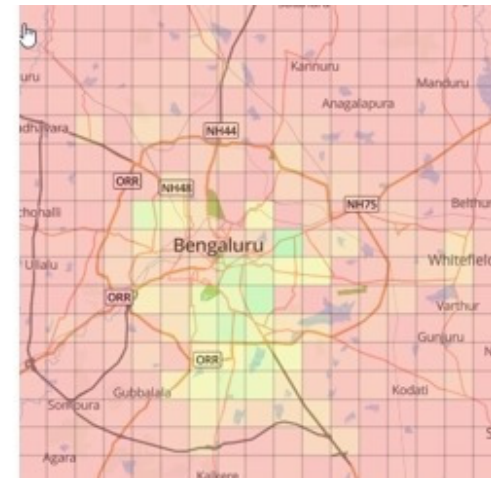
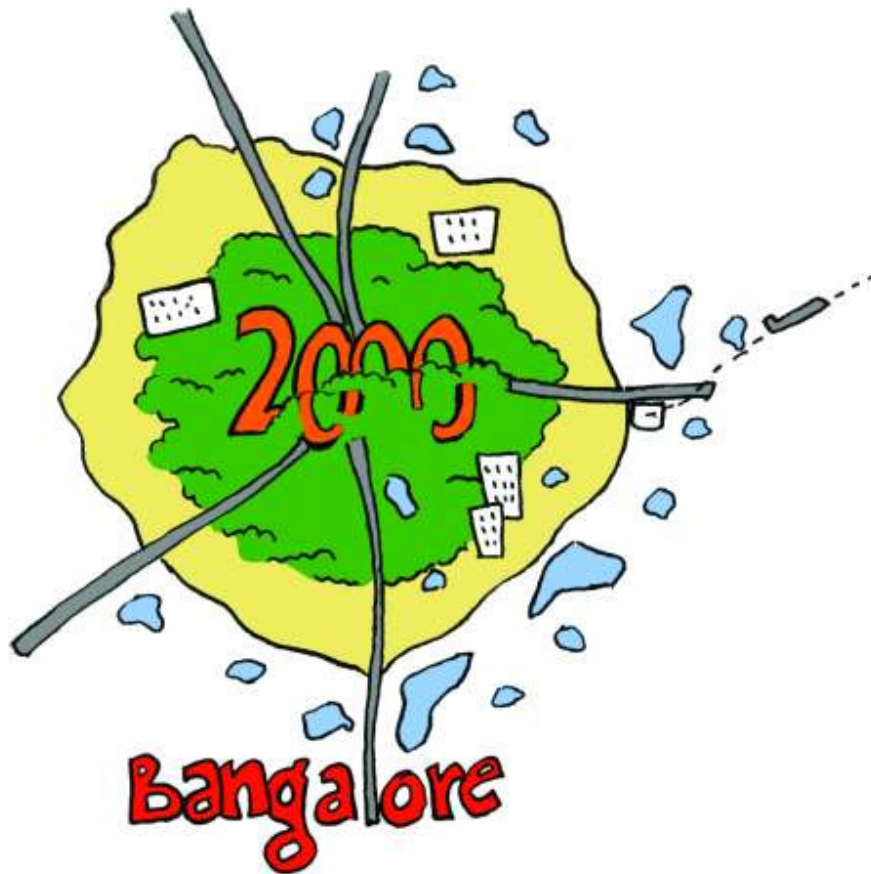


# The publicly managed city



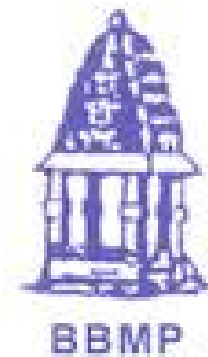
**Ashwin Mahesh**

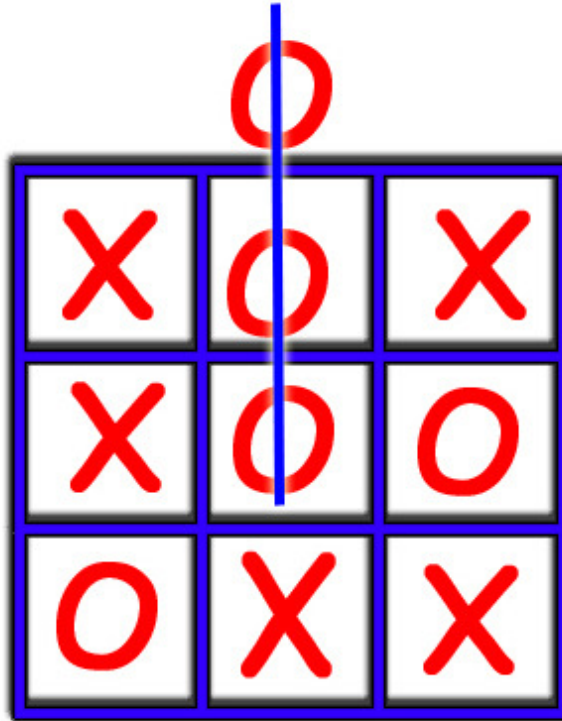


## Rapid urbanisation

12.5 million already live in the city. An additional 300,000 people move into the municipal area each year, plus 30-50,000 more outside it.

## Diffusion of powers, plus gaps





How do we think different?



## Deficits in governance

- Silos in public administration
- Talent and training deficits in departments
- Weak planning and implementation
- Lack of funds
- Expecting 'government alone' to solve problems

## What's the solution?


- Integrate the department silos
- Build internal capacity through technology
- Build collaborative approaches to solutions
- **Problem-solving in every domain**



Think like it's **1947.**

If we had the opportunity to create government in our imagination all over again, would we do it the same way, or would we do it differently?


Almost certainly, we would put **much greater emphasis on the local, even hyper-local.**



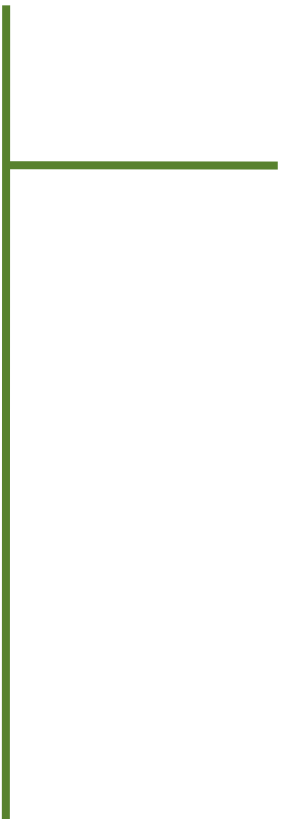


## Government **BY** the people.

The complexity and diversity of urban problems is such that we can never find the 'right' solutions and scale them everywhere. Instead what we need to do is **increase the number of problem-solving people.**








Don't guess. **KNOW.**

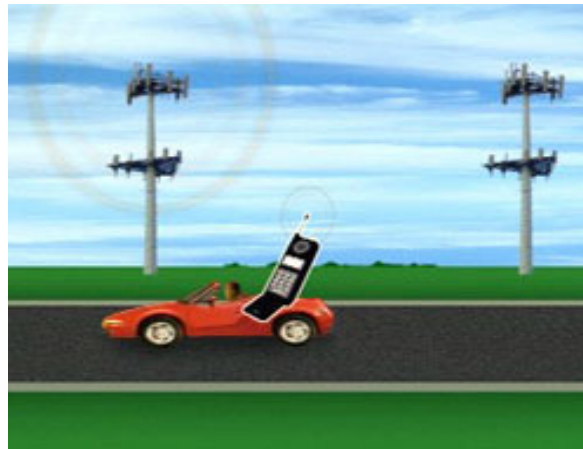
Too many of the problems that we are trying to solve are not actually visible to us. As a result, we're guessing, more often than not. A new **emphasis on data and measurement** is needed to switch from guessing to knowing the problems.



## Who does what? And what can 'we' do?



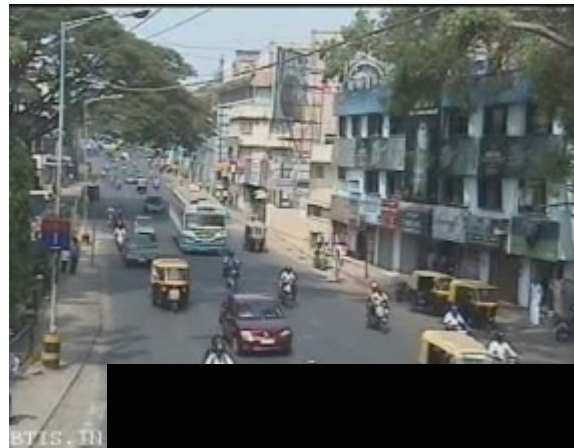
## Tele-density from mobile tower network



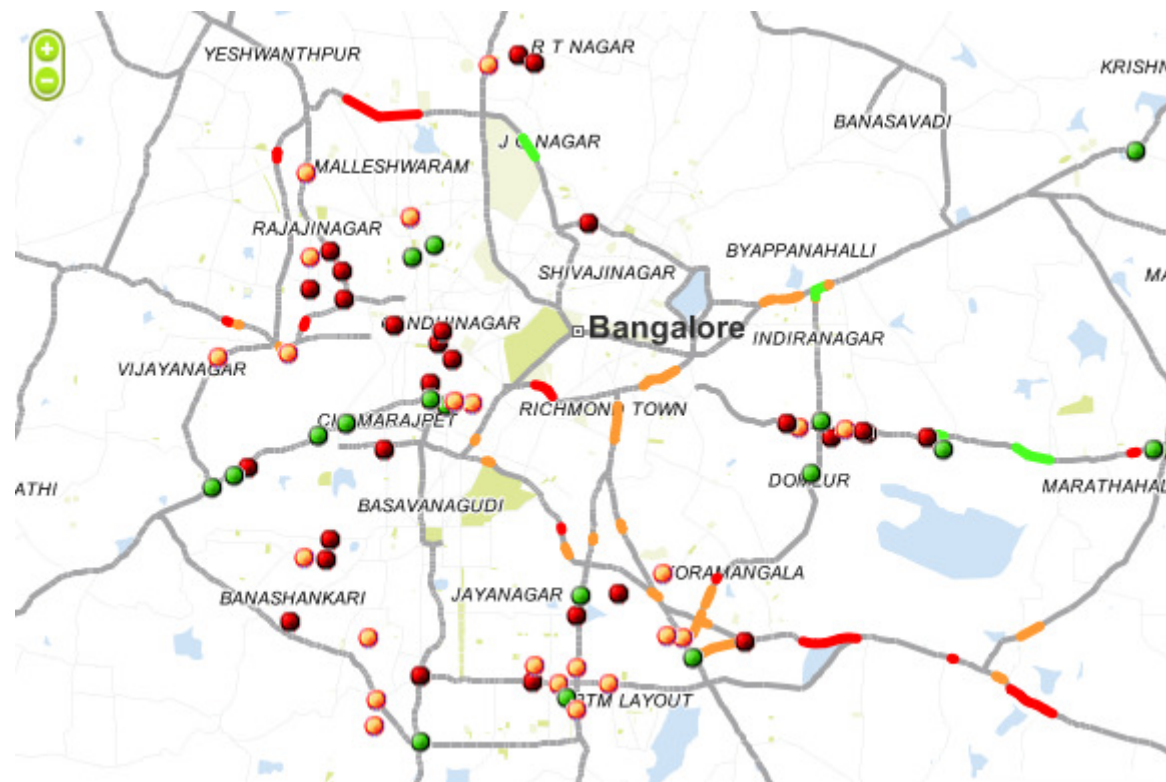
## GPS units on city buses, other vehicles



## Police traffic cameras at junctions



## Integrated view of live traffic conditions



## Violation reports through SMS





## Blackberry-powered enforcement



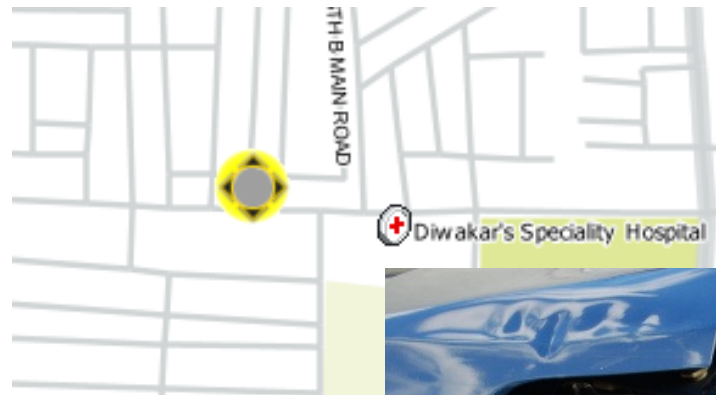


## Asset management

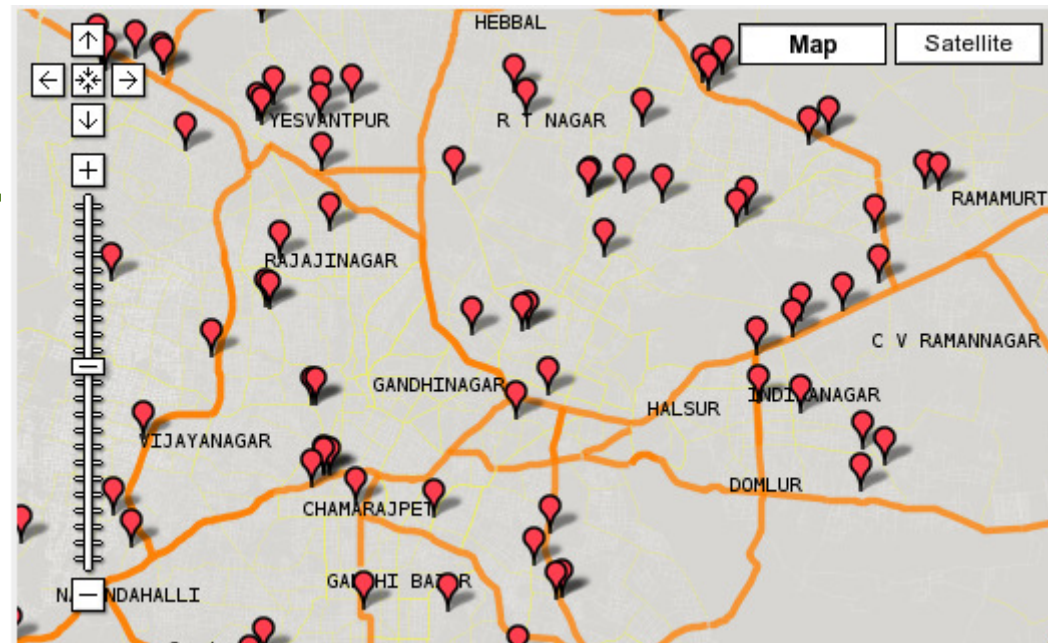
- Cameras, signals, modems monitored 24x7
- Downtime leads to automatic SMS alert to crews
- Resolution time monitored for performance
- Escalation matrix for unresolved issues



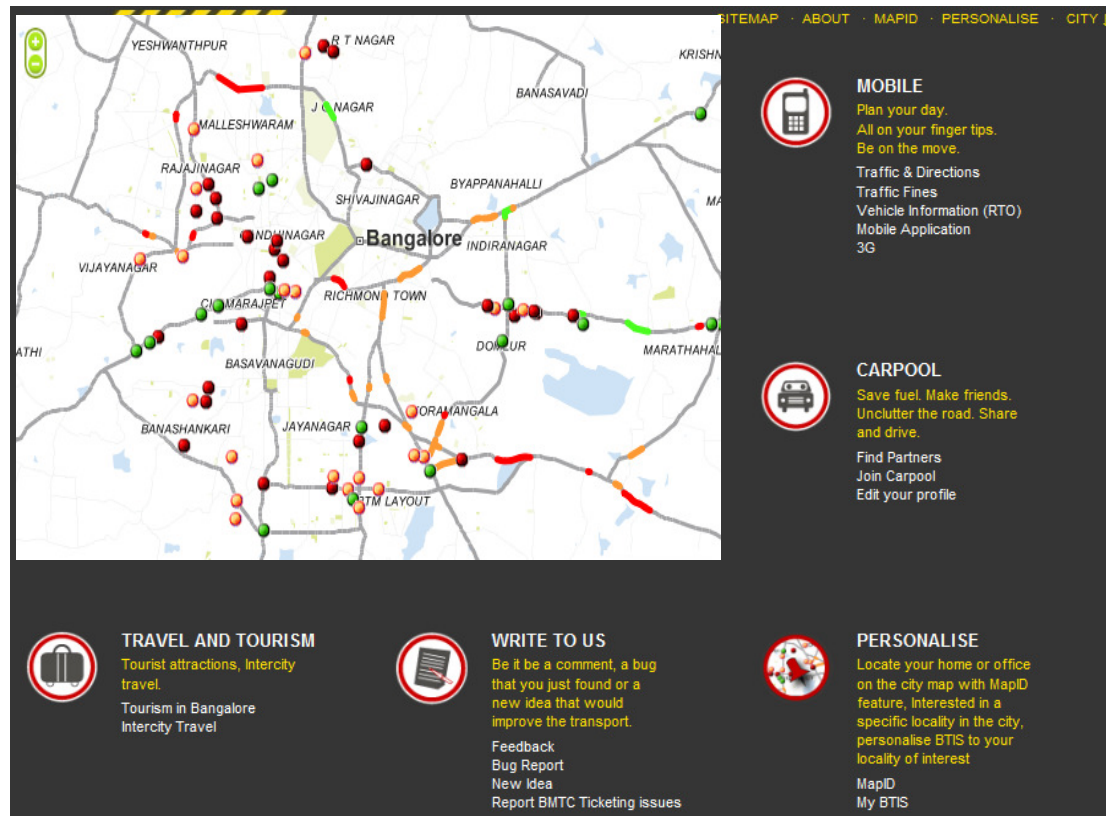
## Mapping accident hot-spots



## Mapping accident hot-spots



# Bangalore Transport Information System



SITEMAP · ABOUT · MAPID · PERSONALISE · CITY ↓

**MOBILE**  
Plan your day.  
All on your finger tips.  
Be on the move.  
Traffic & Directions  
Traffic Fines  
Vehicle Information (RTO)  
Mobile Application  
3G

**CARPPOOL**  
Save fuel. Make friends.  
Unclutter the road. Share  
and drive.  
Find Partners  
Join Carpool  
Edit your profile

**TRAVEL AND TOURISM**  
Tourist attractions, Intercity  
travel.  
Tourism in Bangalore  
Intercity Travel

**WRITE TO US**  
Be it be a comment, a bug  
that you just found or a  
new idea that would  
improve the transport.  
Feedback  
Bug Report  
New Idea  
Report BMTC Ticketing issues

**PERSONALISE**  
Locate your home or office  
on the city map with MapID  
feature, interested in a  
specific locality in the city,  
personalise BTIS to your  
locality of interest  
MapID  
My BTIS

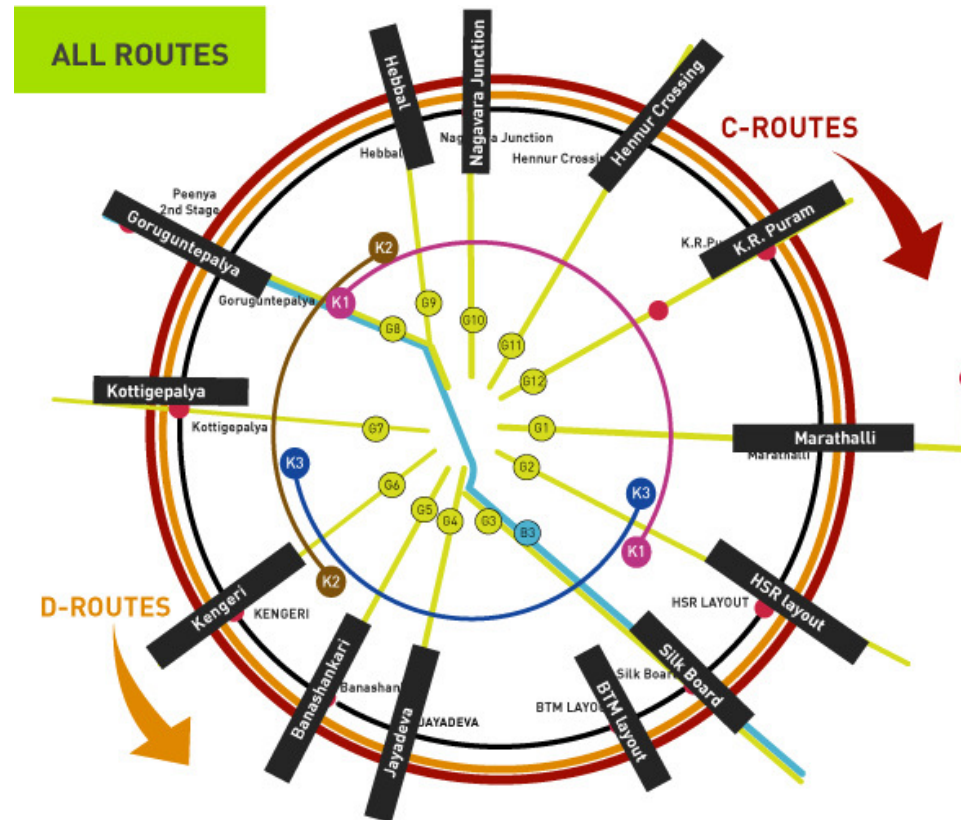
## Traffic Management Centre







along with significant fleet expansion







## Ducting utilities on 14 arterial roads



## A dedicated budget for footpaths



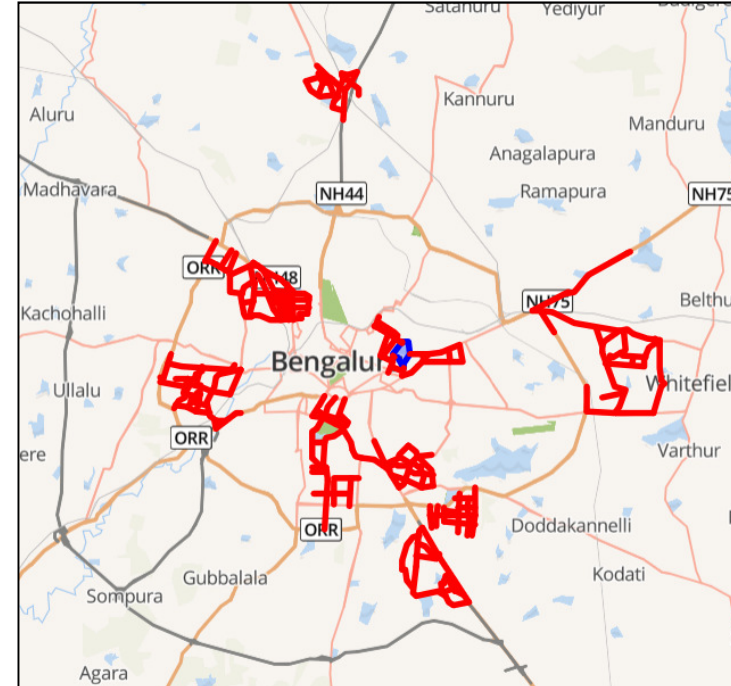
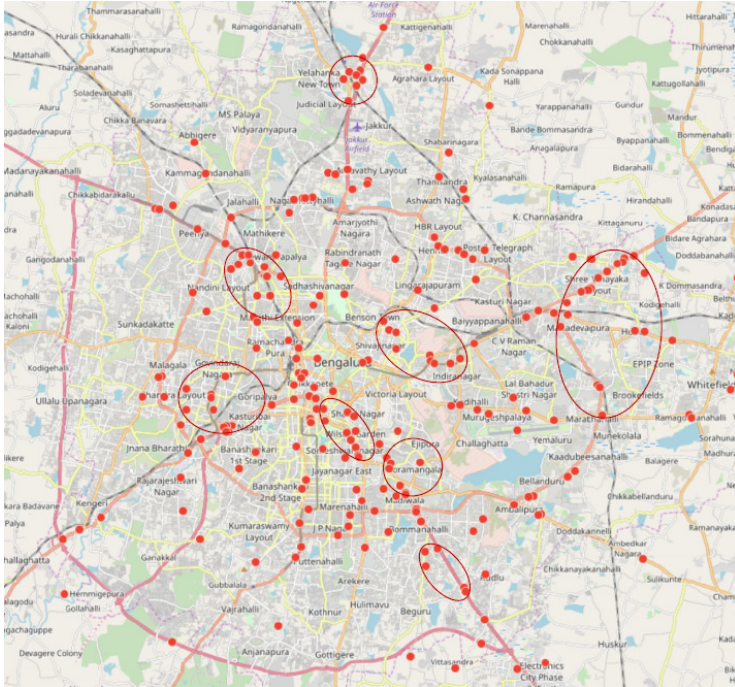


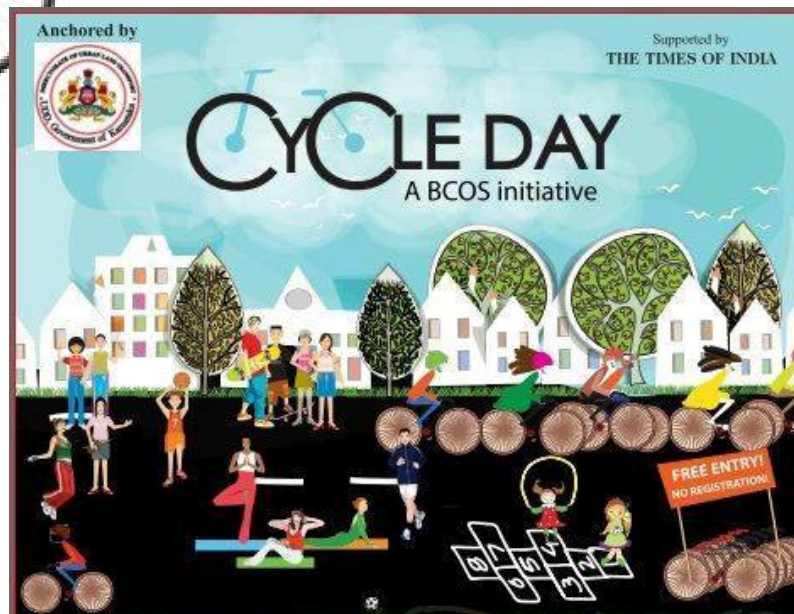
55 roads of  
footpath-widening



# ಕಾಲುದಾರಿ ಬೆಂಗಳೂರು

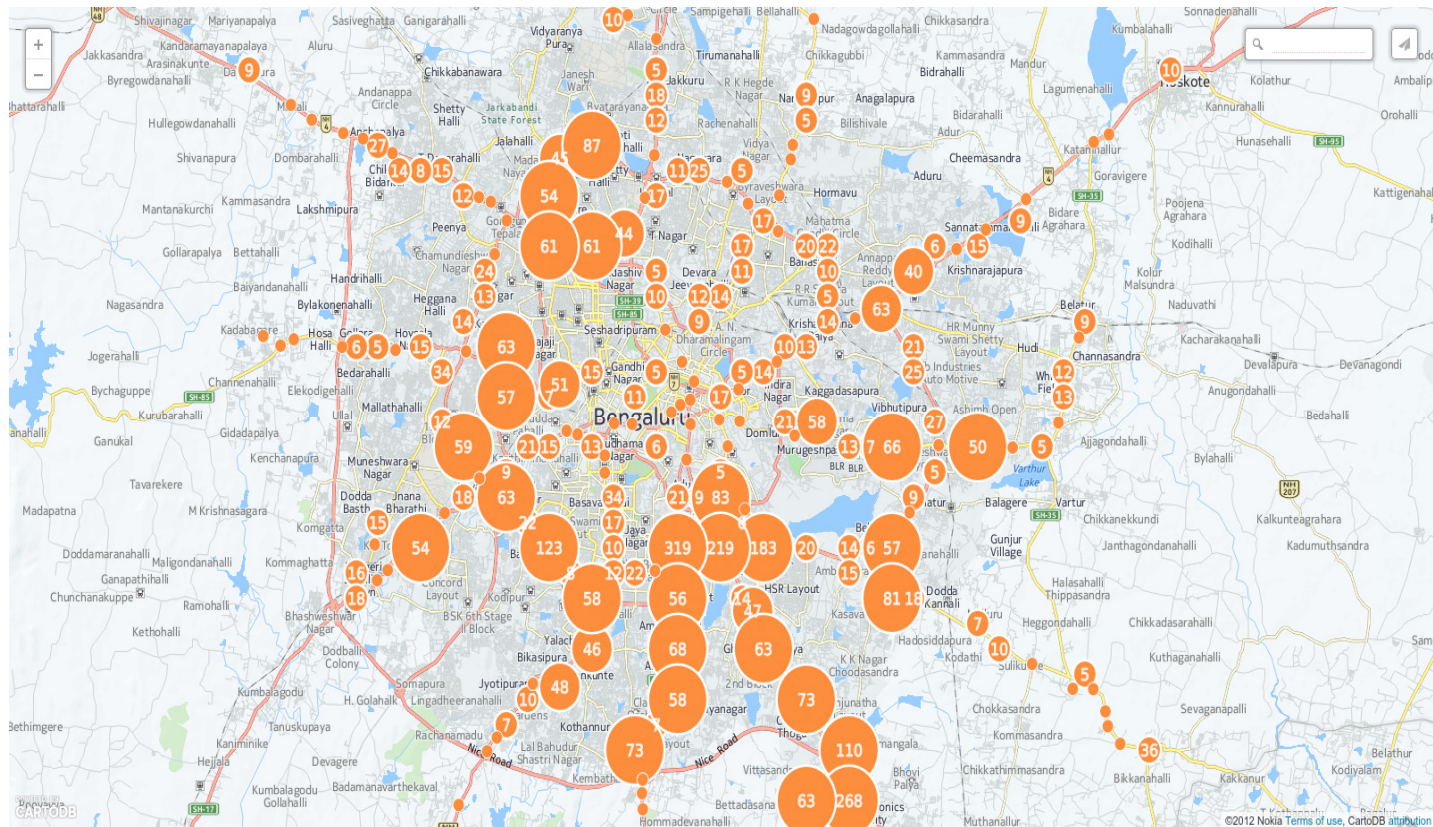
## Kaaludaari Bengaluru - A walkable city

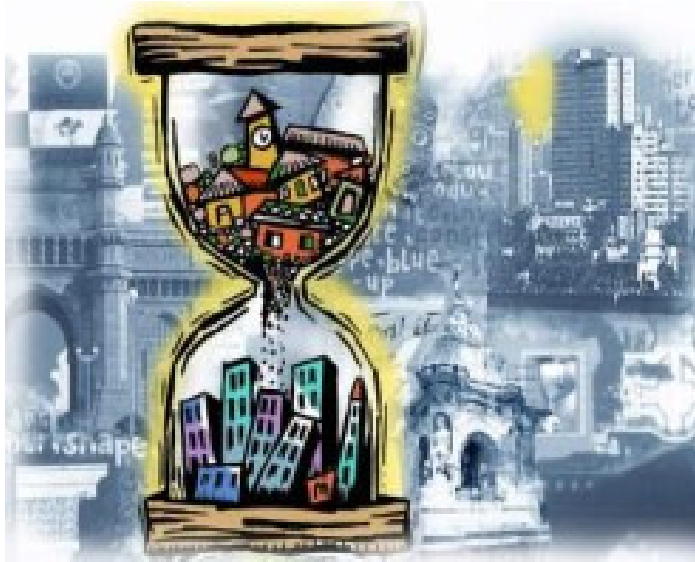






# Optimizing employee transportation





## Lessons for the smart city

- Wide ownership of problems
- Technology as integrator
- Knowledge as social capital
- **Government BY the people**

# Bangalore Environment Portal

The screenshot shows the Bangalore Environment Portal website. The header is green with the 'URBAN ENVIRONMENT' logo, a search bar, and links for 'Sign up' and 'Sign in'. Below the header is a navigation bar with links: HOME, MAPS, NEWS, VIDEOS, DOCUMENTS, ORGANISATIONS. A secondary navigation bar lists topics: BIODIVERSITY, CLIMATE, ENERGY, LAWS, POLLUTION, WASTES, WATER. The main content area features a section titled 'WHAT DO YOU HAVE TO SAY TODAY?' with a prompt to share views, articles, photos, or videos about environmental concerns, and a 'click here' button. Below this is a map of Bangalore with various environmental markers. To the right of the map is a 'Spotlight' section with a photo of a tree and a text box about water rights. Below the map is a 'TOPIC / NEWS Yellenhalli here' section. The 'LATEST' section is divided into three columns: 'NEWS' (a project on the Barak river), 'ORGANISATIONS' (Kshiti Foundation), and 'DOCUMENTS' (a comprehensive data file on air pollution, water pollution, and environment). At the bottom left is a 'Featured Organisation' section for 'KSHITIFOUNDATION'. At the bottom right is a 'Widgets' section featuring a 'Water Footprint Calculator'.

**URBAN ENVIRONMENT** search Sign up | Sign in

HOME MAPS NEWS VIDEOS DOCUMENTS ORGANISATIONS

BIODIVERSITY CLIMATE ENERGY LAWS POLLUTION WASTES WATER

**WHAT DO YOU HAVE TO SAY TODAY?**  
You can share a view, article, photo or video about your city's environment concerns [click here](#)

Birds Lakes Trees Pollutions Organic stores Wildlife sanctuaries Sees

TOPIC / NEWS Yellenhalli here

**LATEST**

**NEWS**  
The project, located on the Barak river under Churachandpur district in western Manipur, is under...

**ORGANISATIONS**  
Kshiti Foundation is a melting pot of such unreasonable individuals passionate about making a dif...

**DOCUMENTS**  
Using the most comprehensive data file ever compiled on air pollution, water pollution, environme...

**Featured Organisation**  
**KSHITIFOUNDATION** Kshiti Foundation is a melting pot of such unreasonable individuals passionate about making a difference in this world. We intend to influence change for the better of humankind and educate others in the process of achieving the goal.

**Spotlight**  
For millions of people, the law does not explicitly direct that they are entitled to safe water. A United Nations resolution passed in July this year is about to change that.

**Videos**  
ENVIRONMENTAL AND SOCIAL CONSEQUENCES OF THE

**Widgets**  
**Water Footprint Calculator**  
Know how much water you use.

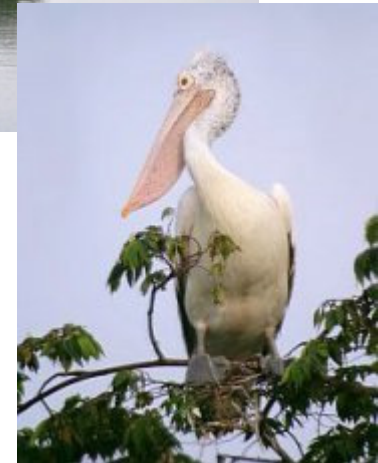
Air Quality  
Biodiversity  
Solid Waste  
Ground Water  
Green Cover  
Energy  
Water Supply  
Water Quality



# Community-managed lakes



28 lakes in the city now have 'local' communities engaged in conservation efforts.



# Safe Bangalore



Welcome **cidkar**. [Log out?](#)  
Inbox messages: 0. [Read?](#)  
Last login: 04-10-2009 03:40 am

[Wanted](#) ▾ [News & Announcements](#) [Mail](#) [Resources](#)

## Home

### Overview

Total Records: **15**  
Recent Records: **340**  
AndhraPradesh: **3**  
Karnataka: **3**  
Kerala: **20**  
Pudhucherry: **230**  
Tamilnadu: **230**

### News and Events

Process to form commando force in progress: DGP - Hindu: Kerala  
*04 October 2009 12:00 AM*

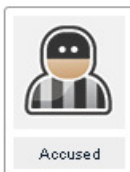
Top court tells CBI to trace NRI child - Hindustan Times: India  
*04 October 2009 12:00 AM*

From ecstasy to agony - TOI: Bangalore Times  
*04 October 2009 12:00 AM*

44 houses in Purna, Assonora flooded - The Navhind Times  
*04 October 2009 12:00 AM*

[Read More](#)

## Shortcuts



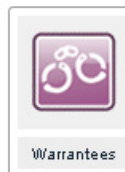
Accused



Gangs



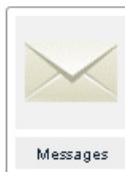
FICN



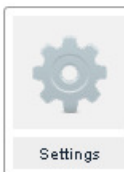
Warrantees



Narcotics



Messages



Settings

## CID Network

### Wanted Lists

Gangs

FICN

Accused in Other states

Narcotics

### News and Events

### Resources

### Mail

# BANGALORE HERITAGE

Showcasing the built, natural and cultural history & heritage of Bangalore and its surrounding areas



TIMELINE



GALLERY



MAP



TRADITIONS



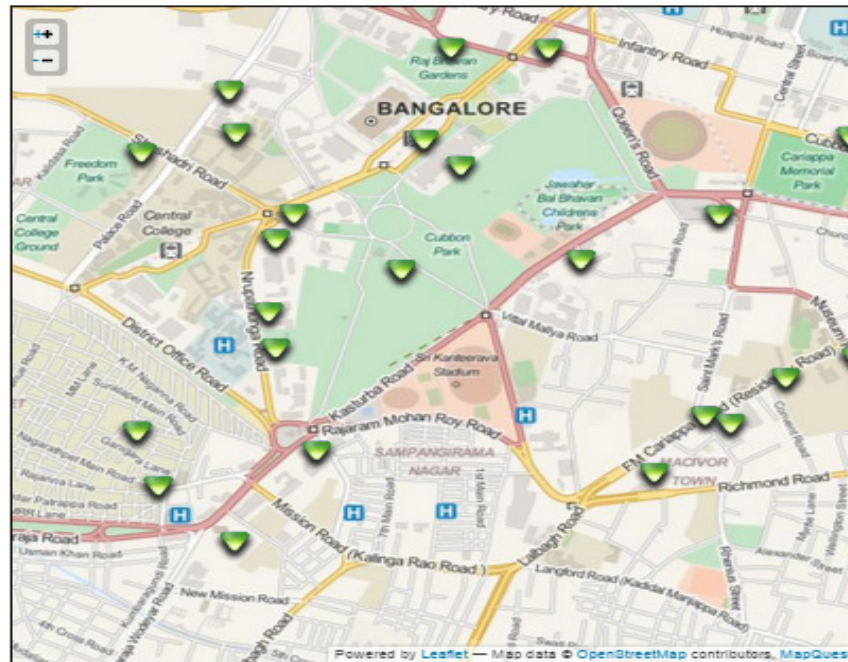
EVENTS

## MAP

Add a Location

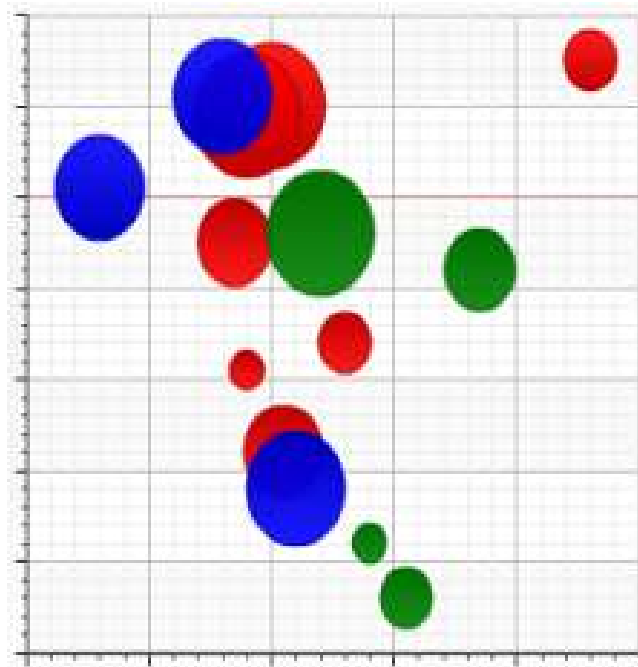
### Locations

- Archeological Museum
- State Central Library
- St. Mary's Basilica
- Bandstand, Lalbagh
- Glass House, Lalbagh
- Ecumenical christian centre
- Bangalore central jail
- Sri Krishna Rajendra silver jubilee Technological Institute, K.R. Circle
- Puttanchetty Town Hall 1935
- University Visvesvaraya College of Engineering
- Daly Memorial hall 1909
- St. Martha's hospital



# Industry cluster analysis

What is our city/region good at?



**Aerospace**

**Information Technology**

**Health care**

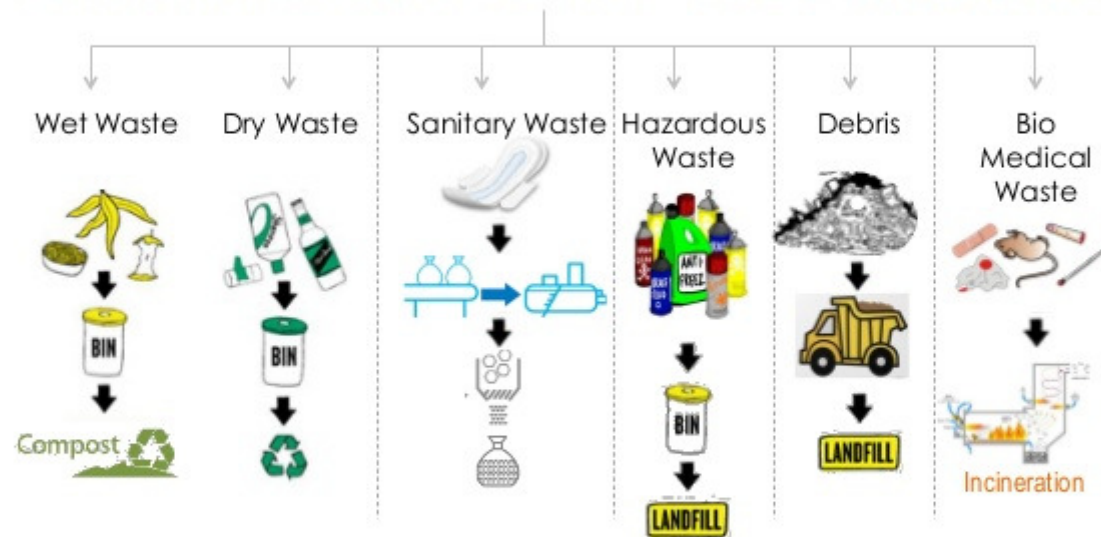
**Garments**

**Education**

**Machine Tools**



# NOTHING IS GARBAGE IF WE SEGREGATE

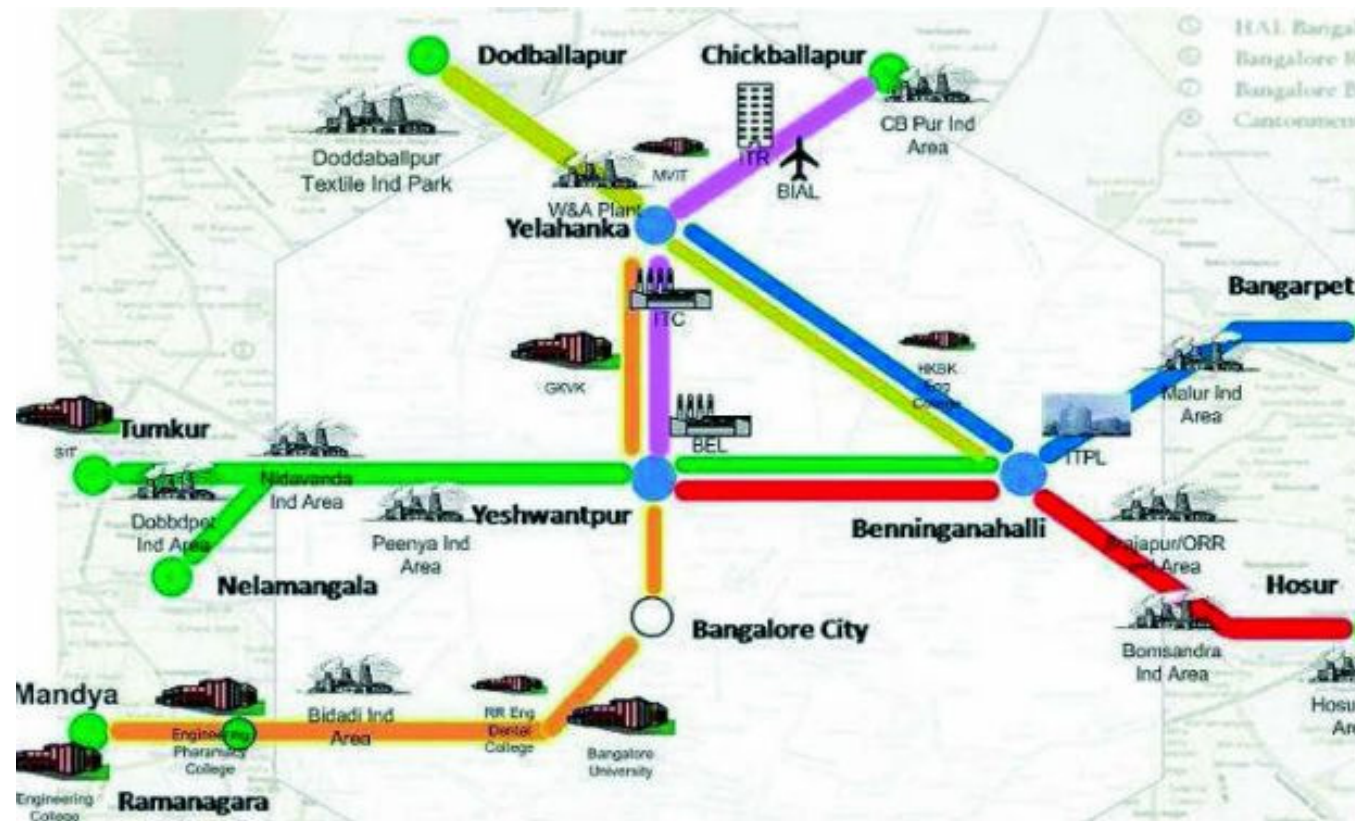




**ಮತ್ತೊಂದು ಕಾವೇರಿ**  
**Matthondu Cauvery**



# Commuter Rail System (Prajna)



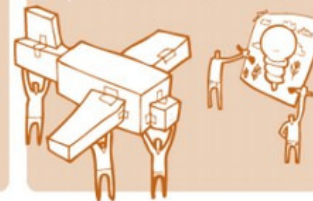


Center For  
**Public Problem Solving**

Team up with passionate people  
collaborating across sectors.



Focus on government,  
public sector, & civic issues.



Try a toolbox of creative problem  
solving skills & design methods.



Develop & prototype  
innovative service solutions.







## Our first projects

- Re-imagining the Master Plan process for Bangalore
- Neighbourhood Improvement Partnerships
- A framework for implementing Swachh Bharat
- What exactly is a Smart City?





## Our canvas for intervention

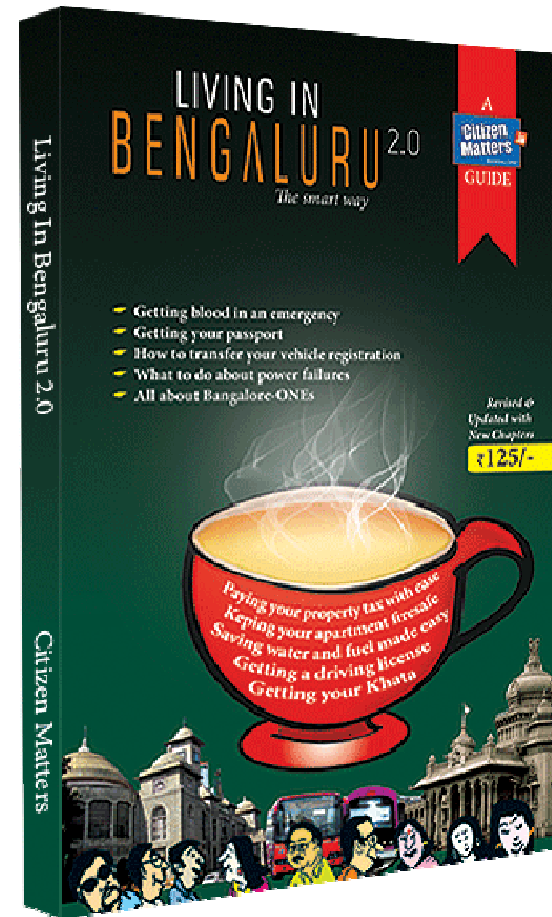
- Public information, data and metrics for knowledge-led choices in government.
- Citizens as active managers of the city, and key decision-makers, not merely consumers of public services.
- Comprehensive planning that feeds into public finances, spatial plans and governance.
- The city as a Social Network.





neighbourhood  
improvement  
partnership  
challenge







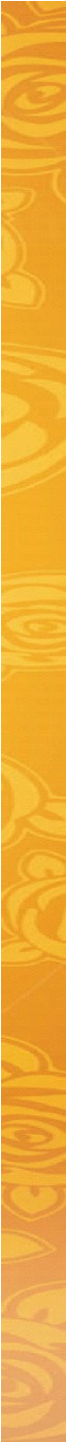








# Technology



## PROBLEMS WITH CURRENT APPROACH

1. Each department buys its own technology
2. Usually buys yesterday's technology
3. In-house knowledge capital is low
4. Government, citizen and businesses as silos
5. Led by thinking of large cities



**Mission:** To solve social development problems that affect the lives of large numbers of people, using intervention strategies that leverage the power of information technology.

**Managing A City**

Water supply, power, transport, education, ... so many things have to work together for a city to be socially and economically vibrant. The first step is to bring them all together into a single City Management System.

[Read More](#)

**Agriculture**

**Urban Transport & Traffic**

**Digital Democracy**

**Public Health**

**Law and Order**

**Environment**

**Education**

**Heritage**

**Gender**

**Local Economy**

**Market Research**



Cities will be transformed by technology in 30 years.  
Internet of things and services will become reality.  
**What are the steps that will lead us there, quickly?**







# Technagara

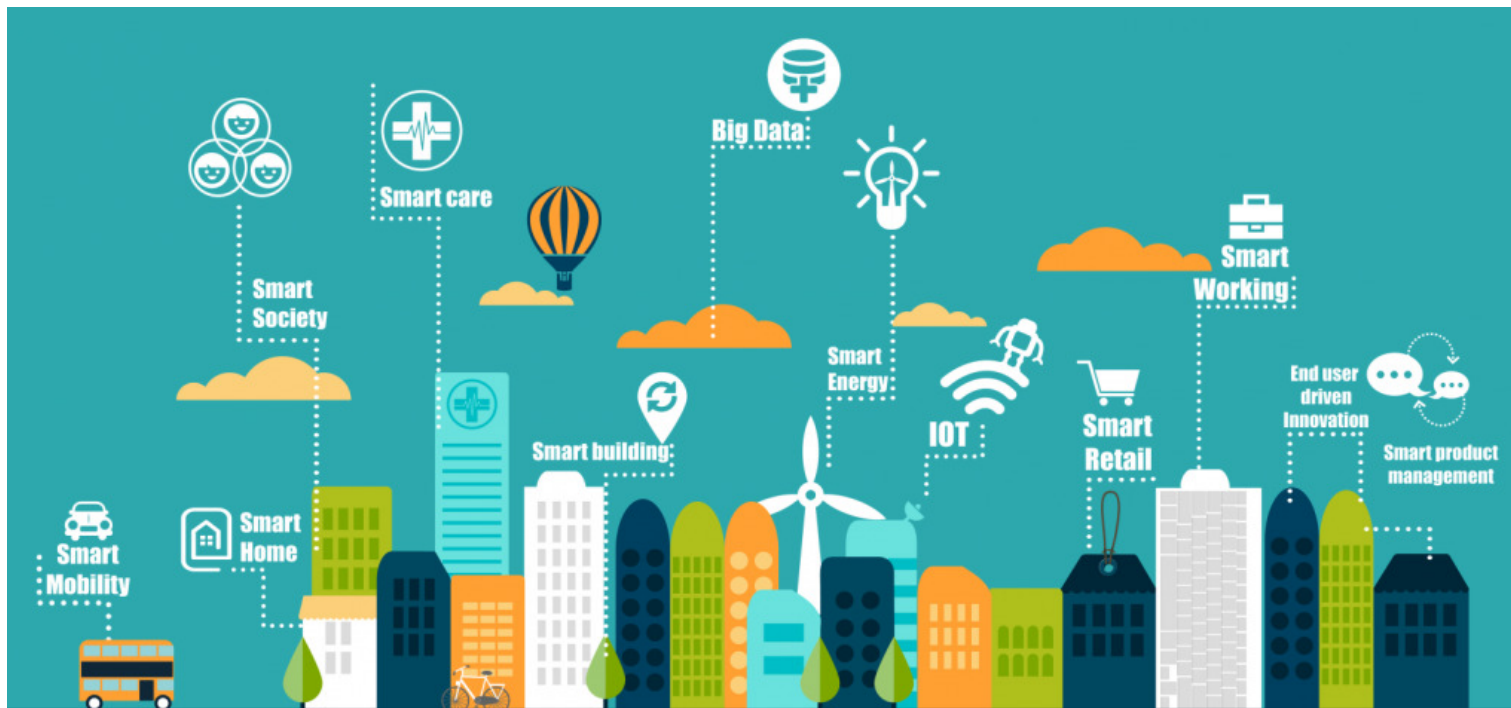
One hosted platform for

— All cities

— All domains

— All scales

— All stakeholders



## Build it once (e.g. Bangalore Transport Information System)

The screenshot displays the 'bengaluru transport information system' website. At the top, a navigation bar includes links for MODES, TRIPS, GOVERNMENT, INFORMATION, ENFORCEMENT, SAFETY, and TOOLS. The 'INFORMATION' link is active, showing a dropdown menu with 'Vehicle Records' and 'RTO Fees for various works'. Below the navigation bar is a map of Bengaluru with a search interface for 'FROM / FIND' and 'TO' locations, and a 'GO' button. To the right of the map are links to download the app on Google Play and the App Store. Further right is an 'ISSUES' section with a 'New Issue' button and a list of reported problems: 'Potholes on the road' (Today), 'Vehicle breakdown on the shoulder' (Today), 'Need new bus service in my area' (yesterday), and 'Difficulty in crossing the road' (2 days ago). Below the map and issues section are three main content areas: 'NEWS & ANNOUNCEMENTS' with articles about elevated corridors, Namma Metro Phase-I, bus numbers, and a minister's letter; 'FORMS' with links to various government forms like Medical fitness form, Duplicate RC, Ownership Transfer, Refund of Tax, Vehicle Fitness Certificate, and Tax payment; and 'MAPUNITY GROUPS (?)' with links to traffic solutions, petrol pumps, and road guidance.

**bengaluru transport information system**

MODES | TRIPS | GOVERNMENT | INFORMATION | ENFORCEMENT | SAFETY | TOOLS

Vehicle Records  
RTO Fees for various works

FROM / FIND  
TO  
GO

Bengaluru

Google play | Download on the App Store

**ISSUES** | New Issue

- Potholes on the road Today
- Vehicle breakdown on the shoulder Today
- Need new bus service in my area yesterday
- Difficulty in crossing the road 2 days ago

Show courtesy and coi

**NEWS & ANNOUNCEMENTS**

- Stop building elevated corridors in the city! 07 Apr, 2016
- When is Namma Metro Phase-I expected to complete realistically? 10 Mar, 2016
- 13,000 to 15,000 buses - that's what Bengaluru needs right now! 10 Feb, 2016
- Chief Minister Siddaramaiah writes to MPs and Ministers on commuter

**FORMS**

- Medical fitness form
- Issue of Duplicate RC
- Ownership Transfer
- Refund of Tax
- Renewal of Vehicle Fitness Certificate
- Payment of Tax


**MAPUNITY GROUPS (?)**

- trafficsolutions: A community to collect data about traffic and transport problems in particular locations and to discuss plausible solutions for these.
- Petrol Pumps: List of petrol pump locations.
- Road Guidance: A guide to watch for one-ways, parking/no-parking areas, roads that aren't open to public and are under construction etc.

**For all sectors (transport, heritage, tourism, environment, etc.)**

 **MUMBAI  
HERITAGE**

 **TIMELINE**

 **GALLERY**

 **MAP**

 **TRADITIONS**

 **EVENTS**

 **LANGUAGE**



**Places of Interest** [\(see all\)](#)



**Timeline** [\(5 of 26, see all\)](#)

- 298 BC - 185 BC  
The Mauryan Empire
- 185 BC - 248 AD  
The Satvahanas
- 248 AD - 415 AD  
Abhiras Rule
- 415 AD - 550 AD  
Trikutakas and Kalachuris
- 550 AD - 635 AD  
Konkan Mauryas

**Gallery** [\(see all\)](#)




**Traditions**


 **ARCHITECTURE**

 **CRAFTS**

 **CUISINE**


 **FOLKLORE**


 **MUSEUMS**


        

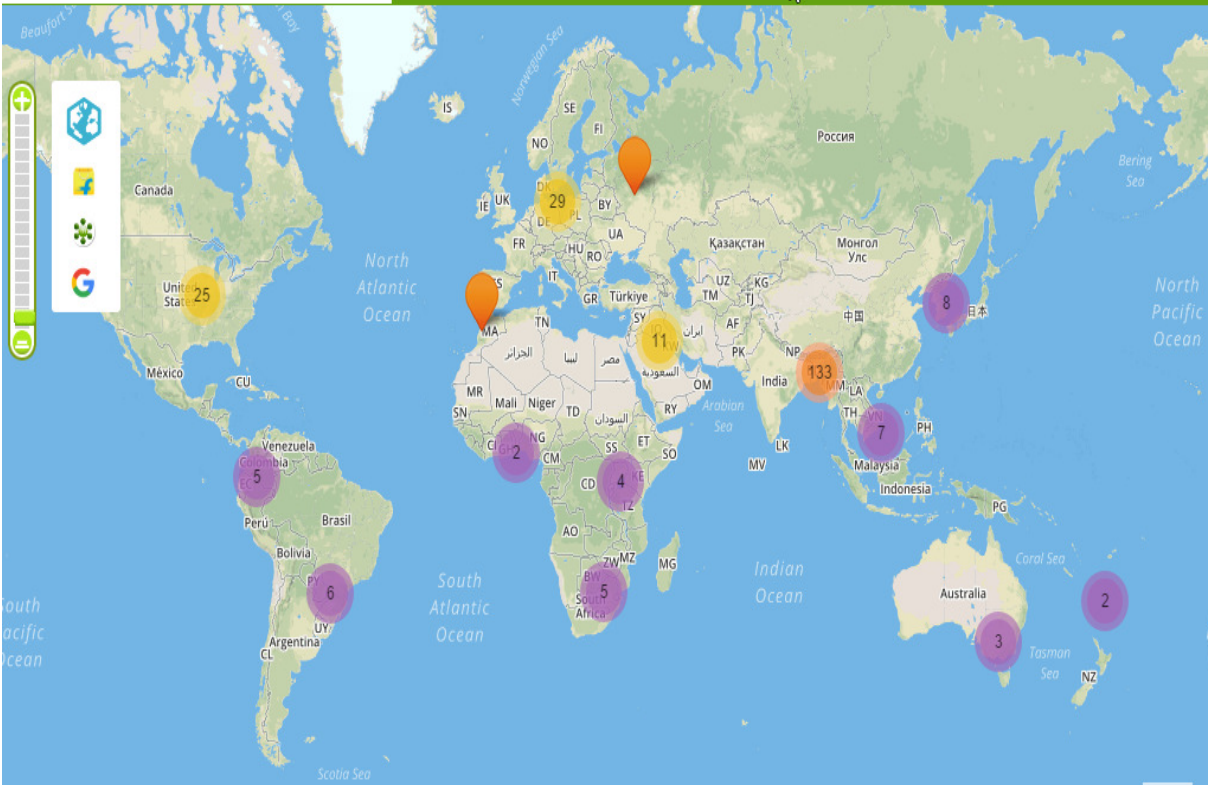


For all cities












Map showing cities and their network connections. Cities are marked with colored circles and numbers. The map includes labels for continents, oceans, and countries.

**social network**  
Network for cities


**1 - 9 of 245 Cities**  
Recent | [Name](#) << >>




Vaesteras  
[Sweden](#)




Uppsala  
[Sweden](#)




Malmö  
[Sweden](#)




Gothenburg  
[Sweden](#)




Eindhoven  
[Netherlands](#)




Montreal  
[Canada](#)



Aalborg  
[Denmark](#)

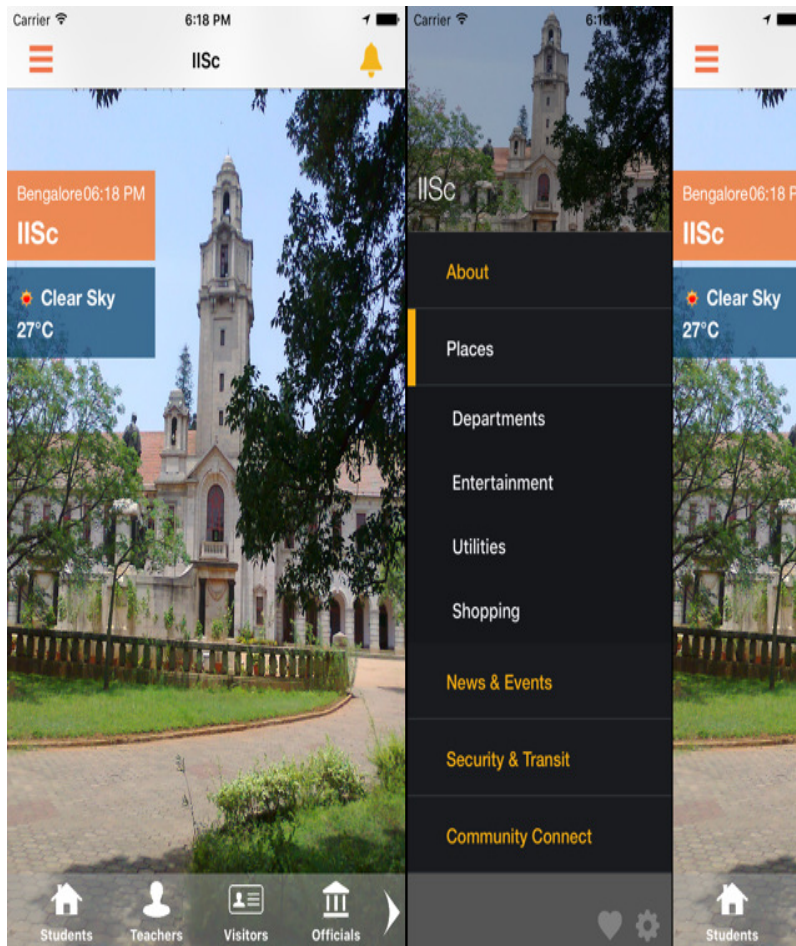


Bloomington  
[United States](#)



Decatur  
[United States](#)

## For all scales

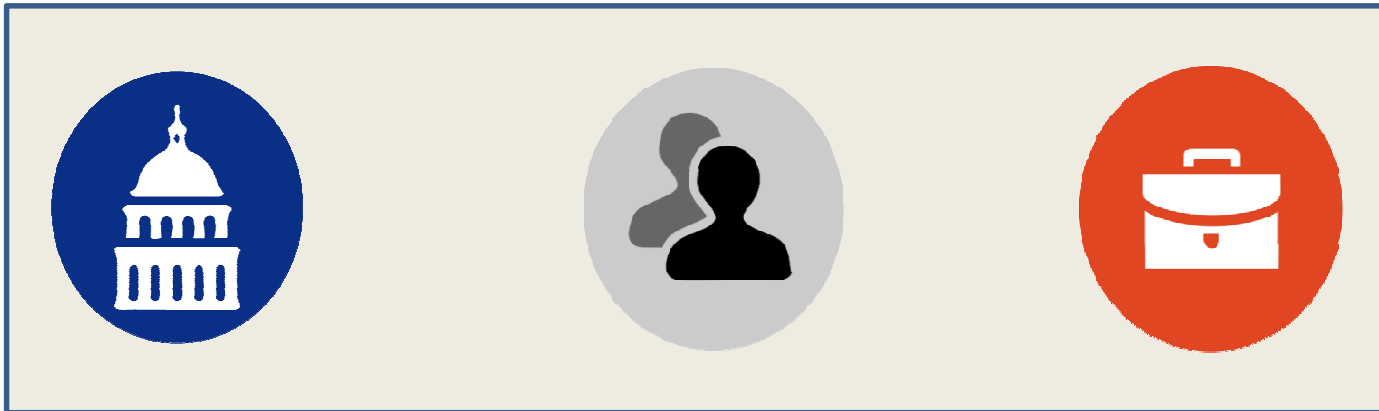


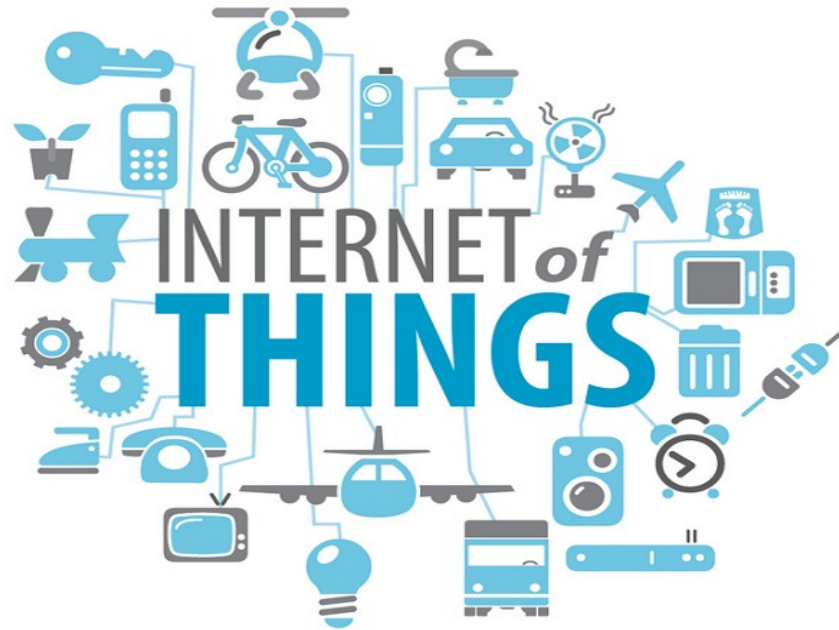
- Wards
- Localities
- Campuses
- Schools
- Universities
- Hospitals
- Hotels
- Public Offices

- 
- Residents
  - Employees
  - Visitors
  - Administrators



**For all stakeholders** (government, businesses, residents)





Mapunity has already built a significant part of this stack, and is well placed to leverage the multiple possibilities that an urban technology ecosystem provides.



ABOUT ▾

MOBILITY ▾

ENVIRONMENT ▾

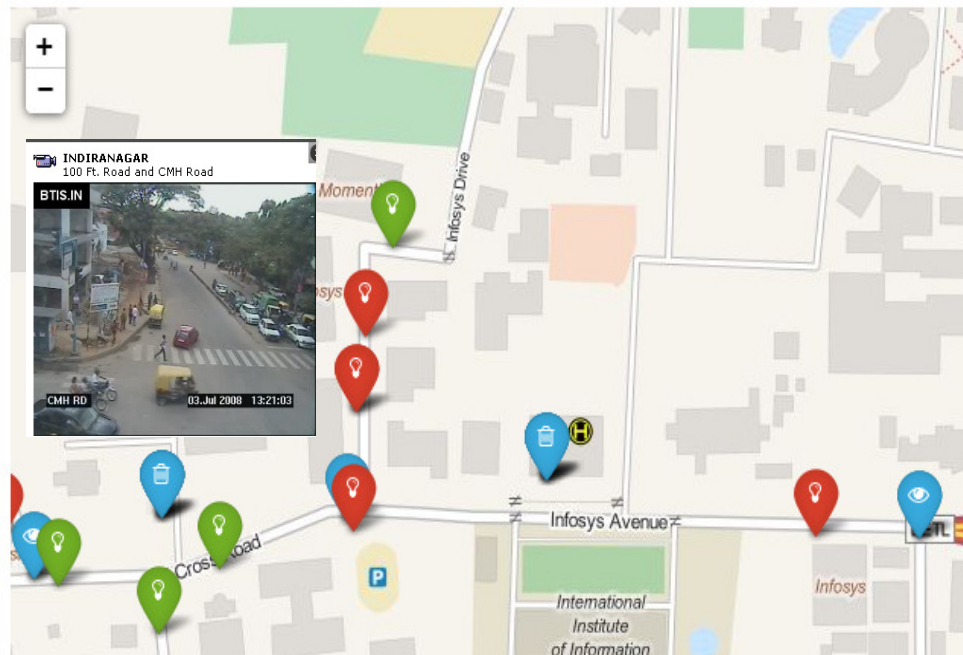
SAFETY

BUSINESSES

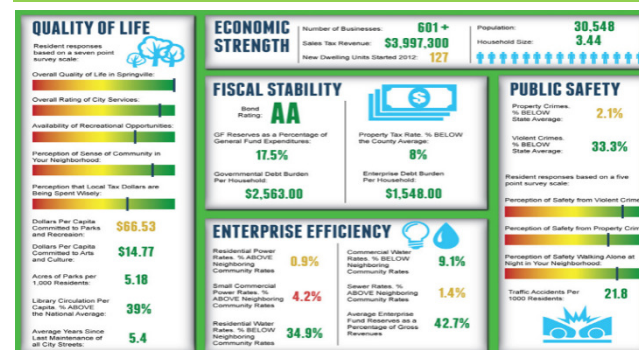
SERVICES

DATA ▾

☒ Pollution
 ☒ Traffic
 ☒ Energy
 ☒ Water
 ☒ Safety
 ☒ Waste
 ☒ Smart Citizen

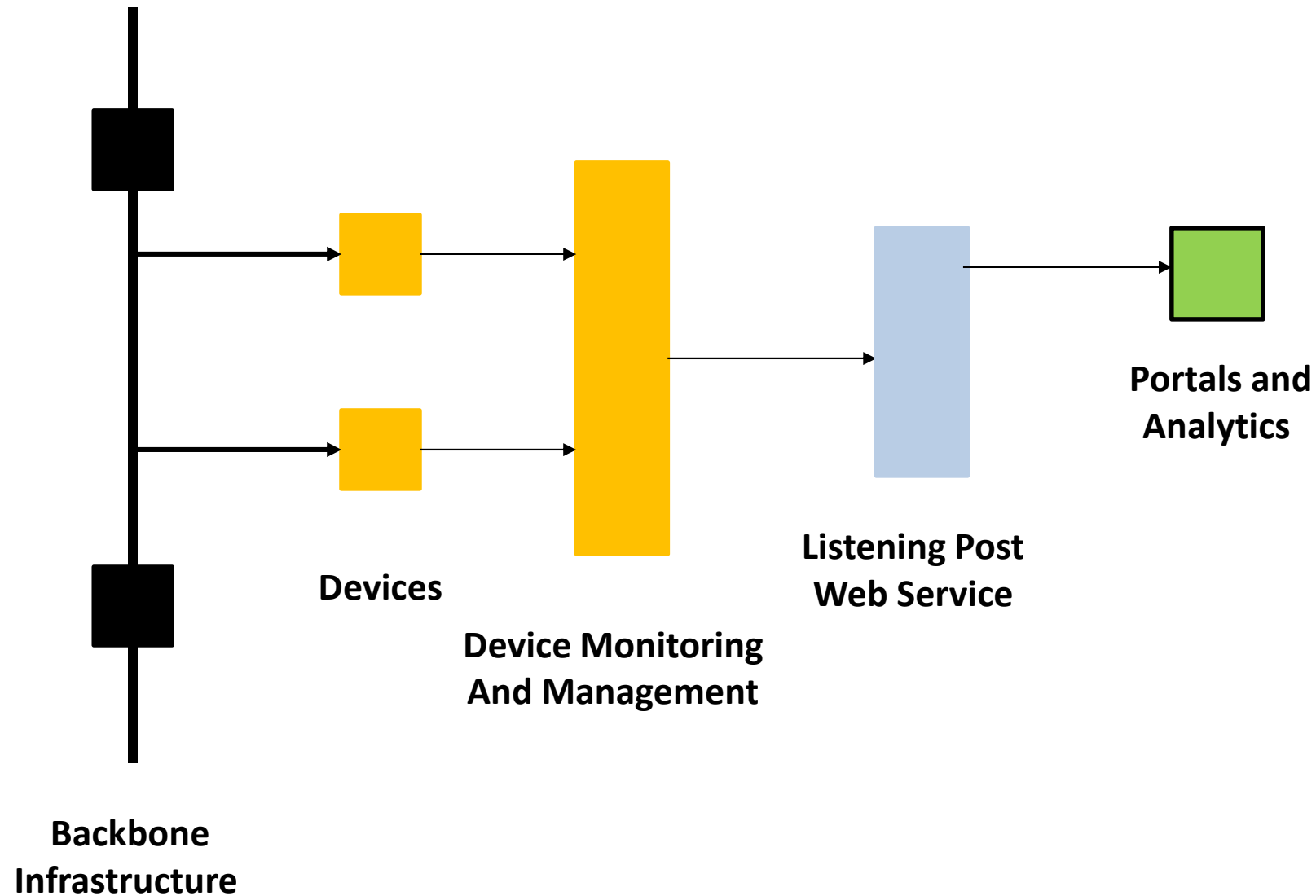


## SMART CITY DASHBOARD

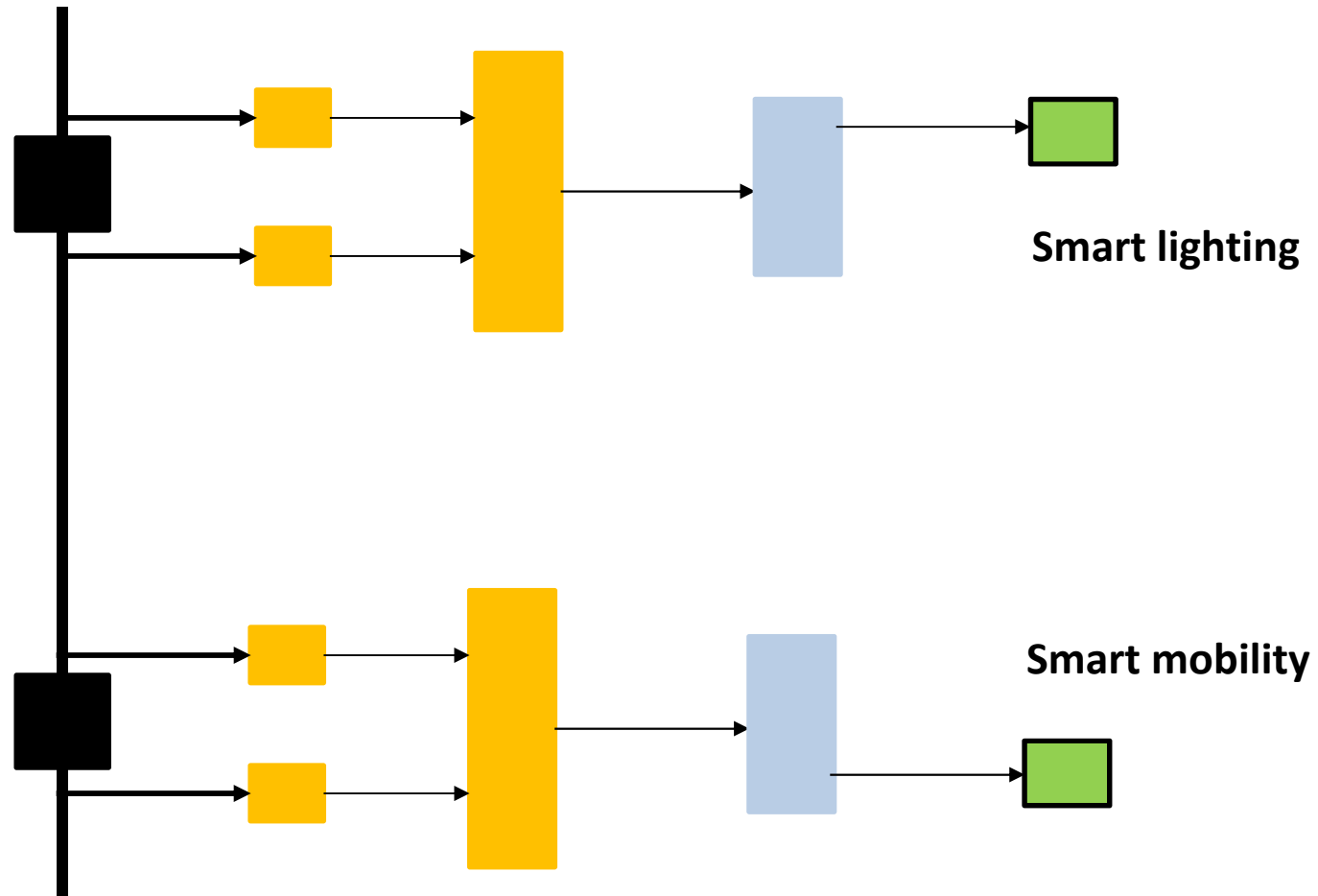


- ☒ Vendor Registration
- ☒ News and Announcements
- ☒ Forms used by ELCITA
- ☒ Feedback and Suggestions

## Typical 'smart' solutions

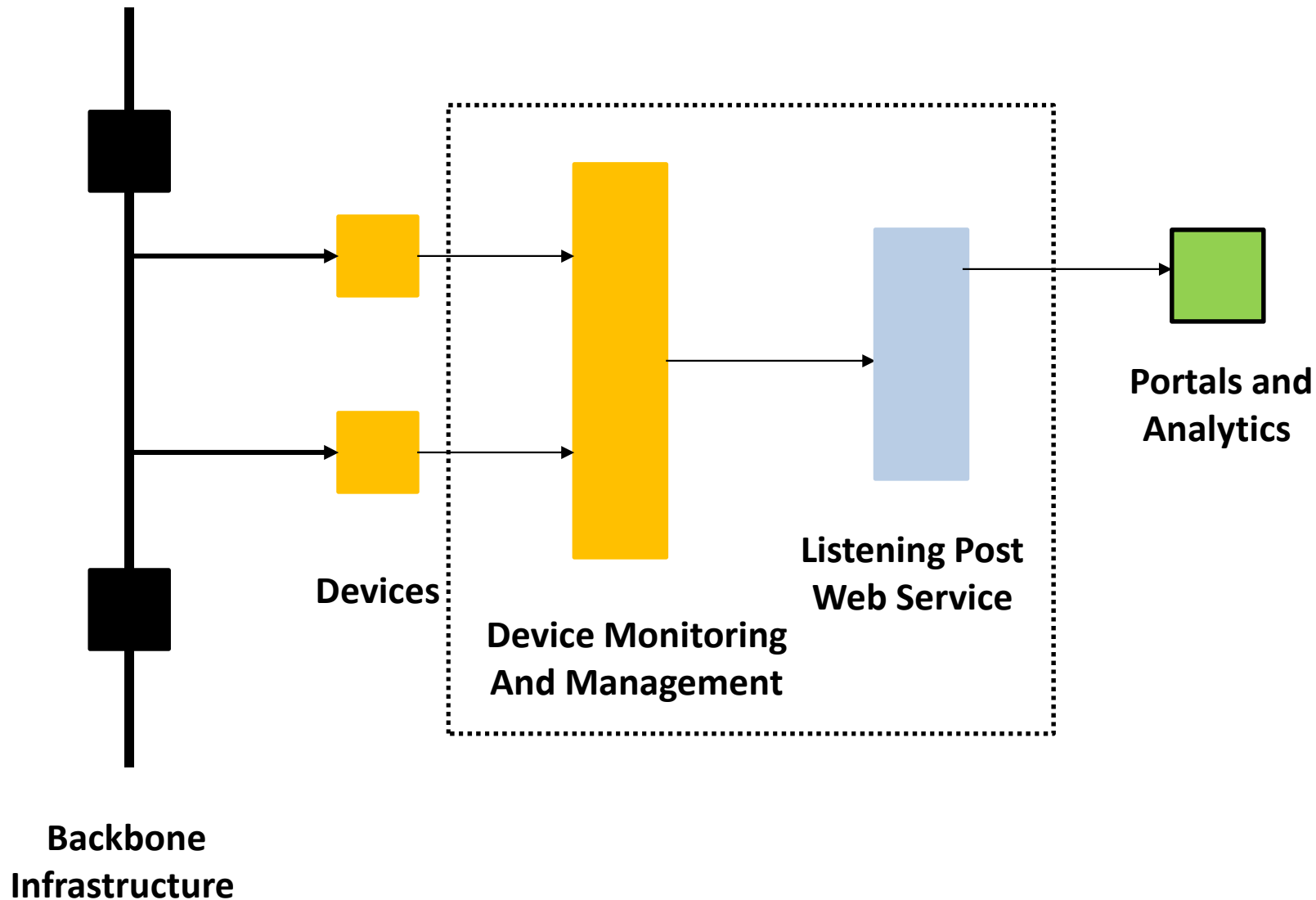


## Parallel 'device-to-cloud' stacks



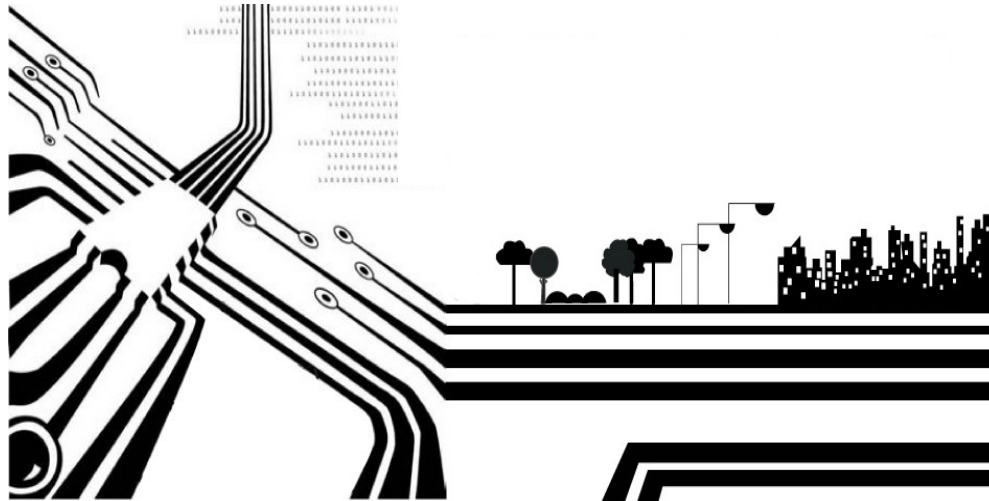


## Cities must define and own the core



# technagara

## The India Smart Cities Platform



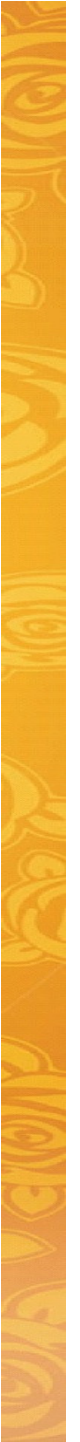
**From the government side, with the public**

**Covering many domains**

**Open to multiple devices and applications**

**Social + Commercial + Administrative**

# Planning



## PROBLEMS WITH CURRENT APPROACH

1. Limited to land use planning
2. Binary modes of governance – rural or urban?
3. No sectoral approach to guide spatial, temporal and financial implications
4. No tactical capacity
5. Jobs and livelihoods?
6. No distinguishing focus



Tomorrow's Transportation. Today.



Clean



Connected



Shared



Smart





Mobility will be transformed in 30 years  
Clean, smart, connected, competitive  
**Q: How much of this is doable today?**





350 cars in 18 months

More than 220 km / day / car

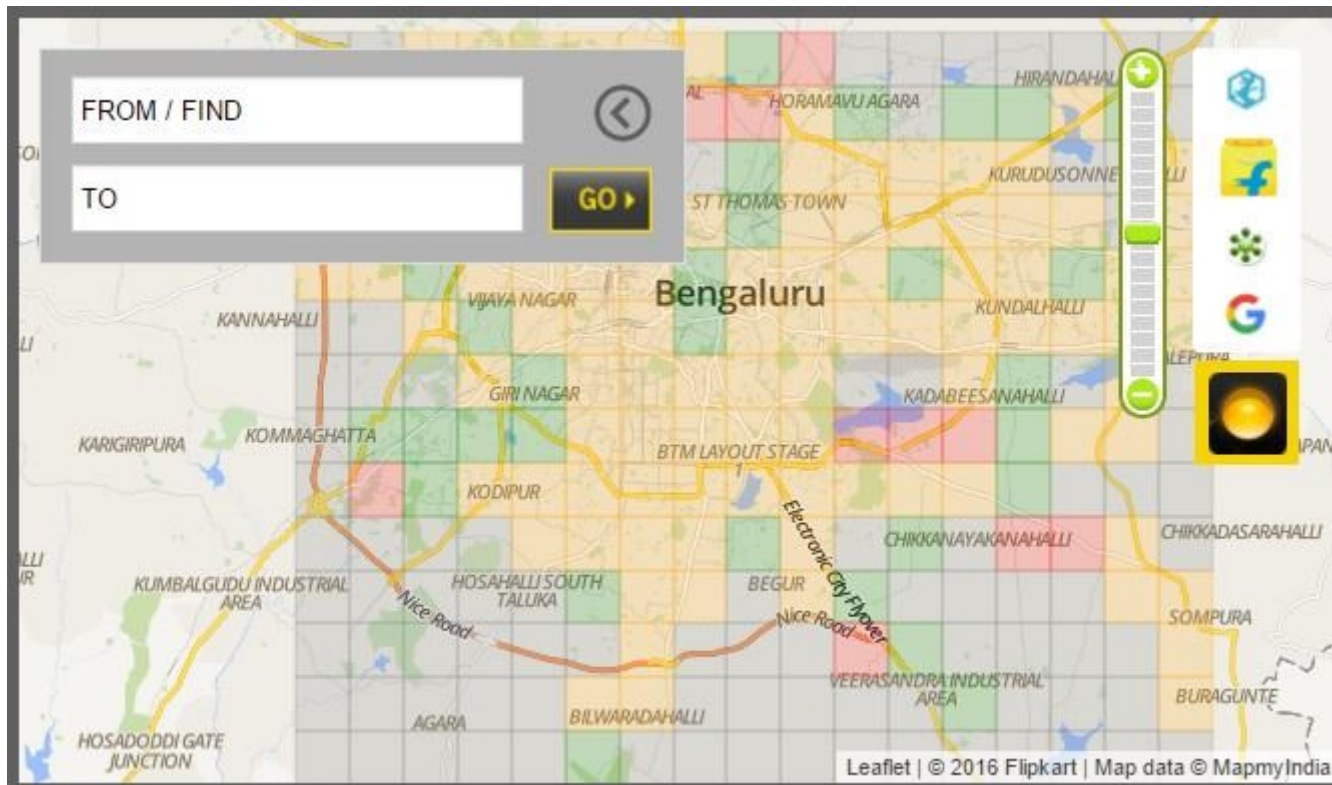
Likely to hit 1000 cars this year

Expansion into cargo, buses, and other segments

**Viable**



## Public-Private Data Partnerships





## WHAT GOVERNMENTS NEED TO DO ...

1. Focus on problem-solving
2. Think of citizens as co-managers along with officials
3. Encourage local solutions, tolerate diversity of choices
4. Foster a sense of place
5. Bring knowledge capital into the mix
6. Dream publicly



## WHAT CITIZENS NEED TO DO ...

1. Stop externalising the problem
2. Believe that every little bit helps – don't do nothing !!
3. Connect to the lives of others
4. Focus on problem-solving
5. Engage with politics - Campaign and vote in elections
6. Have fun 😊



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[info@ashwinmahesh.in](mailto:info@ashwinmahesh.in)