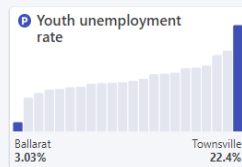
- ### Performance Areas
- Job & Skills
 - Housing
 - Infrastructure
 - Liveability
 - Innovation
 - Planning

- Adelaide
- Albury-Wodonga
- Ballarat
- Bendigo
- Brisbane
- Cairns
- Canberra
- Darwin
- Geelong
- Gold Coast-Tweed Heads
- Hobart
- Launceston
- Mackay
- Melbourne
- Newcastle-Maitland
- Perth
- Sunshine Coast
- Sydney

Jobs & skills All cities

The jobs & skills performance indicators seek to measure employment, education and training outcomes. The indicators will help all levels of government, industry and the community to boost employment through a better understanding of education, skills and industry development needs.

Key indicator Labour force



Featured indicators Showing range



Labour force



View all 7 charts



Education

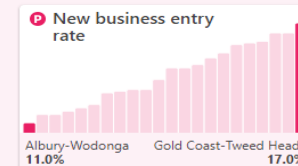


View all 3 charts

Innovation & digital opportunities All cities

The innovation & digital opportunities performance indicators seek to measure innovation and entrepreneurship. The indicators will help all levels of government, industry and the community to increase productivity growth and develop new knowledge industries and the digital economy.

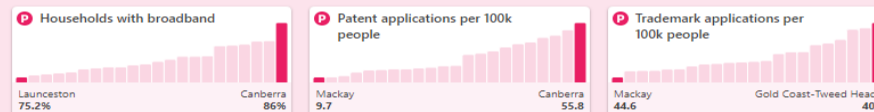
Key indicator Innovation



Featured indicators Showing range



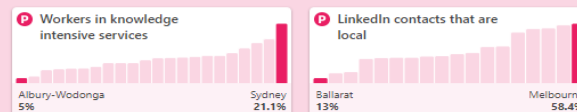
Innovation



View all 4 charts



Digital opportunities

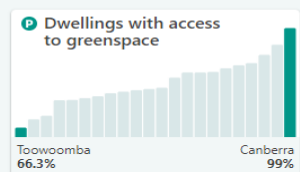


View all 2 charts

Liveability & sustainability All cities

The liveability & sustainability performance indicators can help all levels of government, industry and the community to better target policies aimed at promoting safety, social cohesion and human health and improving the quality of the local environment.

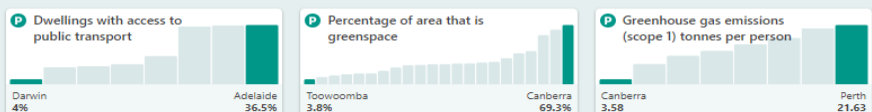
Key indicator Sustainability



Featured indicators Showing range



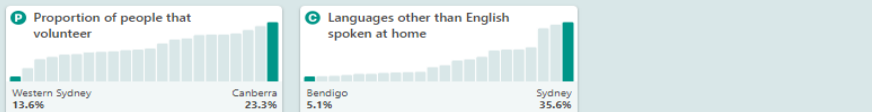
Sustainability



View all 7 charts



Liveability

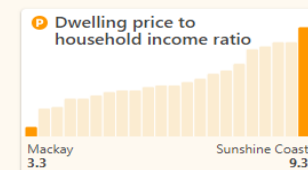


View all 5 charts

Housing All cities

The housing performance indicators seek to measure housing supply and affordability. The indicators will help all levels of government, industry and the community to develop policies to deliver more affordable housing that is located near jobs, services and transport connections.

Key indicator Housing affordability



Featured indicators Showing range



Housing affordability



View all 7 charts



Living affordability



View all 5 charts

Insights and trends in Urbanization

Traffic jams in just four Indian cities cost \$22 billion a year

10 million Bangaloreans lose 60 crore hours, Rs 3,700 crore a year to road congestion....

Source : BCG, Revised Master Plan 2031 ,Bangalore Development Authority

Source : <https://www.airvisual.com/world-most-polluted-cities>

Leverages data to derive insights and assess trends in Urbanisation namely Livability, Healthcare, Traffic, Pollution, etc.

India Urban Observatory



Data-Smart City Solutions

An initiative by the Ash Center at Harvard Kennedy School and powered by Bloomberg Philanthropies

DATA-SMART CITY SOLUTIONS



GIS

Map Monday: Brampton's Vision for the Future

FEBRUARY 25, 2019



MOBILITY

The Bus System of the Future

PROFILES | FEBRUARY 13, 2019



GIS

Map Monday: Tracking Relocation and Crowdsourced Mapping during Hurricane Maria

PROFILES | FEBRUARY 11, 2019



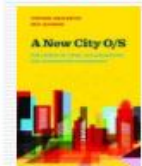
CIVIC DATA

#ThisWeekInData

ARTICLE SPOTLIGHTS | JANUARY 31, 2019

ABOUT THE BOOK

A NEW CITY O/S



A New City O/S: The Power of Open, Collaborative, and Distributed Governance sets out transformative operational reforms that will produce better public services and more citizen trust by taking advantage of advances that have been made in analytics, social engagement, and big data.

ABOUT THE PROJECT DIRECTOR

STEPHEN GOLDSMITH



Stephen Goldsmith is the Daniel Paul Professor of the Practice of Government and the Director of the Innovations in Government Program at the Harvard Kennedy School. His latest book is *A New City O/S*.



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SUBSCRIBE

ON TWITTER

Data-Smart Cities Retweeted

Harvard Ash Center
@HarvardAsh

Excited to host leading city chief data officers from around the country @Kennedy_School for the Civic Analytics Network Convening @DataSmartCities



Focus Areas

Civic Data

Civic Engagement

Health & Human Services

Infrastructure

Public Safety

Use Cases

Mobility

DATA-SMART CITY SOLUTIONS

CIVIC DATA

A Catalog of Civic Data Use Cases

How can data and analytics be used to enhance city operations?

ISTOCKURBANOW

BY DATA-SMART CITY SOLUTIONS • JULY 19, 2017

DATA-SMART CITY SOLUTIONS

Civic Data

SUBSCRIBE TO CIVIC DATA

ALL | MAP OF THE MONTH | HUMAN-CENTERED DESIGN | NUDGING | BIG DATA | DATA VISUALIZATION | GIS | OPEN DATA

Analytics in City Government

CIVIC ANALYTICS NETWORK

How the Civic Analytics Network Cities Are Using Data to Support Public Safety, Housing, Public Health, and Transportation

DATA-SMART CITY SOLUTIONS

Civic Engagement

SUBSCRIBE TO CIVIC ENGAGEMENT

ALL | 311 | CROWDSOURCING | SOCIAL MEDIA

DATA-SMART CITY SOLUTIONS

Health & Human Services

SUBSCRIBE TO HEALTH & HUMAN SERVICES

ALL | EDUCATION | PUBLIC HEALTH | SOCIAL SERVICES

CIVIC DATA

How Trusting Tech Can Improve Disaster Response

Using data from both government and volunteer sources is key to an effective disaster response strategy.


CrowdRescueHQ Puerto Rico Map

PREDICTIVE ANALYTICS

Finding the Rat: How to Optimize Your Inspections

Challenge.gov

An official website of the United States government

 An official website of the United States government [Here's how you know](#) ▾



[Challenges](#) [About](#) [Agency Toolkit](#) [Contact](#)

LOGIN

Welcome to Challenge

Here, members of the public compete to help the U.S. government solve problems big and small. Browse through challenges and submit your ideas for a chance to win.

All Challenges

ALL CHALLENGES



Search Challenge... 



Department of Health and Human Services
Shape of Health: An Obesity Prevention Game
Create an interactive video game with focus on obesity prevention or weight control for women or girls.
\$200,000 IN PRIZES



NASA Mechanical Maker
The Mechanical Eye
Create a Clockwork Mechanical Camera for Venus
VIEW THIS CHALLENGE



IARPA
CASE Challenge
Develop a ground-breaking and innovative solution to evaluate credibility tools and technologies!
\$125,000 IN PRIZES


Launched in 2010, Challenge.gov allows federal agencies to crowdsource ideas from the public and solve problems.

Since 2010, the U.S. government has run nearly 1,000 challenges and offered well over \$250 million in cash prizes for the best ideas.

An official website of the United States government. [Here's how you know](#)

Challenge.gov Government Challenges. Your Solutions. Challenges About Agency Toolkit Contact


ALL CHALLENGES



Department of Health and Human Services
Shape of Health: An Obesity Prevention Game
Create an interactive video game with focus on obesity prevention or weight control for women or girls.

\$200,000 IN PRIZES


Open Until: 03/31/2019



NASA Mechanical Maker
The Mechanical Eye
Create a Clockwork Mechanical Camera for Venus

VIEW THIS CHALLENGE


Open Until: 03/31/2019



IARPA
CASE Challenge
Develop a ground-breaking and innovative solution to evaluate credibility tools and technologies!

\$125,000 IN PRIZES


Open Until: 04/01/2019



Centers for Disease Control and Prevention
2019 Million Hearts® Hypertension Control...
Are you a clinician, practice or health system working to control hypertension among your patient population?

VIEW THIS CHALLENGE


Open Until: 04/01/2019



Department of the Interior
Saving the 'Ōhi'a
Developing new and improved tools for early detection of the fungi *Ceratocystis lukuohia* and *Ceratocystis huliohia* in the 'Ōhi'a and the environment.

\$70,000 IN PRIZES

Open Until: 04/08/2019



Bureau of Reclamation
Lowering the Cost of Continuous Streamflow...
Can you help us lower the cost of continuous streamflow monitoring?

VIEW THIS CHALLENGE

Open Until: 04/08/2019

Challenge Types

Find detailed information on every type of challenge.



Analytics

Analytics, visualization and algorithm challenges focus on finding better ways to interpret or communicate data.



Design

Creative design and multimedia challenges can help agencies capture, communicate and project a concept or aesthetic that would be difficult to achieve with a grant or contract.



Entrepreneurship

Entrepreneurship or business plan challenges are competitions used by government, universities and private sector organizations to help train and equip entrepreneurs, as well as launch their ventures.



Ideas

An ideation challenge supports new ways of understanding and framing problems, new processes to solve problems, and innovative implementations as solutions to problems.



Scientific

Scientific challenges seek to promote the understanding of a problem, solution or outcome using empirical or measurable evidence-based practices.



Software

In a software and app development challenge, an organization asks solvers to create a software application to solve an existing problem or draw attention to potential uses of available datasets.



Technology

Technology demonstration and hardware challenges seek prototypes or fully developed solutions to catalyze and demonstrate breakthrough technical innovations.

LONDON DATASTORE

MAYOR OF LONDON LONDON ASSEMBLY

LONDON DATASTORE Login

Data ▾ Blog Apps & Analysis ▾ Area Profiles Collaboration ▾ About Q



Search 814 datasets

Updated 5 days ago: London Average Air Quality Levels

Welcome to the Datastore

The London Datastore is a free and open data-sharing portal where anyone can access data relating to the capital. Whether you're a citizen, business owner, researcher or developer, the site provides over 700 datasets to help you understand the city and develop solutions to London's problems. Please do have a look around, and **let us know** what you think.

We are proud to be the winners of the 2015 [ODI Open Data Publisher Award](#).

Latest Tweet by @LDN_Data



LDNMayor Data
@LDN_data

Are you a Civil Society organisation who has a project idea that involves data analysis or just want to better understand what you can do with your organisations data? Sign up to City Hall's Data Surgery & receive some 1-2-1 support from a data volunteer: bit.ly/2BKjna1

Datastore Highlights



City Data Analytics Programme

See how we're using data science to address public sector challenges across London.



Borough Data Partnership

Bringing London's Boroughs together to solve city-wide problems and drive efficiency in our use of data.



Economic Fairness

Explore a range of indicators that attempt to measure how fair and inclusive London's economy is.



Apps & Analysis

Read the latest reports produced by the GLA and explore our suite of data-driven apps.



Art and Culture

24 Datasets



Business and Economy

102 Datasets



Championing London

17 Datasets



Crime and Community Safety

58 Datasets



Demographics

166 Datasets



Education

67 Datasets



Employment and Skills

130 Datasets



Environment

108 Datasets

Pune Open Data Store


PUNE MUNICIPAL CORPORATION | A Digital India Initiative

PUNE DATASTORE
Freedom of Information

Home Register Login

Search

Departments Datasets PMC Reports Data Portals Dashboard Open Data Policy About



Sewage Treatment Slum Rehabilitation Social Development Department Solid Waste Management Traffic Water Supply Bhavan Rachna Water Supply

26699 Views
29 VIEWS PER DAY

161658 Downloads
180 DOWNLOADS PER DAY

115 Feedbacks
1 FEEDBACKS PER DAY

330 Users
1 USERS PER DAY

26 Departments
More info

453 Datasets
More info

15 Data Officers
More info

93 Suggested Datasets
More info

Launched in 2016, Pune Data Store has published more than 10 Research papers using published data sets

Smart Cities Open Data Portal



The banner features a background image of hands gathered around a laptop. The text reads: 'Open Data Platform: India Smart Cities' and 'Engaging Communities through Open Data'. The navigation menu includes 'HOME', 'DATA', 'CITIES', 'EVENTS', 'DOCUMENTS', 'FAQ', and 'SIGN IN / SIGN UP'. A search bar at the bottom left contains the text 'Search 2,340 data catalogs' and a magnifying glass icon.



91

Cities



2,340

Catalogs



20

APIs



70,584

Views



**NEW DATA
CATALOGS**



**POPULAR DATA
CATALOGS**



**SEARCH BY
CITIES**



**SEARCH BY
SECTOR**



5,512

Downloads To Date

Search Cities

1 - 12 of 100 Cities



Agartala

57 Data Catalogs



Agra

26 Data Catalogs



Ahmedabad

48 Data Catalogs



Aizawl

17 Data Catalogs

Formats



Spreadsheet (555)



CSV File (199)



PDF File (170)



Website (96)



ZIP File (65)



Shapefile (24)



XML File (24)

Search Sectors

1 - 12 of 25 Sectors



Art and Culture

29 Data Catalogs



Commerce

5 Data Catalogs



Economy

8 Data Catalogs



Education

52 Data Catalogs

India Urban Data Exchange



HOME ▾ PARTNERS USE CASES ▾ RESOURCE CENTER MEDIA ▾ CONTACT US

Search

STANDARD MECHANISM TO SHARE AND ACCESS DATA

The India Urban Data Exchange (IUDX) is a software platform that allows Smart Cities and the citizens to fully benefit from the large volumes of data available within cities.

NEWS

/ joins IUDX to harness the city's data for its CCC and other city-wide applications (01-02-19) Pune Smart City joins IUDX

Offers

Resource Center

Use Cases

IUDX Overview

Architecture

Standard APIs

Connect Ecosystem Partners

India Urban Data Exchange : Use Cases

USE CASES: WOMEN'S SAFETY



Imagine having a live Safety Index for every street, similar to traffic congestion, which gets updated periodically throughout the day, reflecting the "safeness" of the road/street. Such an index can be used for planning trips to ensure unsafe areas/streets are avoided. Calculating such a live index will require combining static and dynamic data from a diverse set of sources in a way that captures the notion of safety. For instance, these data sets could be used to determine the safety index:

- Police station locations
- Bus stop locations
- Land use patterns
- Street structure and topology
- Live streetlight status
- Live activity status

Having this data made available by their respective custodians via IUDX will enable solution providers to create new and useful applications for citizens. For instance, a bright entrepreneur can figure out how to properly combine the raw data to calculate a live safety index per street and serve it again through IUDX.

Similarly, a cab aggregator or trip planning application can use this data to provide safe routes for app users. A city manager or the police can in turn use this data to evaluate and improve the safety of places whose safety index is poor.

To develop a pilot for this use case, we are currently collaborating with Pune Smart City Development Cooperation Limited (PSCDCL) along with our partner ecosystem.

To join our on-going work in this area, please write us at contact@iudx.org.in.



USE CASES: SMART MOBILITY



Traffic and parking problems are two of the most frustrating experiences in India's bustling cities. Mitigating these will require a multi-disciplinary and collaborative approach involving active participation from all stakeholders in the city. Real-time data will go a long way in enabling smart solutions to address these issues. Such data can come from a diverse set of public and private sources – from field sensors, crowd sourced data, traffic cameras, fleet operators, transport companies, logistics companies etc. IUDX will enable all these players to safely and securely share their data, either for free or on commercial terms. Video analytics will play a very important role in providing rich contextual data. A framework for distributed video analytics, while keeping privacy as a primary concern, will be an essential component for smart traffic and parking management.

To join our on-going work in this area, please write us at contact@iudx.org.in.

USE CASES: EMERGENCY RESPONSE



Ability to respond to emergencies, within a critical time, requires rapid and automated coordination amongst a diverse set of agencies and citizens. Minutes can make a difference between life and death. The IUDX can facilitate rapid and automated coordination between various participating organizations like the fire department, traffic police, ambulance services, hospitals, city administrators and citizens as a trusted platform working seamlessly across these entities sharing real time data.

To join our on-going work in this area, please write us at contact@iudx.org.in.

India Urban Observatory Setup

- Video wall alongwith IT Infrastructure, Wifi in Room No. 514 C-517 C, Nirman Bhawan
- Data Analytics Platform, tools and infrastructure
- Physical Infrastructure comprising ;
 - 10 seater Meeting room with Web Collaboration system, White boarding .
 - Biometric based Access control system,
 - UPS system, Air conditioning, Lighting etc
 - Informal sitting, LED screen.
- GIS capabilities on Amazon Cloud.
- Team of Data Experts Available through partners (CISCO/Quantela/ESRI)
- Data Analytics and Management Unit set up- In process



Thank You



India Urban Observatory