



10 – 13 March 2019
Jeddah Centre for Forums & Events

Speaker Name: H. ALSamarrai

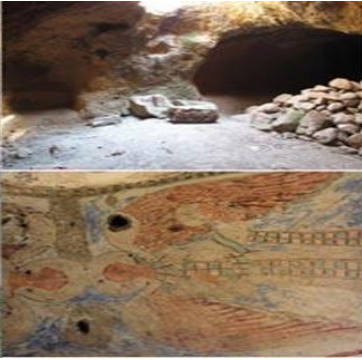
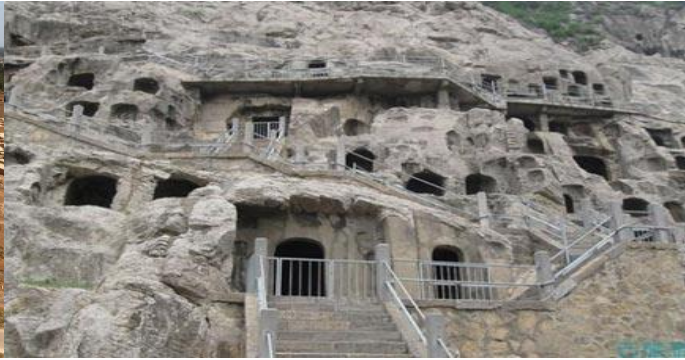
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Presentation Title: An Exploration Journey in Smart Cities



First Question

A journey in the History of Cities

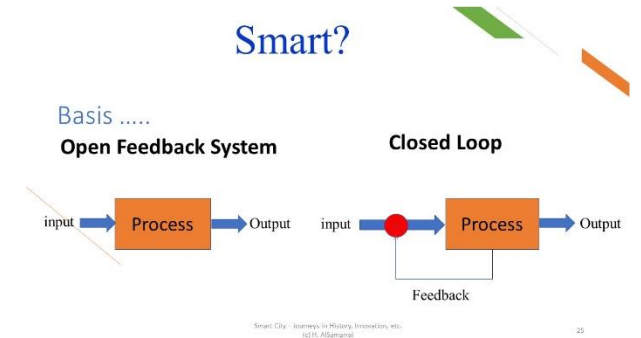
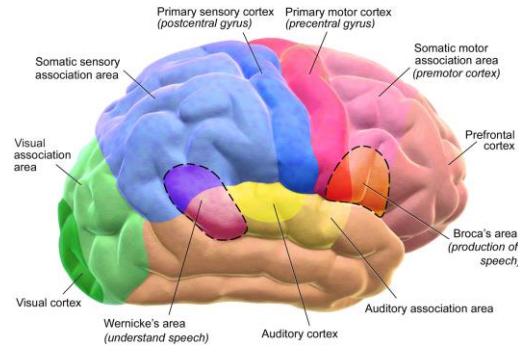


A journey in the History Inventios



The key words are: Justice, safety, security

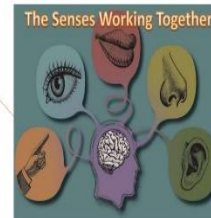
A journey in the History of Inventions in Technology



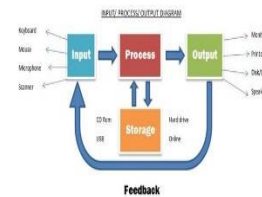
Smart?

Basis

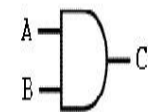
Human



Human Made

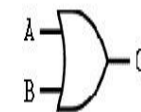


AND



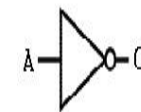
Inputs		Output
A	B	C
0	0	0
0	1	0
1	0	0
1	1	1

OR



Inputs		Output
A	B	C
0	0	0
0	1	1
1	0	1
1	1	1

NOT



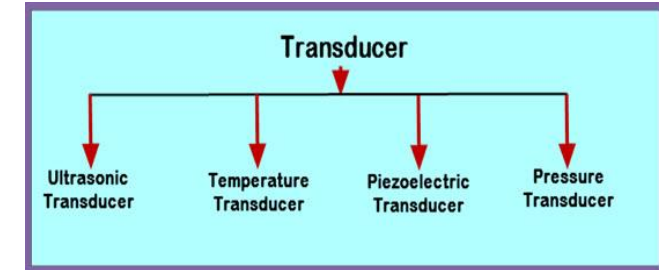
Input	Output
A	C
0	1
1	0

A journey in the History of Inventions in Technology



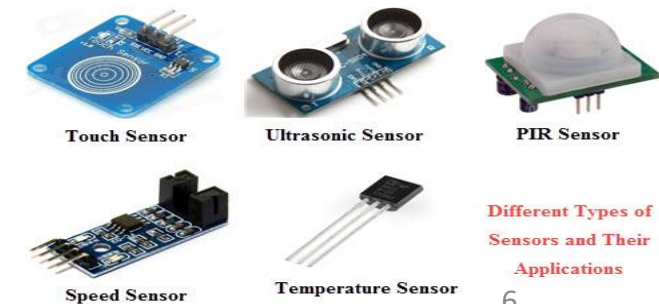
- Transducers

- A transducer is any device which converts one form of energy into another. Examples A microphone converts and a solar cell.



- Sensors

- Sensors detect the presence of energy, changes in or the transfer of energy. Sensors detect by receiving a signal from a device such as a transducer, then responding to that signal by converting it into an output that can easily be read and understood. Typically sensors convert a recognized signal into an electrical – analog or digital – output that is readable



A journey in the History of Inventions in Technology



- Computers: Analog and Digital
- Internet
- Internet of Things (IoT)
- IoT has had a significant effect on cities and is plying an important role in smart cities; but is it alone?

Smart Cities in the Literature

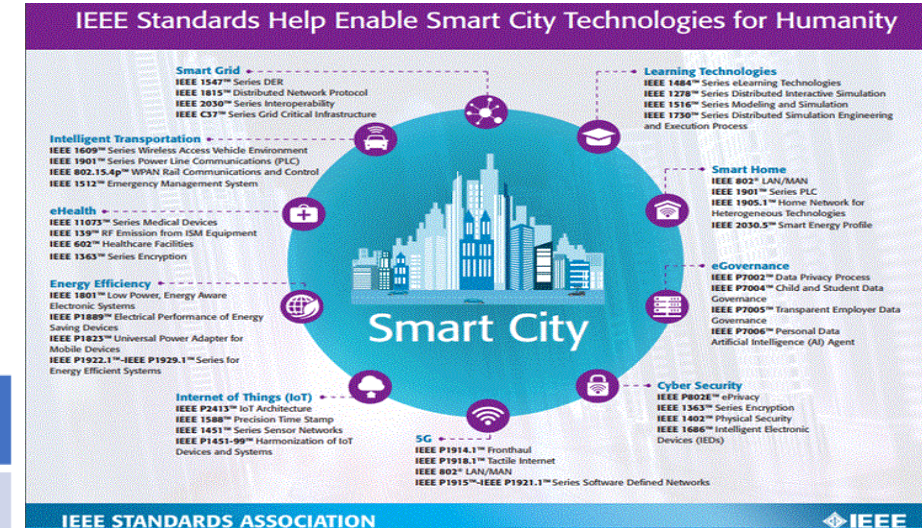


- IEEE
- Regardless of size, cities are becoming too crowded, and the lure of technology is appealing. A little more than half of the world's population now resides in cities, according to the World Health Organization, and that proportion is expected to grow. The WHO predicts that 60 percent of the world's population will live in cities by 2030, and 70 percent by 2050.

• Because each city has its own challenges, there's no one-size-fits-all solution.

• Visual Capitalist

Year	1800	1950	2008	2040
Percent Population in Cities	3%	29%	50%	65%



Smart Cities in the Literature



- **World Economic (Forum WEF)**
- **Smart cities have an opportunity to become far more inclusive**
- For urban planners, data and technology are valuable tools in the drive to improve administration and services. But while these innovations are making urban environments more livable, they come with a hidden cost: the potential to deepen inequality among digitally marginalized groups.
- But as digital systems become more pervasive, there is a danger that inequality will deepen unless local governments recognize that tech-driven solutions are as important to the poor as they are to the affluent.
- With smartphones serving as the primary interface in the modern city, [closing the digital divide](#), and extending access to networks and devices, is a critical first step.

Smart Cities in the Literature



- **World Economic (Forum WEF)**
- **Smart cities have an opportunity to become far more inclusive**
- City planners can also deploy technology in ways that make cities more inclusive for the poor, the disabled, the elderly, and other vulnerable people.
- WEF uses IESE's Cities in Motion Index to decide the World's Smartest Cities.
- **IBM**



Smart Cities in the Literature



- **Wikipedia**

- A **smart city** is an urban area that uses different types of electronic data collection sensors to supply information which is used to manage assets and resources efficiently. This includes data collected from citizens, devices, and assets that is processed and analyzed to monitor and manage traffic and transportation systems, power plants, water supply networks, waste management, etc.
- The smart city concept integrates information and communication technology (ICT), and various physical devices connected to the network (the Internet of things or IoT) to optimize the efficiency of city operations and services and connect to citizens.
- ICT is used to enhance quality, performance and interactivity of urban services, to reduce costs and resource consumption and to increase contact between citizens and government.↓

Smart Cities in the Literature



Forbes

- ✓ Referred to [IESE Cities in Motion Index](#). The index is prepared by IESE Business School's [Center for Globalization and Strategy](#) under the direction of professors [Pascual Berrone](#) and [Joan Enric Ricart](#).
- ✓ The fifth edition ***of the index analyzes the level of development of 165 cities from 80 countries***, across nine dimensions considered key to being a smart, sustainable city.
- ✓ While most smart cities rankings are focused solely on the use of smart technology or specific measures of environmental sustainability, to perform well on this index a city must perform well across a number of different elements. ***After all, it is not much good having an environmentally friendly city if crime & unemployment is so high no one wants to live there.***

Smart Cities in the Literature

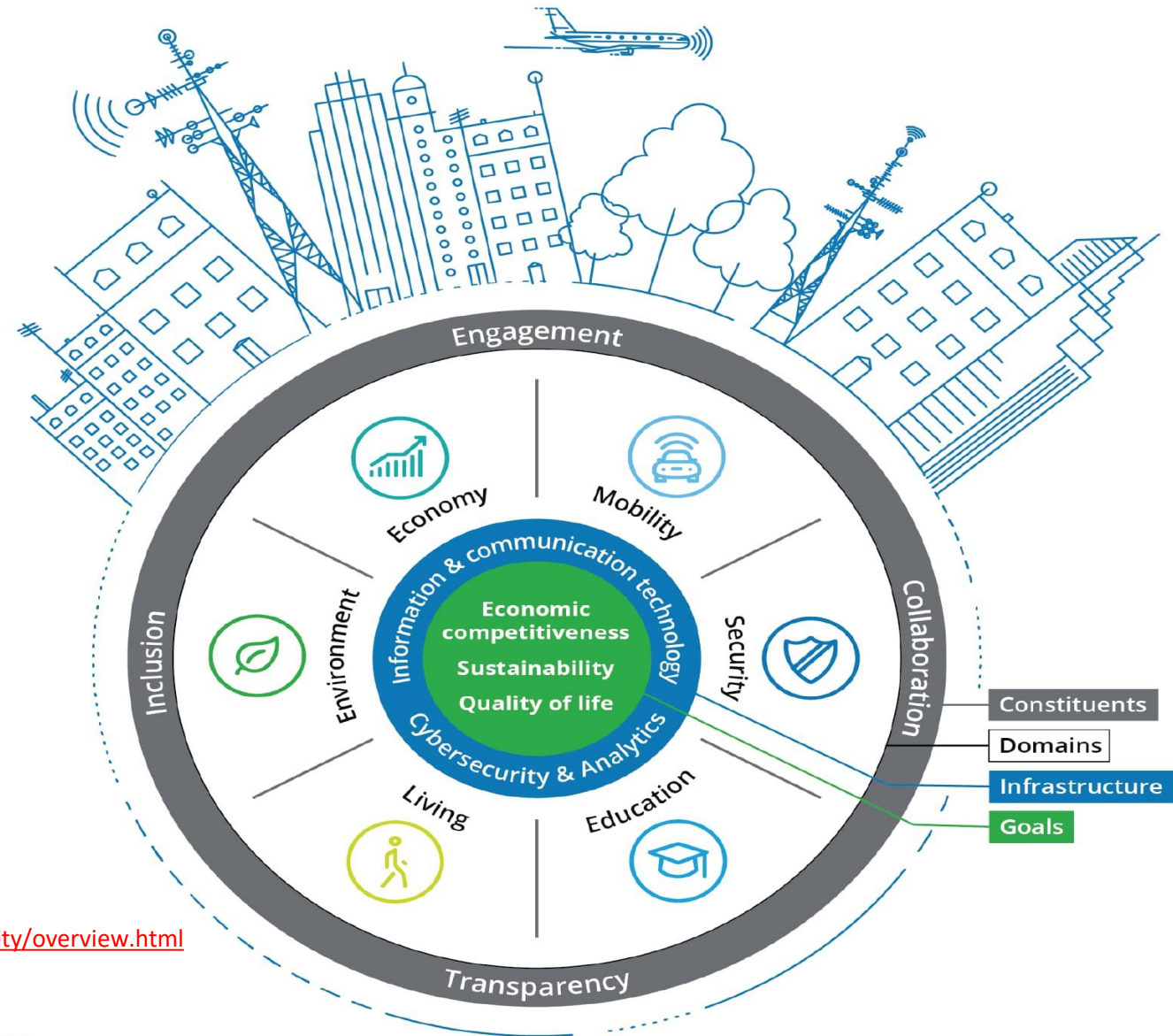
- **Accenture**



Smart Cities in the Literature

Figure 1. Deloitte smart city framework

- **Deloitte**



<https://www2.deloitte.com/insights/us/en/focus/smart-city/overview.html>

Source: Deloitte.

Deloitte Insights | deloitte.com/insights

Major Components of Smart Cities

❖ Smart Homes

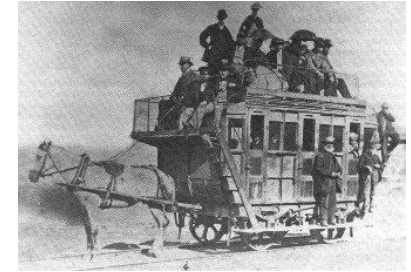


- | | | |
|--|------------------------|-----------------------------------|
| 1 Ambient Intelligence Agent (Aml) Control | 6 Automatic Pet Feeder | 12 Lawn Moisture Sensor |
| 2 Light Sensor | 7 Motorized Drapes | 13 Face Recognition Sensor |
| 3 Windows and Door Control | 8 Automatic Watering | 14 Motion Sensors |
| 4 HVAC Control | 9 Mailbox Sensor | 15 Door Sensors |
| 5 Lighting Control | 10 Driveway Sensor | 16 Aml Interface with Car |
| | 11 Security System | 17 Aml Interface with Smart Phone |

Major Components of Smart Cities

- **Transportation & Traffic**

- 1807 The [Welsh Swansea and Mumbles Railway](#) ran the world's first passenger tram service



- 1817 The first verifiable claim for a practically used bicycle belongs to German [Baron Karl von Drais](#),



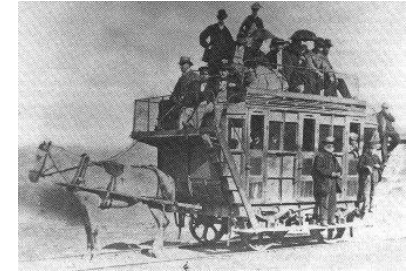
- On 9 December 1868, the first non-electric gas-lit traffic lights were installed outside the [Houses of Parliament](#) in [London](#) to control the traffic in Bridge Street, Great George Street, and Parliament Street.

- The first automated system for controlling traffic signals was developed by inventors Leonard Casciato and [Josef Kates](#) and was used in [Toronto](#) in 1954

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Advances in Transportation and Traffic

- **TRANSYT-7F**
- is an acronym for TRAffic Network StudY Tool, version 7F. The original TRANSYT model was developed by the [Transport Research Laboratory](#) in the United Kingdom. TRANSYT, version 7 was "Americanized" for the Federal Highway Administration (FHWA); thus the "7F." The TRANSYT-7F program and the original TRANSYT-7F manual were developed for the Federal Highway Administration (FHWA) under the National Signal Timing Optimization Project (NSTOP) by the University of Florida Transportation Research Center (TRC). TRANSYT-7F continues to undergo further development, and is currently maintained by the University of Florida's McTrans Center.
- **The future of Transport**
- TRL provided iMAAP for advanced crash data analysis with GIS, meeting the Abu Dhabi Department of Municipalities and Transport 's need for better information without the time, risk and expense of developing its own solution from scratch.



U.S. DOT AUTOMATION PRINCIPLES

The United States Department of Transportation (U.S. DOT) has established a clear and consistent Federal approach to shaping policy for automated vehicles, based on the following six principles.

1. We will prioritize safety.
2. We will remain technology neutral.
3. We will modernize regulations.
4. We will encourage a consistent regulatory and operational environment.
5. We will prepare proactively for automation.
6. We will protect and enhance the freedoms enjoyed by Americans.

<https://www.transportation.gov/sites/dot.gov/files/docs/policy-initiatives/automated-vehicles/320711/preparing-future-transportation-automated-vehicle-30.pdf>

Intelligent Transportation Systems

<https://www.its.dot.gov/>

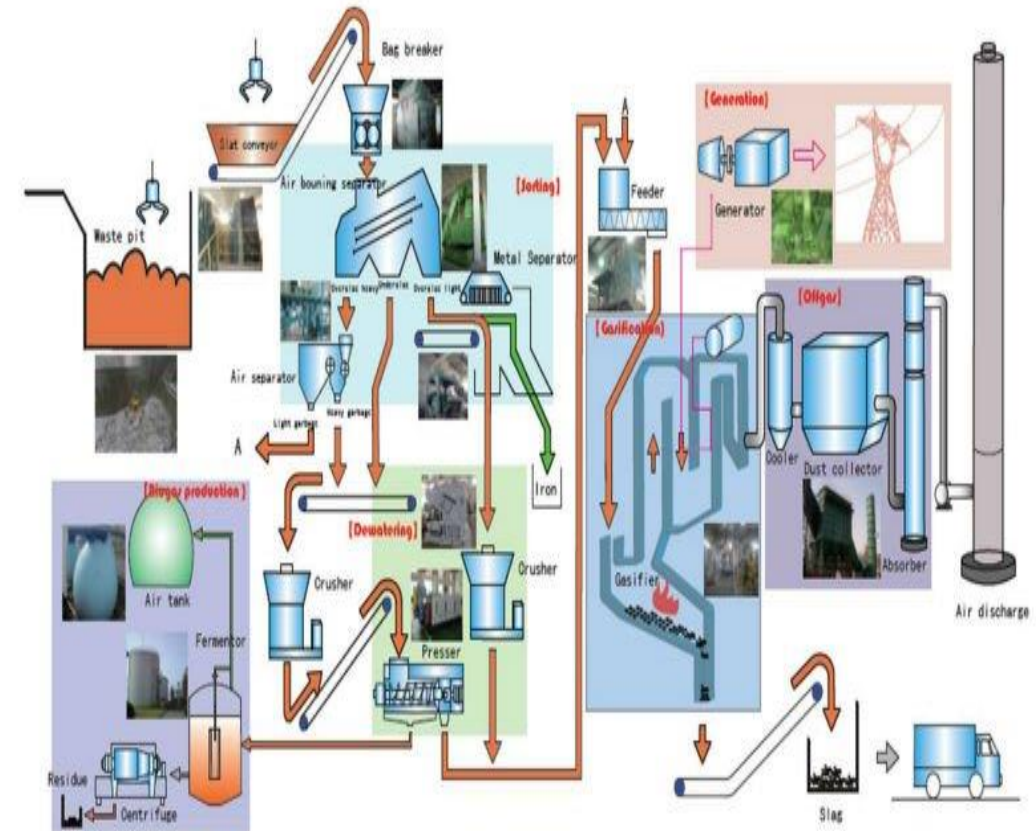
Solid Waste Management System

- https://youtu.be/MR9tIMEGV_s

- <https://youtu.be/iQqIGsLddB8>

- **Solid Waste Management in Smart Cities using IoT**

<https://acadpubl.eu/jsi/2018-118-7-9/articles/7/84.pdf>





Kindly answer the question
in the following link:

<http://bit.do/acccccca>

Social – Health Care


✓ Health Care in the IoT

<https://youtu.be/Y8288eEEsmc>

✓ Health Care in the Smart City

<https://youtu.be/7c1h5ncLLAk>

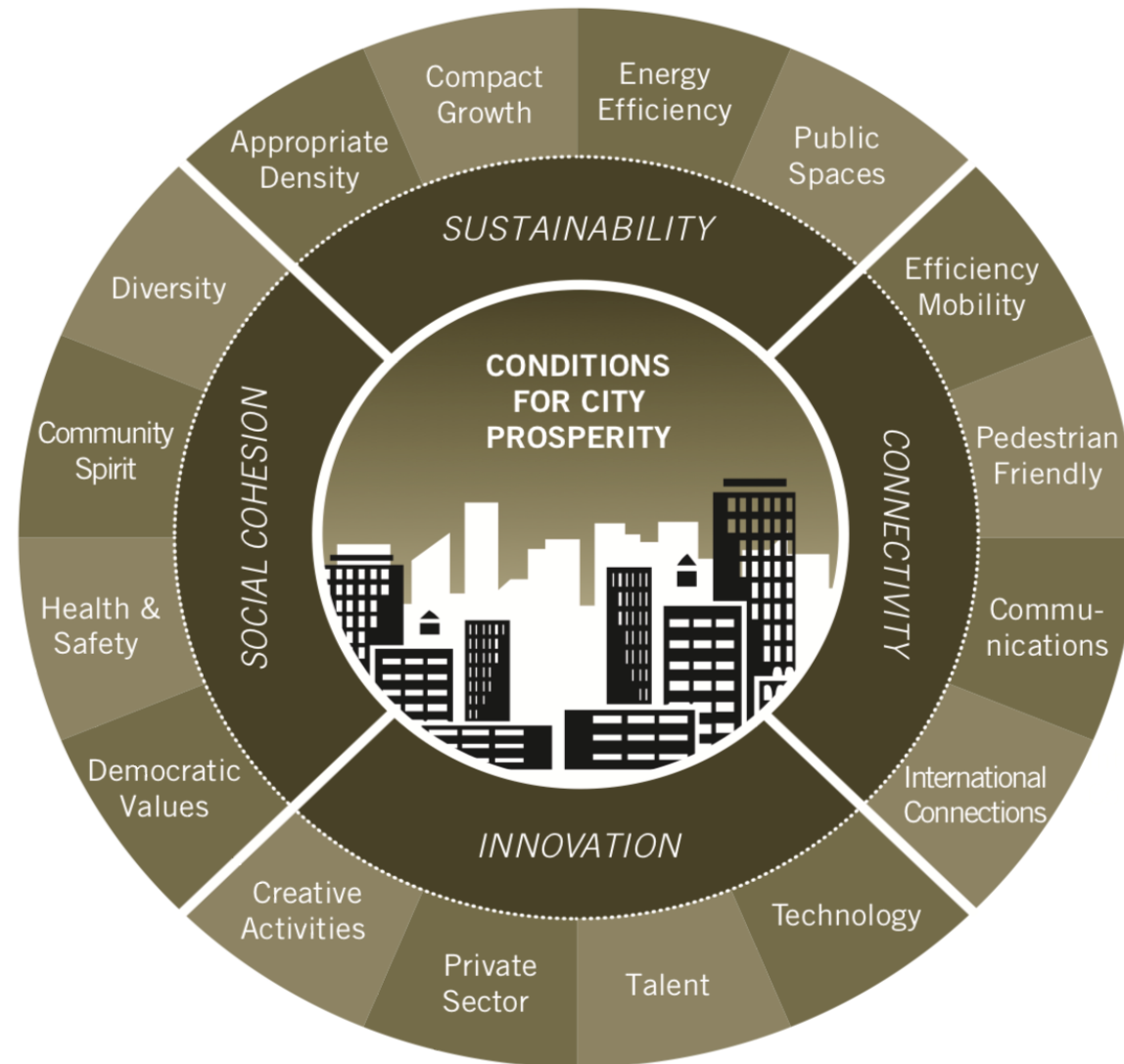




Let us review the results of
the Second question:

<http://bit.do/abbbbba>

Ranking of Smart Cities – IESE Model



Ranking of Smart Cities – IESE Model

- CITIES IN MOTION MODEL: CONCEPTUAL FRAMEWORK, DEFINITIONS AND INDICATORS:
- HUMAN CAPITAL (Higher education, Business schools, Movement of students, Universities, etc.)
- SOCIAL COHESION (mortality, crime rate, health, unemployment, etc.)
- ECONOMY (Productivity ,Time required to start a business, Ease of starting a business, Headquarters, Motivation for early-stage entrepreneurial activity, GDP estimate, GDP, etc.)
- GOVERNANCE
- THE ENVIRONMENT
- MOBILITY AND TRANSPORTATION
- URBAN PLANNING
- INTERNATIONAL OUT REACH
- TECHNOLOGY

Ranking of Smart Cities – IESE Model

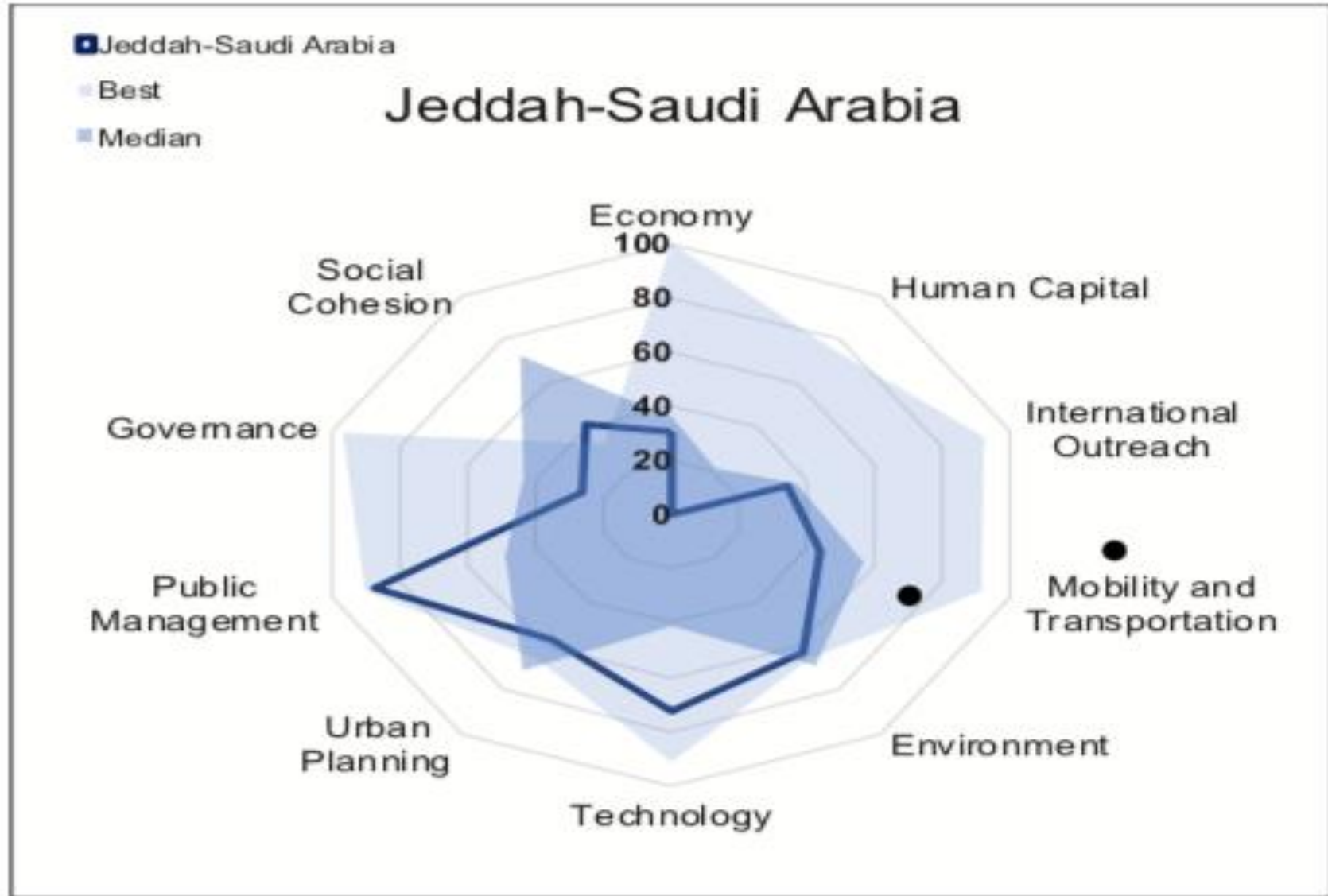
The world's smartest cities

Based on the IESE Cities in Motion Index, 2018

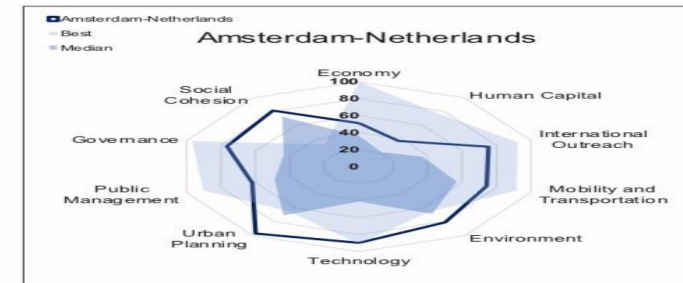
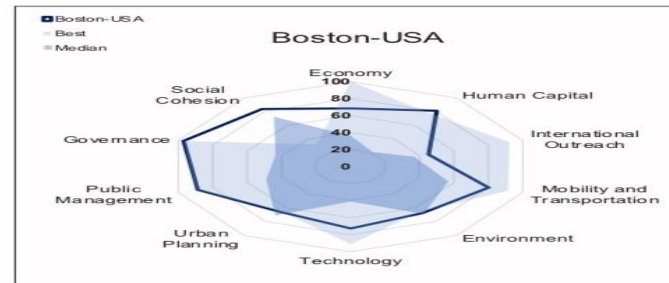
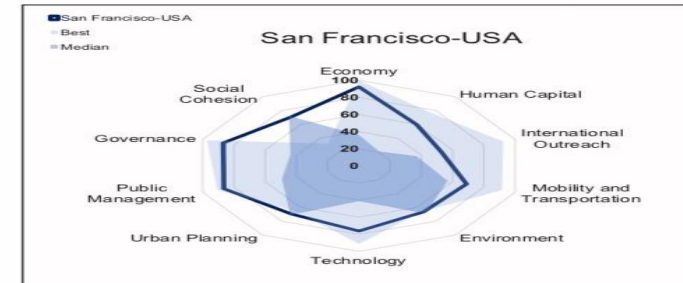
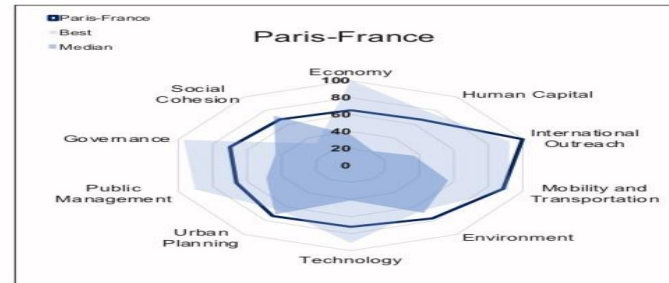
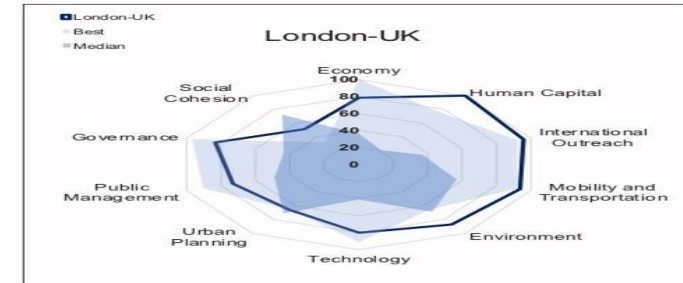
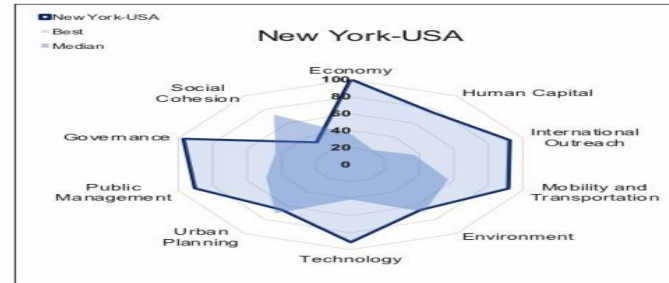
1. New York, USA
2. London, UK
3. Paris, France
4. Tokyo, Japan
5. Reykjavik, Iceland
6. Singapore
7. Seoul, South Korea
8. Toronto, Canada
9. Hong Kong SAR
10. Amsterdam, Netherlands

Source: IESE

Ranking of Smart Cities



Ranking of Smart Cities



Ranking of Smart Cities

TABLE 13. TOP 10 BY DIMENSION



ECONOMY

New York City-USA	1
San Francisco-USA	2
Boston-USA	3
London-United Kingdom	4
Los Angeles-USA	5
Tokyo-Japan	6
Washington, D.C.-USA	7
Chicago-USA	8
Houston-USA	9
Dallas-USA	10



HUMAN CAPITAL

London-United Kingdom	1
Boston-USA	2
Washington, D.C.-USA	3
New York City-USA	4
Los Angeles-USA	5
Tokyo-Japan	6
Paris-France	7
Chicago-USA	8
San Francisco-USA	9
Philadelphia-USA	10



SOCIAL COHESION

Helsinki-Finland	1
Zurich-Switzerland	2
Stuttgart-Germany	3
Basel-Switzerland	4
Prague-Czech Republic	5
Copenhagen-Denmark	6
Antwerp-Belgium	7
Munich-Germany	8
Tallinn-Estonia	9
Berlin-Germany	10

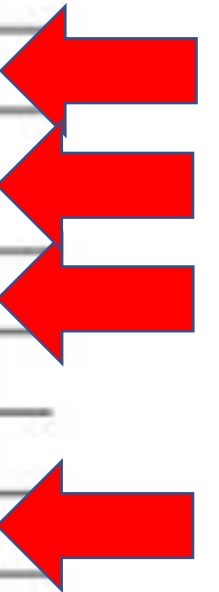
Ranking of Smart Cities

ENVIRONMENT

Zurich-Switzerland	1
Tallinn-Estonia	2
Vienna-Austria	3
Stockholm-Sweden	4
Linz-Austria	5
Zagreb-Croatia	6
Vilnius-Lithuania	7
Tokyo-Japan	8
Ljubljana-Slovenia	9
Singapore	10

PUBLIC MANAGEMENT

Geneva-Switzerland	1
Washington, D.C.-USA	2
Baltimore-USA	3
New York City-USA	4
Dubai-United Arab Emirates	5
Abu Dhabi-United Arab Emirates	6
Riyadh-Saudi Arabia	7
Boston-USA	8
Miami-USA	9
Jeddah-Saudi Arabia	10



Smart Cities

- Social Impact

<https://ottawa.impacthub.net/2018/05/07/what-do-we-mean-when-we-talk-about-smart-cities/>

- Challenges

https://youtu.be/z72G4WXQ_IY

- Ethics

<https://youtu.be/7sWnNzczF90>

- A [recent study](#) by Juniper Research and Intel puts it best: For all the dissections and analyses of what makes smart cities great, ***“they do not sufficiently account for the most important part of the city itself: its citizens”***.

Is the Smart City?



وَلَوْ أَنَّ أَهْلَ الْقُرَىٰ آمَنُوا وَاتَّقَوْا لَفَتَحْنَا عَلَيْهِم بَرَكَاتٍ مِّنَ السَّمَاءِ وَالْأَرْضِ وَلَكِن كَذَّبُوا فَأَخَذْنَاهُم بِمَا كَانُوا يَكْسِبُونَ

And if only the people of the cities had believed and feared Allah, We would have opened upon them blessings from the heaven and the earth; but they denied [the messengers], so We seized them for what they were earning."

وَضَرَبَ اللَّهُ مَثَلًا قَرْيَةً كَانَتْ آمِنَةً مُّطْمَئِنَّةً يَأْتِيهَا رِزْقُهَا رَغَدًا مِّن كُلِّ مَكَانٍ فَكَفَرَتْ بِأَنْعُمِ اللَّهِ فَأَذَاقَهَا اللَّهُ لِبَاسَ الْجُوعِ وَالْخَوْفِ بِمَا كَانُوا يَصْنَعُونَ

And Allah presents an example: a city which was safe and secure, its provision coming to it in abundance from every location, but it denied the favors of Allah. So Allah made it taste the envelopment of hunger and fear for what they had been doing.

Is the Smart City?



وَإِذْ قُلْنَا ادْخُلُوا هَذِهِ الْقَرْيَةَ فَكُلُوا مِنْهَا حَيْثُ شِئْتُمْ رَغَدًا وَاَدْخُلُوا الْبَابَ سُجَّدًا وَقُولُوا
حِطَّةً نَغْفِرْ لَكُمْ خَطَايَاكُمْ وَسَنَزِيدُ الْمُحْسِنِينَ

And [recall] when We said, "Enter this city and eat from it wherever you will in [ease and] abundance, and enter the gate bowing humbly and say, 'Relieve us of our burdens.' We will [then] forgive your sins for you, and We will increase the doers of good [in goodness and reward]."

وَمَا كَانَ رَبُّكَ لِيُهْلِكَ الْقَرْيَةَ بِظُلْمٍ وَأَهْلِهَا مُصْلِحُونَ

Thank you for attending!

Related Videos



- [The story of civilization](#)
- [The binary](#)
- [Internet of Things \(IoT\)](#)
- [The future of Transport](#)
- [The Future of UK Infrastructure \(2:06\)](#)
- [The Future of Transport](#)
- [Intelligent Transportation Systems](#)
- [Challenges](#)
- [Ethics](#)

Your answers



- Let us review the results of the first question:
<http://bit.do/eHPLs>

