# Smart Cities in Perspective:

## From Vision to Implementation

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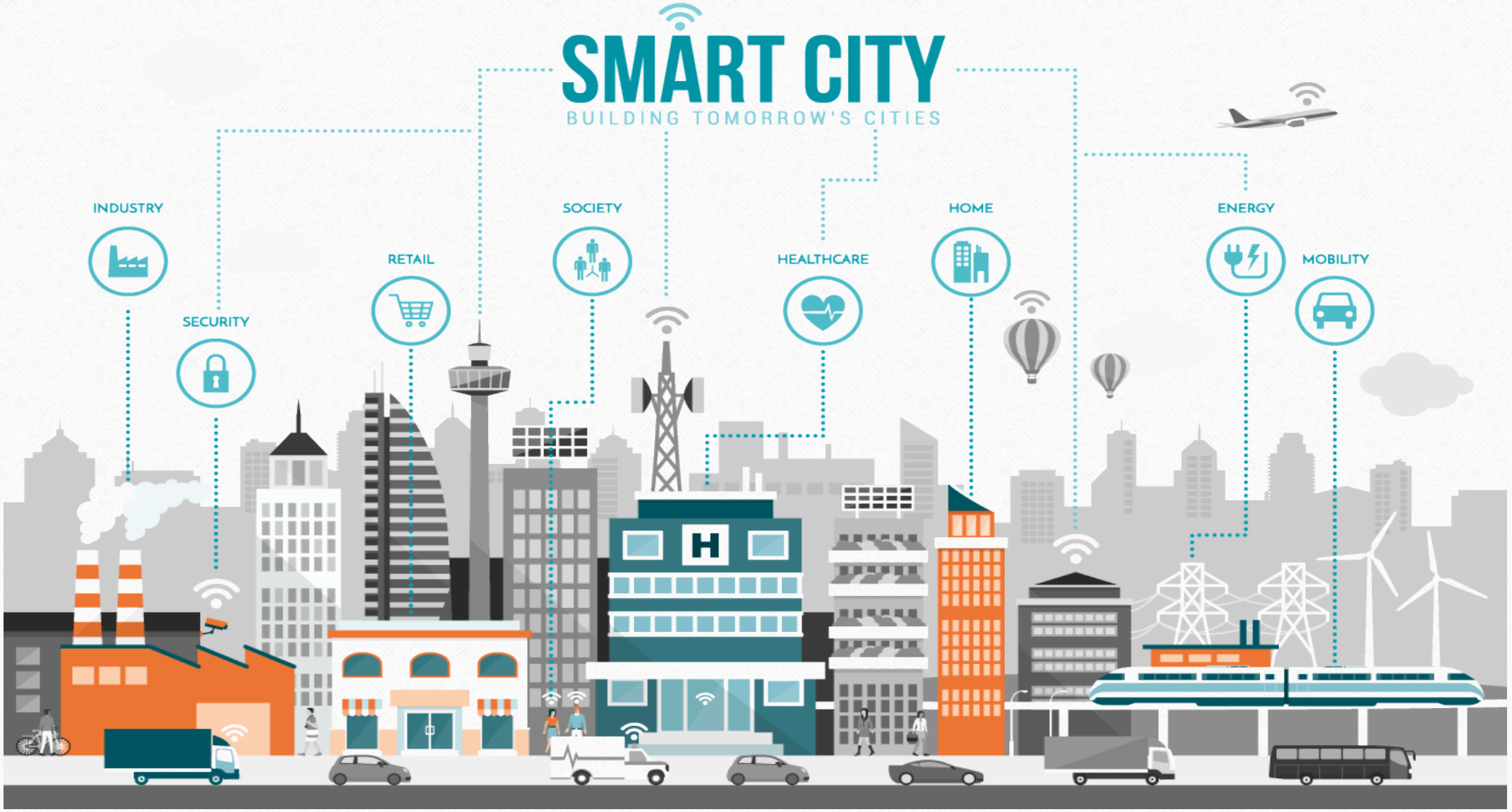
# A. INTRODUCTION


SMART CITY
BUILDING TOMORROW'S CITIES
INDUSTRY
SECURITY
RETAIL
SOCIETY
HEALTHCARE
HOME
ENERGY
MOBILITY

**What is a Smart City?**

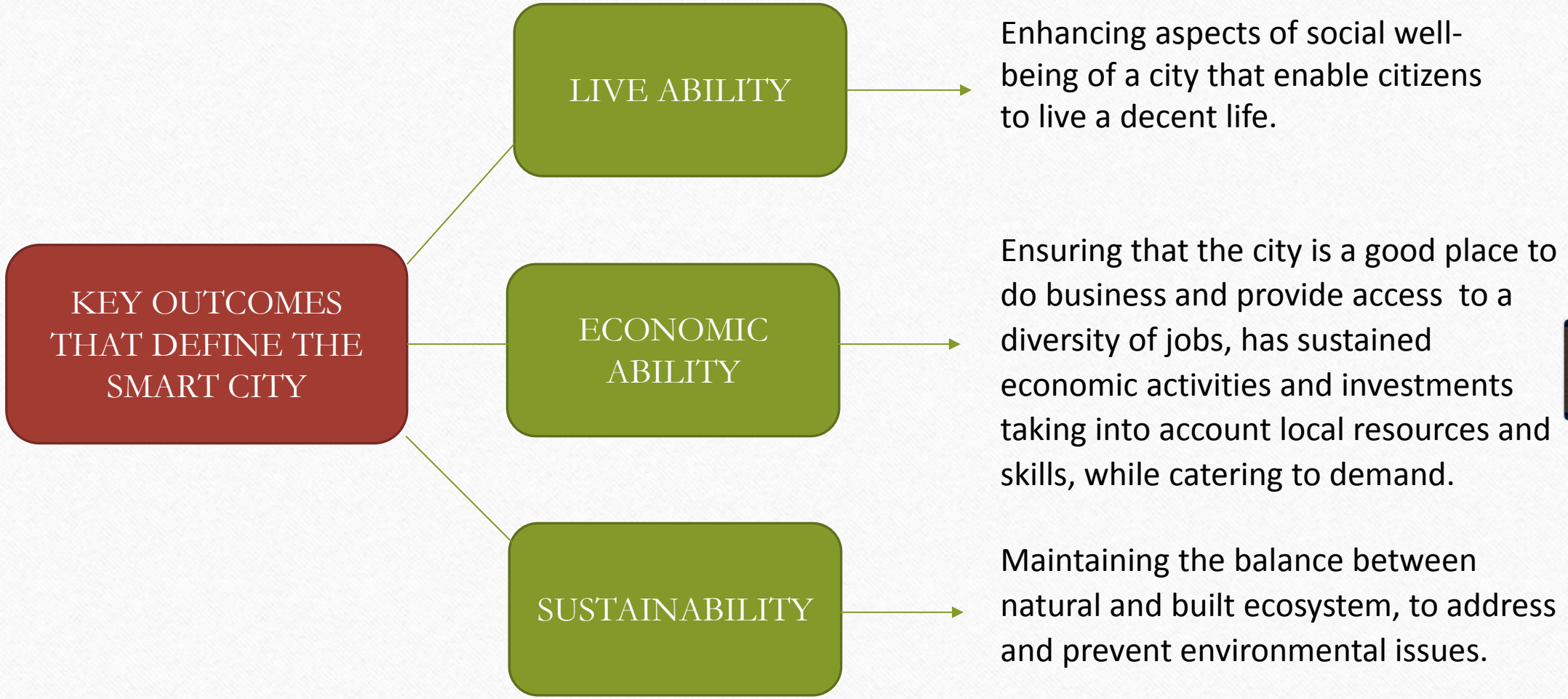
A **smart city** uses digital technology, data, and innovation to enhance quality of life, improve services, and promote sustainability.

**Why Smart Cities?**

Addressing 21st-century urban challenges such as population growth, resource scarcity, pollution, traffic congestion, and governance inefficiency.

**Objective of the Webinar:**

To explore different types of smart cities and examine real-world experiences—from ideation to implementation.


KEY OUTCOMES THAT DEFINE THE SMART CITY
LIVE ABILITY
ECONOMIC ABILITY
SUSTAINABILITY
Enhancing aspects of social well-being of a city that enable citizens to live a decent life.
Ensuring that the city is a good place to do business and provide access to a diversity of jobs, has sustained economic activities and investments taking into account local resources and skills, while catering to demand.
Maintaining the balance between natural and built ecosystem, to address and prevent environmental issues.

# B. WHY A SMART CITY?

Smart cities are platforms to test and scale innovative ideas on the basis of which actions may be influenced at city, state and national levels.

Our future in this century will be defined by major trends.

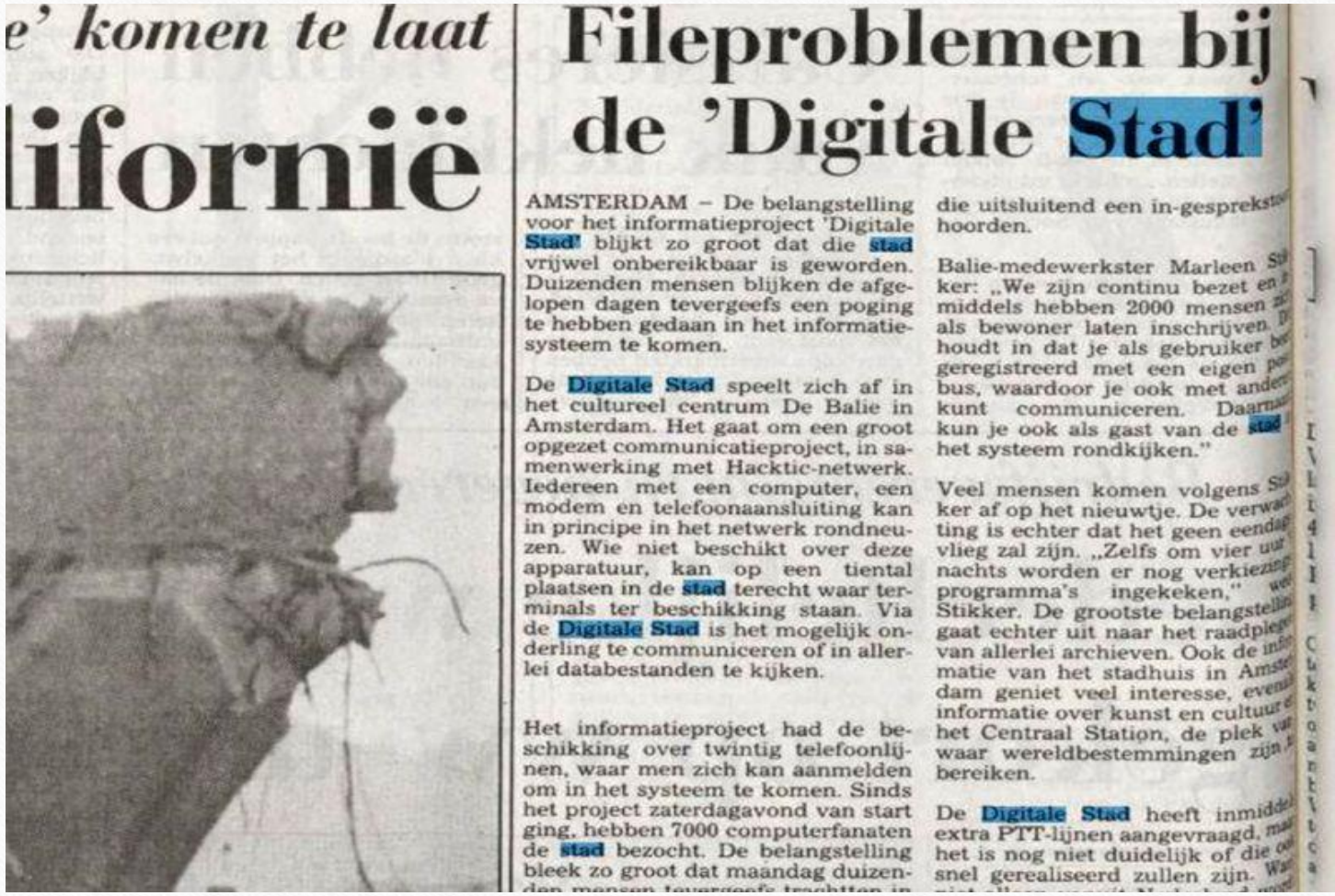
**Guiding principles that can help us achieve the outcomes in response to these trends are:**

1. **Inclusion**
2. **Engagement**
3. **Resilience**
4. **Adaptability**
5. **Healthy Urban Environment**
6. **Resource Conservation and Regeneration**
7. **Connectivity**
8. **Safety & Security**
9. **Responsible Technology**
10. **More from Less**

# HISTORY

The journey of smart city goes way back when to the 1970s, when Los Angeles created the first urban big data project report : **“A Cluster Analysis of Los Angeles”.**

Then on 15th January 1994 Internet became available to everyone, Amsterdam created a virtual digital city – **De Digitale Stad (DDS)** to promote Internet usage.



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# Fileproblemen bij de 'Digitale Stad'

AMSTERDAM – De belangstelling voor het informatieproject 'Digitale Stad' blijkt zo groot dat die stad vrijwel onbereikbaar is geworden. Duizenden mensen blijken de afgelopen dagen tevergeefs een poging te hebben gedaan in het informatiesysteem te komen.

De Digitale Stad speelt zich af in het cultureel centrum De Balie in Amsterdam. Het gaat om een groot opgezet communicatieproject, in samenwerking met Hacktic-netwerk. Iedereen met een computer, een modem en telefoonaansluiting kan in principe in het netwerk rondneuzen. Wie niet beschikt over deze apparatuur, kan op een tiental plaatsen in de stad terecht waar terminals ter beschikking staan. Via de Digitale Stad is het mogelijk onderling te communiceren of in allerlei databestanden te kijken.

Het informatieproject had de beschikking over twintig telefoonlijnen, waar men zich kan aanmelden om in het systeem te komen. Sinds het project zaterdagavond van start ging, hebben 7000 computerfanaten de stad bezocht. De belangstelling bleek zo groot dat maandag duizenden

die uitsluitend een in-gesprek hoorden.

Balie-medewerkster Marleen S ker: „We zijn continu bezet en middels hebben 2000 mensen z als bewoner laten inschrijven houdt in dat je als gebruiker b geregistreerd met een eigen p bus, waardoor je ook met ande kunt communiceren. Daarna kun je ook als gast van de stad het systeem rondkijken."

Veel mensen komen volgens S ker af op het nieuwtje. De verwac ting is echter dat het geen eenda vlieg zal zijn. „Zelfs om vier uur nachts worden er nog verkiezing programma's ingekeken," Stikker. De grootste belangstelli gaat echter uit naar het raadplee van allerlei archieven. Ook de info matie van het stadhuis in Amste dam geniet veel interesse, even informatie over kunst en cultuur het Centraal Station, de plek va waar wereldbestemmingen zijn bereiken.

De Digitale Stad heeft inmidd extra PTT-lijnen aangevraagd. ma het is nog niet duidelijk of die o snel gerealiseerd zullen zijn. Wa

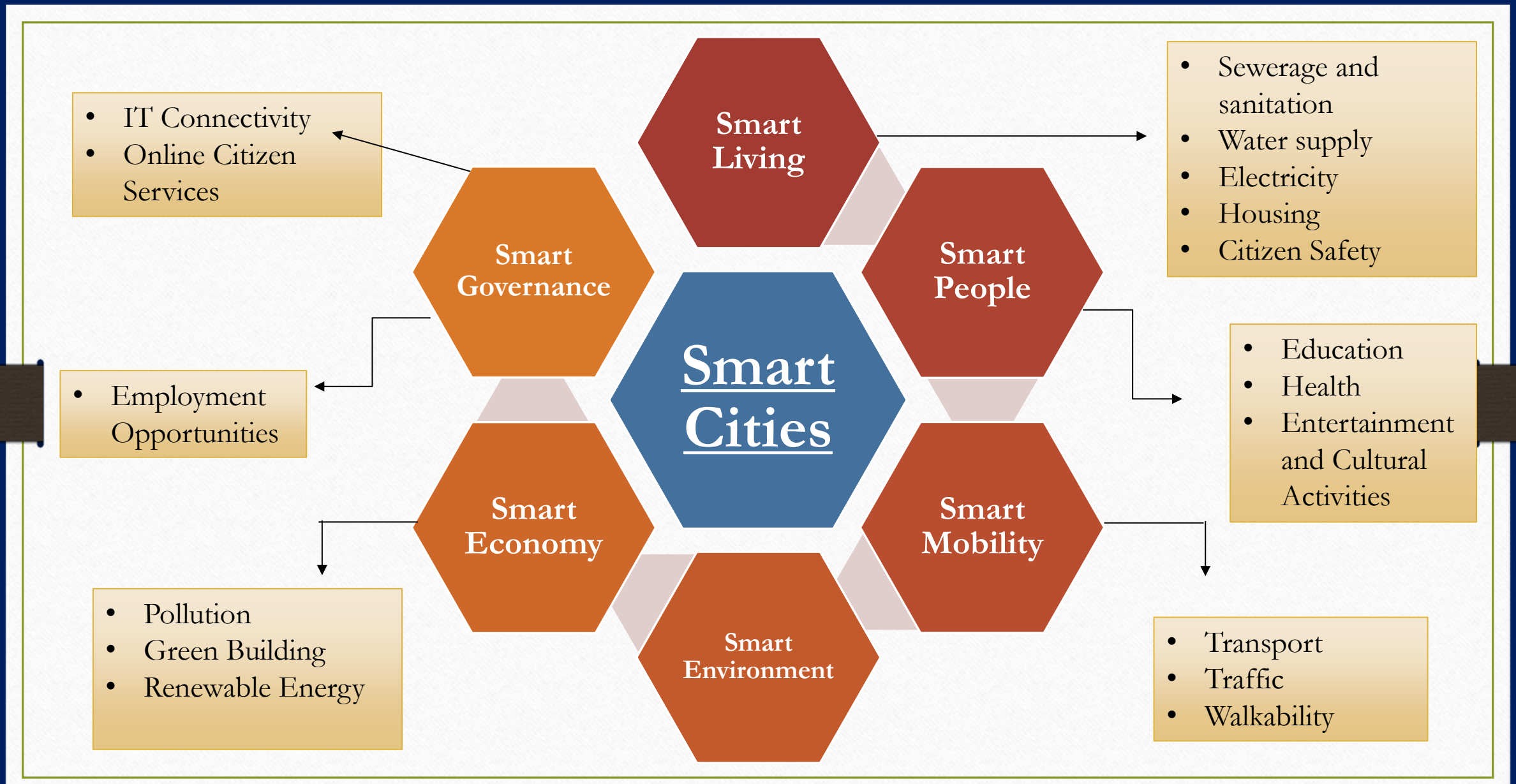
And when the entire world was facing one of the worst economic crisis that is in 2008, **IBM began to work on a 'smarter cities' concept as a part of its Smarter Planet Initiative.**

By 2009 Concept of Smart City Captivated the Imagination of various nations across the globe.

In 2011 **IBM Named 24 cities as Smarter Cities winners from 200 applicants.**

On **25th June 2015** Our Prime Minister Narendra Modi launched **"Smart Cities Mission"** for 100 Indian cities.

# WHAT ALL CONTRIBUTE TOWARDS MAKING A CITY SMART?


Smart Cities
Smart Living
Smart People
Smart Mobility
Smart Environment
Smart Economy
Smart Governance
• Sewerage and sanitation
• Water supply
• Electricity
• Housing
• Citizen Safety
• Education
• Health
• Entertainment and Cultural Activities
• Transport
• Traffic
• Walkability
• Pollution
• Green Building
• Renewable Energy
• Employment Opportunities
• IT Connectivity
• Online Citizen Services

# CHARACTERISTICS OF SMART CITY

# THREE MOST IMPORTANT CHARACTERISTICS ARE:

## 1. INFRASTRUCTURE DEVELOPMENT

A smart city prioritises the optimal development of infrastructure in order to **enhance economy, social, and urban development**. This is the reason why it improves communication channels so that services like housing, entertainment, telecommunications, business, among others, can be connected using advanced technologies that allow a city to grow and develop.

E.g. Smart Mobility, Smart Building.

# 2. STRATEGIES TO CREATE COMPETITIVE ENVIRONMENT

**BEING SMART IS NOT MORE A CHOICE, ITS A NEED.**

Through Information and Communication Technologies (ICT) and planning, smart cities seek to create a **competitive environment in the sector so as to expand urban sectors**, thereby enhancing the development of new businesses and improving the city's socio-economic performance.

# 3. INCLUSIVE & SUSTAINABLE CITIES

A smart city's main strategic element will be sustainability so as to look for participation drivers, create better **consumption habits** and better **energy management**, and use renewable energies for the **preservation of natural resources** and the environmental care.

E.g. Smart Water Management, Smart Health.

# TECHNOLOGIES

Improved flexibility of the smart grid permits greater penetration of highly variable renewable energy sources such as solar power and wind power

SMART GRIDES

ONLINE COLLABORATIVE SENSOR DATA MGT. PLATFORMS

Online database services that allow sensor owners to register and connect devices to feed data into online database for storage and allow developers to connect to database and build own applications for data

MOBILE DEVICES

CCTV REMOTE

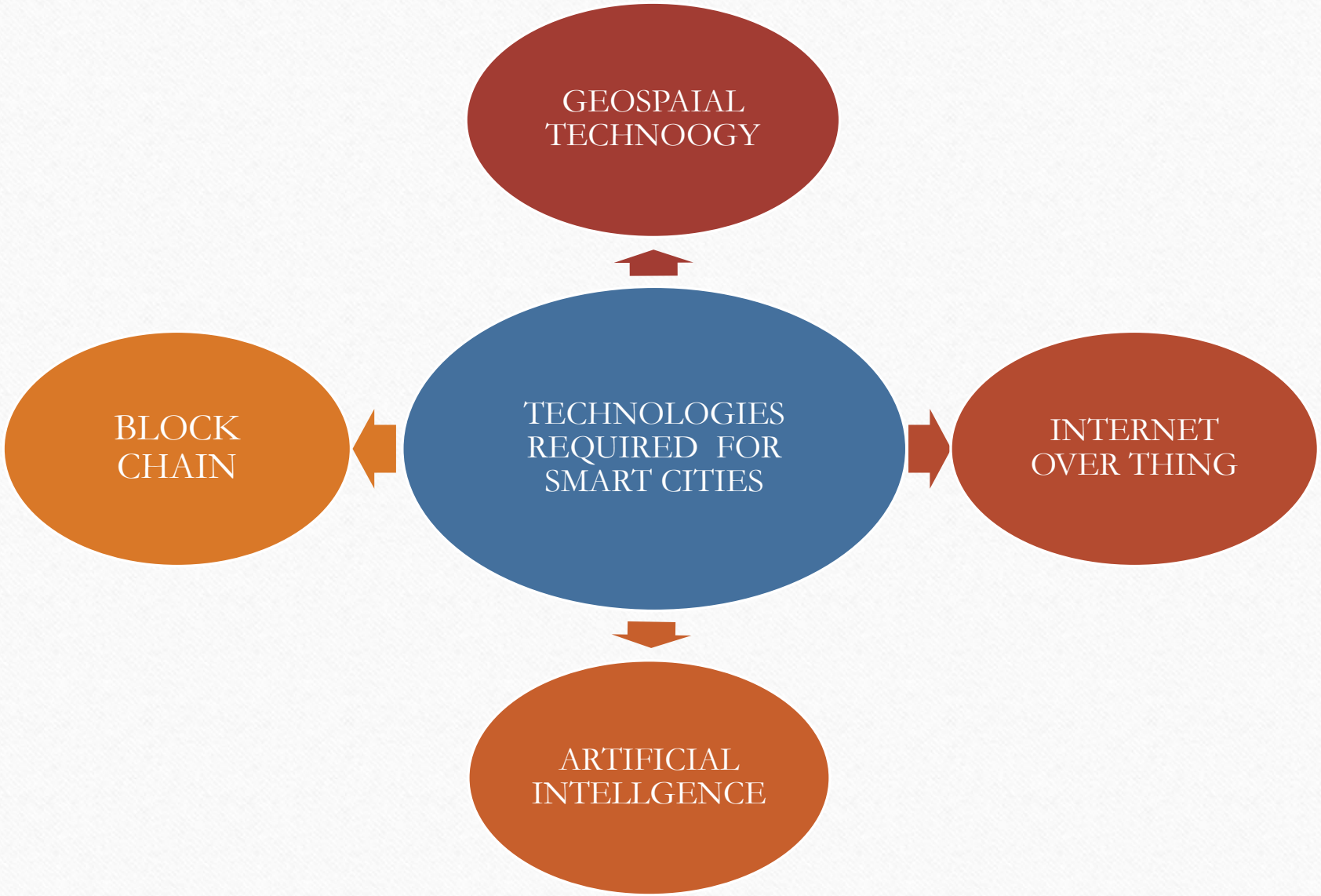
SMART HOMES

BLOCK CHAIN FINTECH

Can help cities to save energy by recording data and using it to increase efficiency

ENERGY DATA MANAGEMENT SYSTEMS

DIGITAL LIBRARIES


GEOSPAIAL TECHNOOGY
BLOCK CHAIN
TECHNOLOGIES REQUIRED FOR SMART CITIES
INTERNET OVER THING
ARTIFICIAL INTELLGENCE

## BLOCK CHAIN

- Blockchain application is new to smart city concept. Blockchain technology secures data flow Integration into smart cities could better connect all city services while boosting security and transparency.
- Market Research company Transparency Market Research' estimates value of technology will exceeds 16 billion uros ($ 20 billion) in 2024 globally

## GEOSPATIAL TECNOLOGY

- This technology provide the underlying foundation and ultimately the fabric upon which solution can be built.
- The research firm, Grand View Research predicts that by 2025 the geospatial technologies market will reach a turnover of $134.48 billion

## INTRNET OVER THINGS (IOT)

- Research made by Zion Market research reveals that IOT market for smart cities will grow by 22.6% to $330.1 billion in 2025.
- IOT is acting in the cities, mainly in three areas : transport and urban mobility, energy and urban maintenance

## ARTIFICIAL INTELLIGENCE

- AI Measurement and monitoring will be big players in the IOT market for smart cities in next few years.
- It is expected that by 2026,87% of all IOT device connections for smart cities will be covered by smart metering devices.

# COMMERCIALISATION OF SMART CITIES

**Large IT, Telecommunication and Energy Management companies had launched market initiatives for intelligent cities**

MICROSOFT

has promoted city next whereas Schneider electric is working on Eco structure

BAIDU

is working on Apollo, a self driving technology while Alibaba has created city brain

CISCO

launched the global “Intelligent Urbanisation” initiative to help cities using network as forth utility of economic development

# WHY DO SMART CITIES FAIL ?

Smart cities” **built from scratch** have so far **failed to live up** to their much-hyped **promise**. Some critics argue that rather than grafting a new city onto the landscape, it is **better to integrate high-tech for clean, efficient energy and transportation into existing cities**.

On paper, smart cities sound like a great idea that will bring society closer together while using technology to solve previously difficult problems. In reality, there are Several problems that these cities face.

Before smart cities can reach their full potential, **they'll need to account for and address these very real hurdles:**

# Invasion of Privacy

- A primary belief of smart cities is collecting data
- Cameras on every corner and sensors
- Although this data improves the quality of life, social activists have concerns that such data collection and surveillance will lead to the invasion of privacy state for citizens.

# Power Consumption

- Currently, most sensors in smart cities are powered by battery systems.
- It's become difficult and sometimes impractical to manufacture the batteries needed
- However, advances in renewable energy seem promising: South Korean companies are working on systems that use solar power for smart city sensors.

## Data Security

- With the level of interconnectedness that smart cities propose, hackers could access many vulnerable points to steal valuable and vital data.
- Cybercriminals constantly create new malware and ransomware designed to steal data they can sell or otherwise make use of for other crimes.

## Public Education

- Many systems within smart cities rely on citizen participation, and they're crippled when a large chunk of people aren't aware of changes or how to use them.
- Low participation means that the system won't work as intended, this threatens the future of smart city- related research and innovation, making future adoption of smart city principles low.

## Funding

- The research required to determine how smart systems would best work for a specific city and the implementation of smart systems
- The cost of a smart city project is significant, and ironically, funding becomes difficult to come by when investors become aware of the other issues described above.

## OTHER ASPECTS

- Maintenance of smart city systems
- Power systems, hardware, and software of all systems require regular care.
- Components wear out (engineers) and software needs updates (programmers), making maintenance an important consideration.

# Types of Smart Cities (With Global Examples)

# Technology-Driven Smart Cities

- **Focus on high-tech infrastructure, IoT, automation**

**Example:** *Songdo, South Korea*
Built from scratch with integrated digital systems: waste collection, traffic, energy monitoring

# Citizen-Centric Smart Cities

**- Emphasis on public participation, co-creation, and responsive services**

**Example:** *Barcelona, Spain*
- Decidim platform for participatory governance
- Sensors for traffic, noise, and energy use based on community input


decidim

free open-source participatory democracy
for cities and organizations

# Innovation & Data-Driven Cities

- **Big data, open platforms, real-time decision-making**

**Example:** *Amsterdam, Netherlands*
- Amsterdam Smart City Platform
- Triple-helix collaboration (government–business–academia)


Amsterdam
Smart
City

# Sustainable Smart Cities

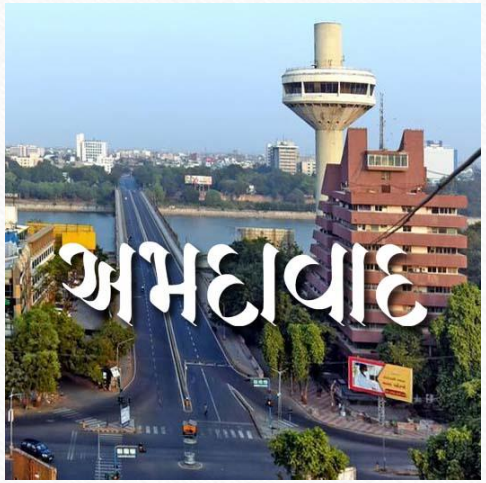
**- Focus on green energy, climate resilience, carbon neutrality**

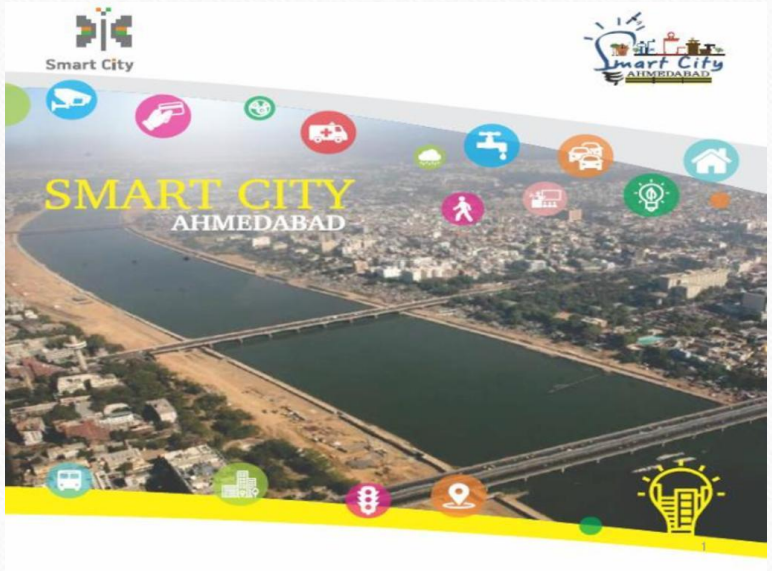
**Example:** *Copenhagen, Denmark*
- Aims to be carbon neutral by 2025
- Smart energy systems, bike infrastructure, environmental monitoring


# Contextual or Locally Adaptive Smart Cities

**- Adapted to local culture, climate, and socio-economic context**

**Example:** *Ahmedabad, India*
- Smart water and waste management in informal settlements
- Low-cost solutions with community participation



## Unique City Experiences – Comparative Table

| City | Unique Practice | Takeaway |
|---|---|---|
| Dubai | Paperless government, blockchain in public services | Strong political will, agile governance |
| Helsinki | Mobility-as-a-Service (MaaS) platform | Integration of public and private transit |
| Singapore | City-scale Digital Twin for simulation and planning | Predictive urban management |
| London | Open Data platform enabling startups and transparency | Data empowerment |
| Tehran | “My Tehran” platform for digital urban services | First steps toward integrated e-services |

# CONCLUSION

**Smart City is NOT the highest end state of a city when it is pursuing its creative needs. It is a city that works for its people – no matter the level in hierarchy of city needs. Being smart makes a city more able and agile to move from one level to the next, guided by principles of making most from limited resources, taking everyone along, quickly adapting to changes, being resilient in the face of stresses or shocks at each stage, and using technology mindfully at every step of the way to make processes smoother and faster.**

| | |
|---|---|
| Smart technologies can provide solutions for cities by helping them save money, reduce carbon emissions and manage traffic flows. | However the complexity of the agenda is hindering its progress. It involves a large number of stakeholders such as local authorities, citizens, technology companies and academics. |

# THANK YOU