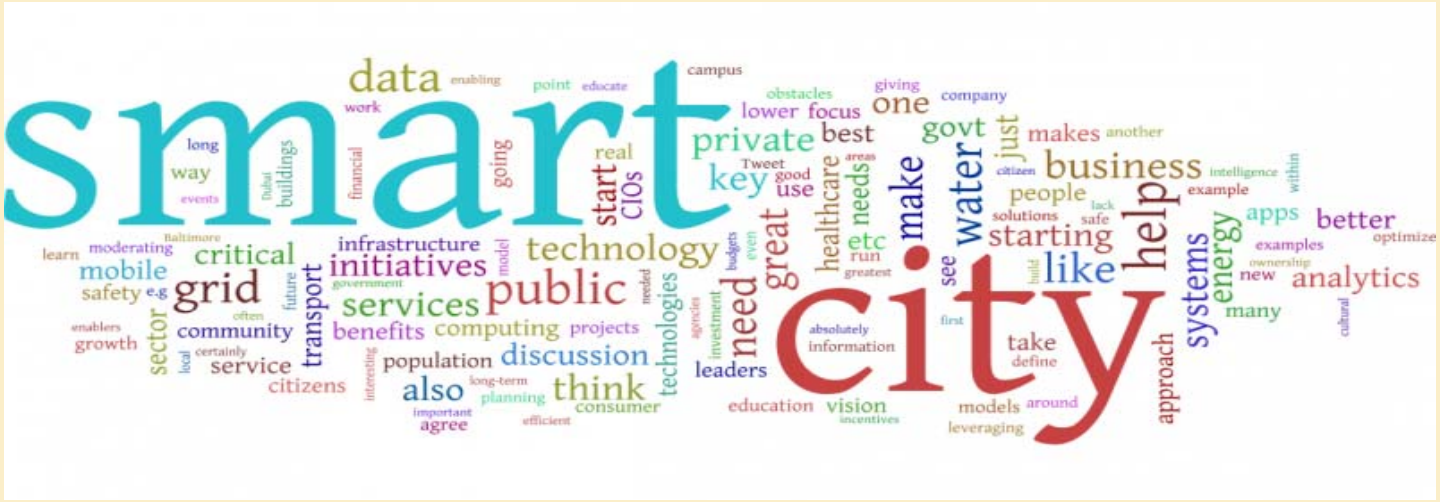
MEG CONFERENCE

27 – 28 November 2014

ROME

How a city can be SMART?

A journey from ancient to modern cities



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What is city?

Definition: A **city** is a relatively large and permanent human settlement. (Wikipedia)

Cities generally have complex systems for sanitation, utilities, land usage, housing, and transportation. The concentration of development greatly facilitates interaction between people and businesses, benefiting both parties in the process, but it also presents challenges to managing urban growth.

Origin

There is not enough evidence to assert what conditions gave rise to the first cities.

The conventional view holds that cities first formed after the Neolithic revolution. The Neolithic revolution brought agriculture, which made denser human populations possible, thereby supporting city development. The advent of farming encouraged hunter-gatherers to abandon nomadic lifestyles and to settle near others who lived by agricultural production. The increased population-density encouraged by farming and the increased output of food per unit of land created conditions that seem more suitable for city-like activities.

CITY ORIGIN AGRICULTURE?

OR

SECURITY?

OR

ECONOMY?

Discussions

The urban theorist Jane Jacobs suggests that city-formation preceded the birth of agriculture, but this view is not widely accepted

"Cities, then, economize on protection, and so protection against marauding barbarian armies is one reason why people have come together to live in cities ..." (O'Flaherty 2005, p. 13).

Economist Edward L. Glaeser, delves into similar reasons for city formation: reduced transport costs for goods, people and ideas. Discussing the benefits of proximity, Glaeser claims that if a city is doubled in size, workers get a ten percent increase in earnings. Glaeser furthers his argument by stating that bigger cities do not pay more for equal productivity than in a smaller city, so it is reasonable to assume that **workers become more productive if they move to a city twice the size as they initially worked in**. The workers do not benefit much from the ten percent wage increase, because it is recycled back into the higher cost of living in a larger city.

ECONOMY???

As it is seen; there is direct relation of formation of a city

and economy. .

Benefits: reduced transport costs, exchange of ideas, sharing of natural resources, large local markets and later in their development, amenities such as running water and sewage disposal.
Possible costs ; higher rate of crime, higher mortality rates, higher cost of living, worse pollution, traffic and high commuting times.

Economy gets bigger ---------→ cities become bigger.

Then ; >>>>> Cities should be planned

City plans has seen many different schemes for how a city should look .

JOURNEY FROM ANCIENT TO MODERN CITIES

ANCIENT

Early cities developed in a number of regions of the ancient world. Uruk is the world's first city. After Mesopotamia, this culture arose in Syria and Anatolia, as shown by the city of Çatalhöyük (7500–5700BC). It is the largest Neolithic site found to date. Although it has sometimes been claimed that ancient Egypt lacked urbanism, several types of urban settlements were found in ancient times.

The Indus Valley Civilization and ancient China are two other areas with major indigenous urban traditions. Among the early Old World cities

In ancient Greece, beginning in the early 1st millennium BC, there emerged independent city-states that evolved for the first time the notion of citizenship, becoming in the process the archetype of the free city, the polis. The Agora, meaning "gathering place" or "assembly", was the center of athletic, artistic, spiritual and political life of the polis.

ANCIENT CONT'D

The growth of the population of ancient civilizations, the formation of ancient empires concentrating political power, and the growth in commerce and manufacturing led to ever greater capital cities and centres of commerce and industry, with Alexandria, Antioch and Seleucia of the Hellenistic civilization, Pataliputra (now Patna) in India, Chang'an (now Xi'an) in China, Carthage, ancient Rome, its eastern successor Constantinople (later Istanbul).

In the ancient Americas, early urban traditions developed in the Andes and Mesoamerica

In the first millennium AC, an urban tradition developed in the Khmer region of Cambodia, where Angkor grew into one of the largest cities (in area) of the world.[

Agriculture was practiced in sub-Saharan Africa since the third millennium BC. Because of this, cities could develop as centers of non-agricultural activity. Exactly when this first happened is still a topic of archeological and historical investigation

SEWER

Animal feces were plentiful on city streets while animal-powered transport moved people and goods. Accumulations of animal feces encouraged dumping chamber pots into streets where night soil collection was impractical. The earliest sewers were designed to carry street runoff away from inhabited areas and into surface waterways without treatment.

Water Aqueducts

Roads

Middle Ages

Ancient Rome the largest city before the 19th century, **London** was the first to exceed a population of 1 million . **Baghdad**, with an estimated population of 1.2 million at its peak, the largest city before 19th century London and the first with a population of over one million. Others estimate that Baghdad's population may have been as large as 2 million in the 9th century .
From the 9th through the end of the 12th century, the city of **Constantinople,** capital of the Byzantine Empire, was the largest and wealthiest city in Europe, with a population approaching 1 million.

During the European Middle Ages, a town was as much a political entity as a collection of houses.

Venice, Genoa or Lübeck, cities themselves became powerful states, sometimes taking surrounding areas under their control or establishing extensive maritime empires.

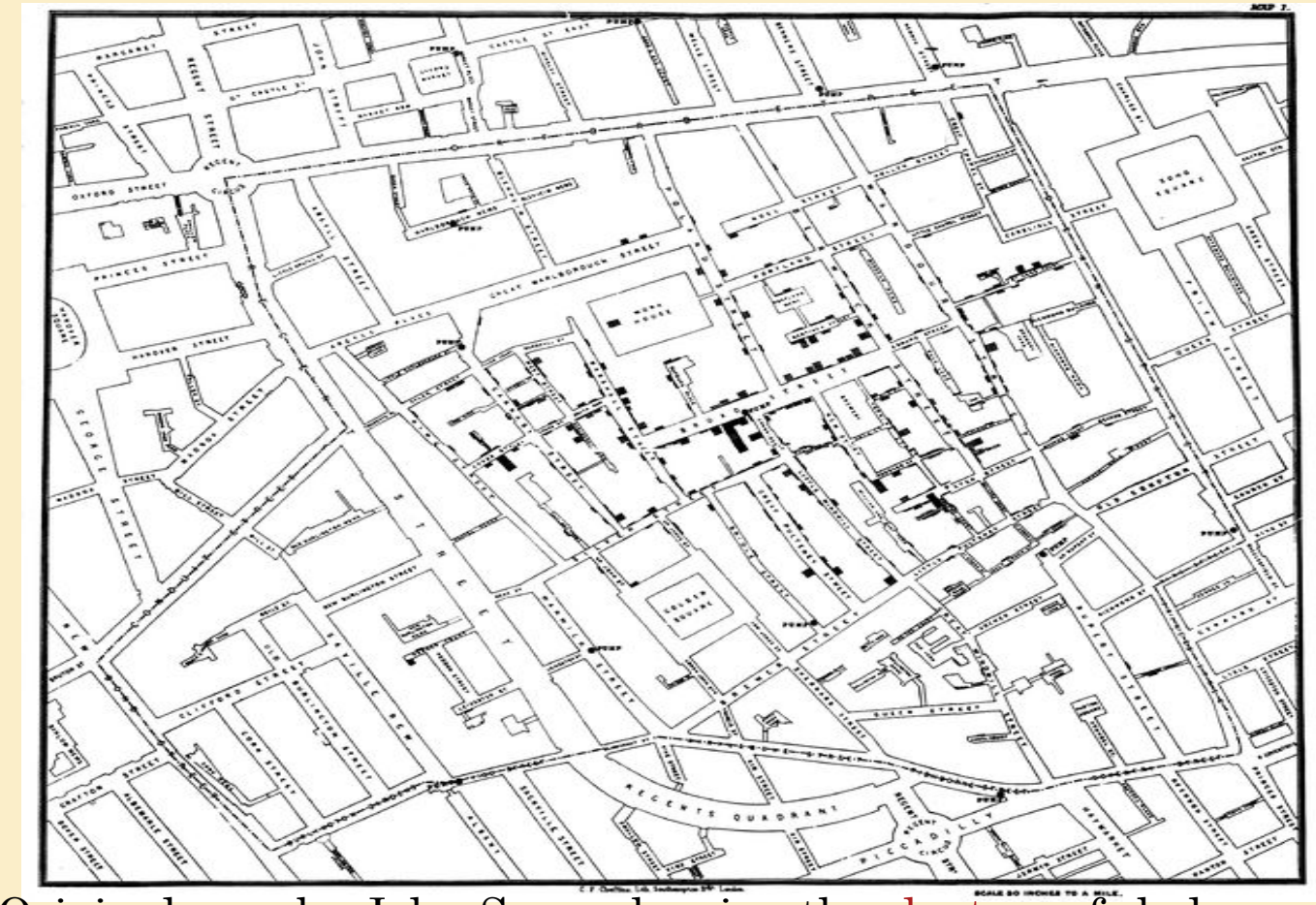
Early modern

While the city-states, or poleis, of the Mediterranean and Baltic Sea languished from the 16th century, Europe's larger capitals benefited from the growth of commerce following the emergence of an Atlantic trade. By the early 19th century, **London** had become the largest city in the world with a population of over a million, while **Paris** rivaled the well-developed regionally traditional capital cities of **Baghdad, Beijing, Istanbul and Kyoto**. During the Spanish colonization of the Americas the old Roman city concept was extensively used. Cities were founded in the middle of the newly conquered territories, and were bound to several laws about administration, finances and urbanism.

INDUSTRIAL AGE

The growth of modern industry from the late 18th century onward led to massive urbanization and the rise of new great cities, first in Europe and then in other regions, as new opportunities brought huge numbers of migrants from rural communities into urban areas. In the United States from 1860 to 1910, the introduction of railroads reduced transportation costs, and large manufacturing centers began to emerge, thus allowing migration from rural to city areas. Cities during this period were deadly places to live in, **due to health problems resulting from contaminated water and air, and communicable diseases**. In the Great Depression of the 1930s cities were hard hit by unemployment, especially those with a base in heavy industry. In the U.S. urbanization rate increased forty to eighty percent during 1900–1990. Today the world's population is slightly **over half urban**, with millions still streaming annually into the growing cities of Asia, Africa and Latin America.

-CHOLERA-MAP- 1854 LONDON



Original map by John Snow showing the clusters of cholera cases in the London epidemic of 1854 **caused by contaminated water.**

SEWER IN19TH CENTURY

Indoor plumbing was often drained to combined sewers through the 19th century. Sewage treatment facilities built for combined sewers become ineffective during periods of precipitation or snowmelt. Cities were built with sanitary sewers operated separately and independently of storm drains carrying the runoff of rain after wagons and carriages powered by internal combustion engines reduced the advantages of treating street runoff; but many cities built prior to the twentieth century have not replaced combined sewer infrastructure.

21ST CENTURY

There is a debate about whether technology and instantaneous communications are making cities obsolete, or reinforcing the importance of big cities as centres of the knowledge economy. Knowledge-based development of cities, globalization of innovation networks, and broadband services are driving forces of a new city planning paradigm towards intelligent cities. Intelligent / smart cities use technology and communication to create more efficient agglomerations in terms of competitiveness, innovation, environment, energy, utilities, governance, and delivery of services to the citizen. Some companies are building brand new masterplanned cities from scratch on greenfield sites.

SMART CITY / INTELLEGENT CITY

The Smart City gained traction in Europe especially after the concept of "smart city" was included in the European Union's reseach funding mechanism, proof that the institutional embrace of a concept gives the discourse legs.

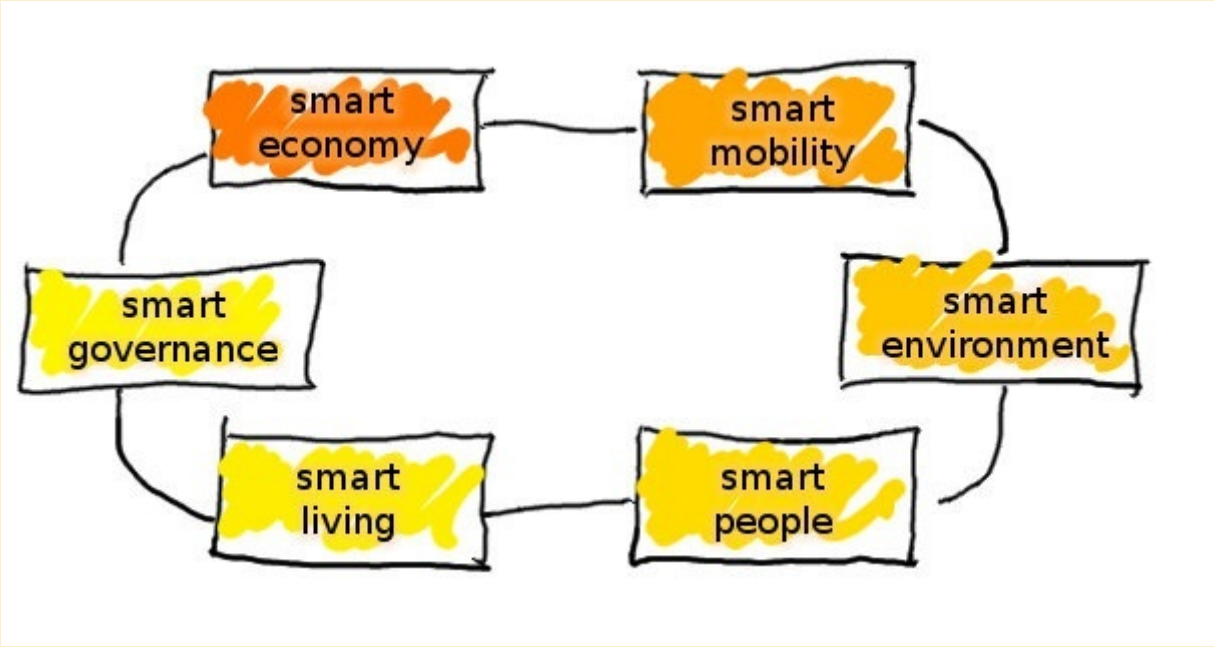
First of all, if we adopt the perspective developed by Swyngedouw (2007), under the heading smart city discourse, urban issues run the risk of shifting more and more towards the field of post-politics: the smart city may increasingly become a generic and easily agreed target, without proper critical discussions and without '**politics',** intended as the clash and debate between different ideas and positions

SMART CITIZEN ?

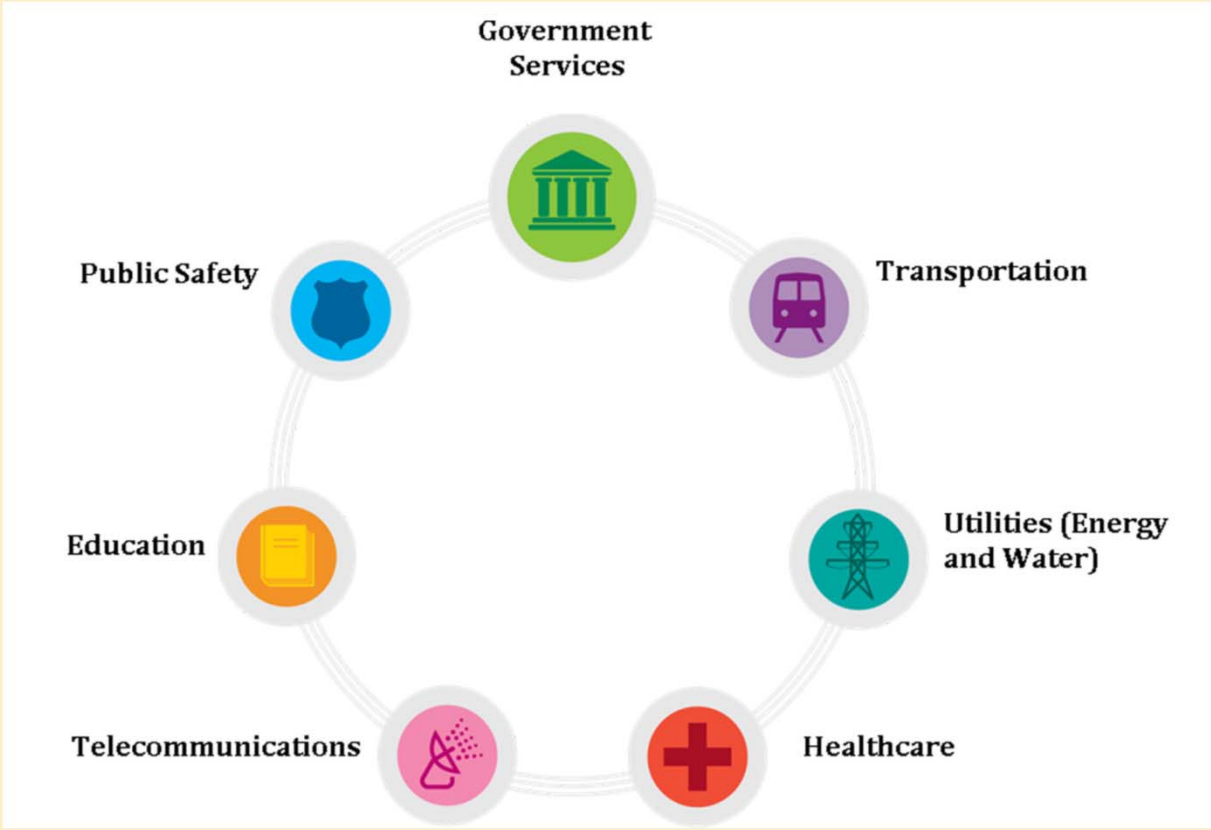
Secondly, producing 'smart cities' inevitably also co-produces what we could call a 'smart citizen'. In fact, the smart city discourse means that people have to be willing to adapt to, and to live in, smart cities

The idea of the smart city seems to have triumphed as a term that aims to bring together the link between the twenty-first century technologies and their deployment in the city. Even though its narrative compresses very diffuse profiles, interpretations and definitions, the smart city –no matter you feel comfortable or not with the term itself- has gained a privileged position in the whole scope of urban discussions and particularly in the field of urban technologies. But after some years of massive attention, the list of skeptics and openly critical positions keeps growing.

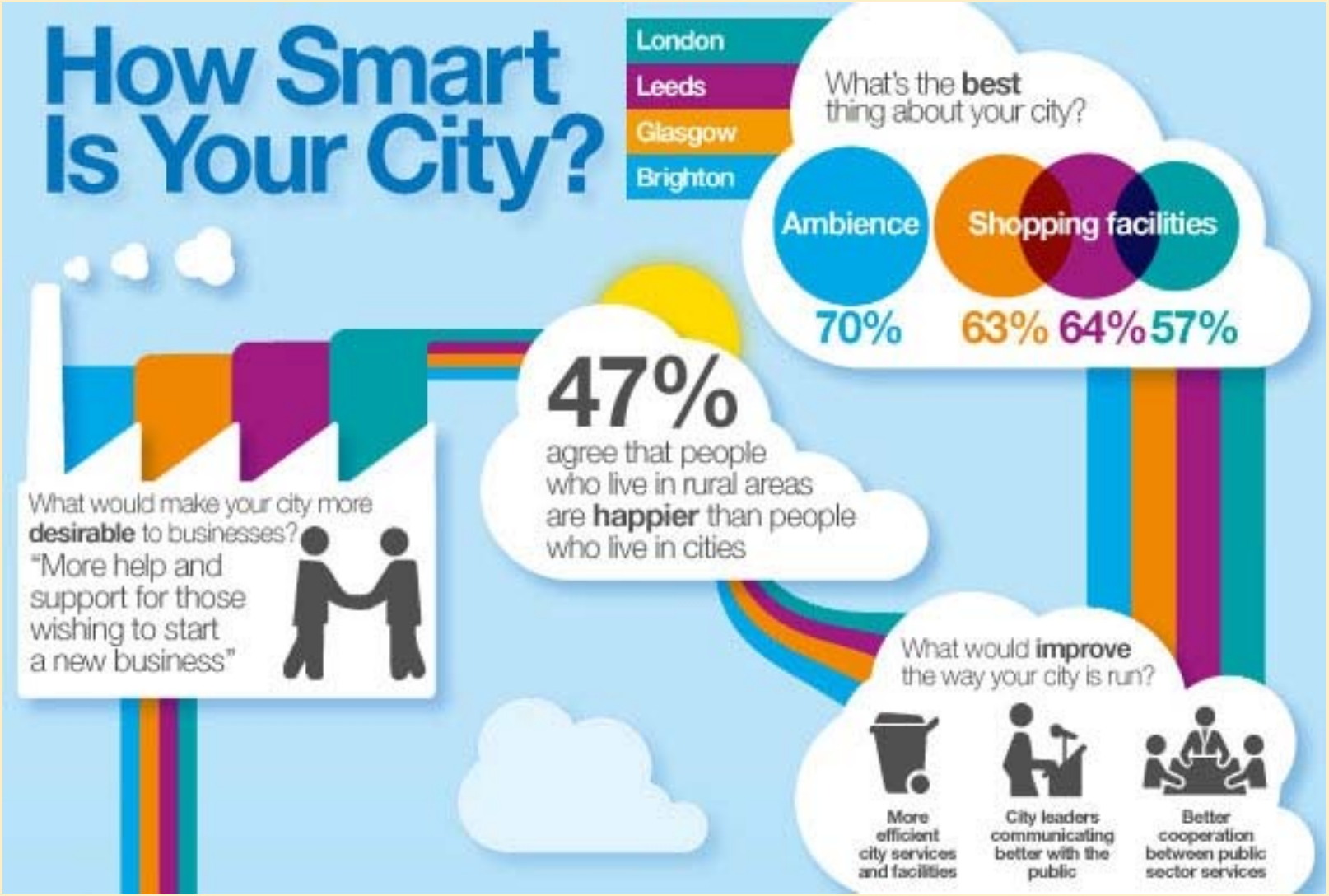
SMARTNESS


smart economy
smart mobility
smart governance
smart environment
smart living
smart people

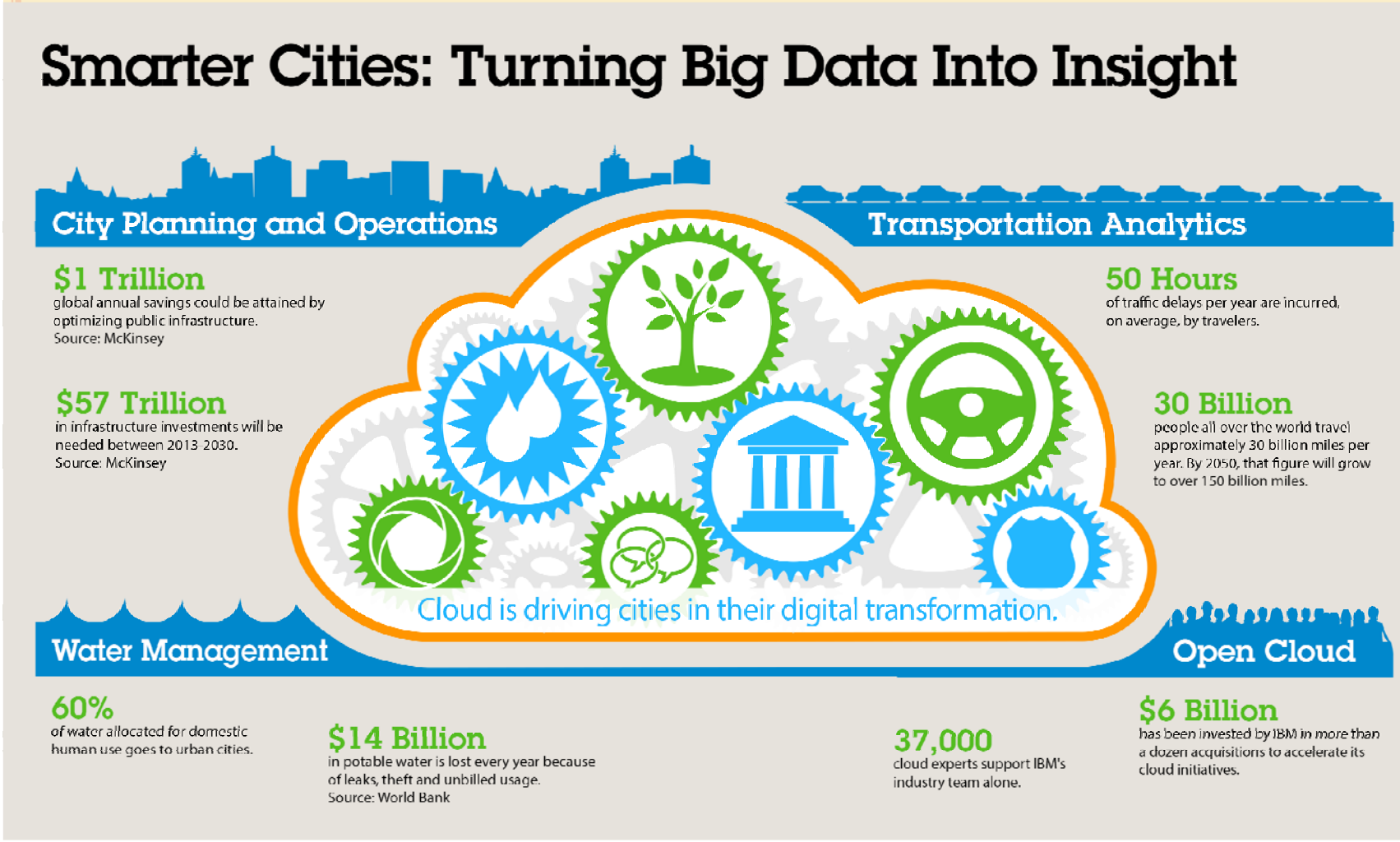
What Can be Smart in a city?



THEN TEST IT?


How Smart Is Your City?
London
Leeds
Glasgow
Brighton
What's the best thing about your city?
Ambience
Shopping facilities
70%
63%
64%
57%
47%
agree that people who live in rural areas are happier than people who live in cities
What would make your city more desirable to businesses?
"More help and support for those wishing to start a new business"
What would improve the way your city is run?
More efficient city services and facilities
City leaders communicating better with the public
Better cooperation between public sector services

Cloud System

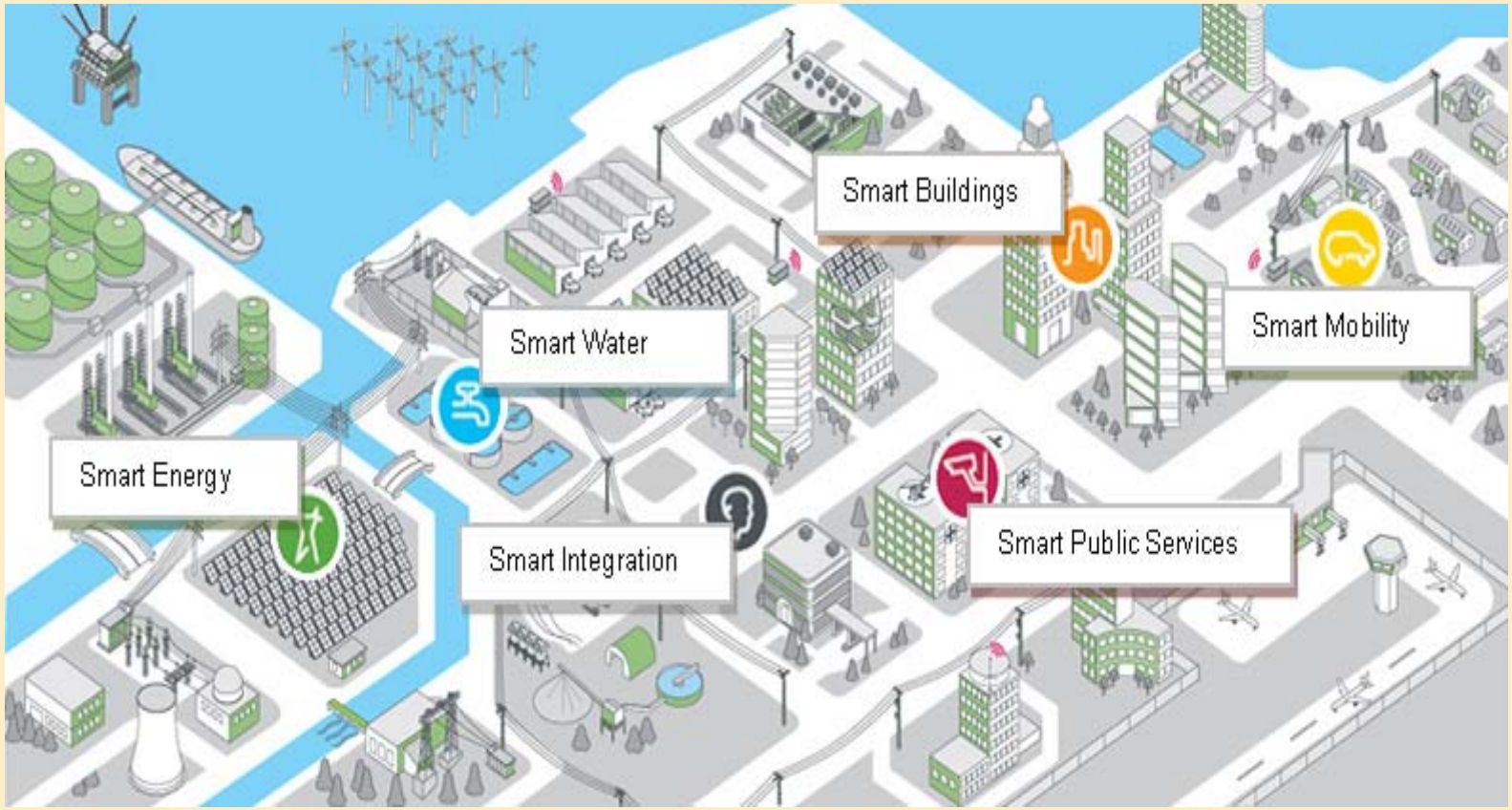


In Summary….

When you think of cloud, you can think of having an unlimited capacity computers that could run very time-consuming operations such as predictive analytics in very short time.

"Smarter Cities" project aims to make cities smarter by predicting the events such as traffic, flood, irregular activities for safety etc. so that the software can prevent them from happening. Such predictions would use a lot of data (this is one reason why we host such software applications in cloud because we do not need to worry about space limitations) and a lot of CPU power to perform the prediction itself (this is the second reason why we need cloud, speed!).

Some Samples



5 STEPS TO MAKE A CITY SMART

1. Vision: setting the goal and the roadmap to get there

2. Solutions: bringing in the technology to improve the efficiency of the urban systems

3. Integration: combining information and operations for overall city efficiency

4. Innovation: building each city's specific business model

5. Collaboration: driving collaboration between global players and local stakeholders

Planning and management

Long term insights based on comprehesive data analysis, followed up through efficient daily management, help a city stay vital and safe for its citizens and businesses

Public safety: Law enforcement

Public safety: Emergency management

Smarter buildings

City planning and operations

Government and agency administration

INFRASTRUCTURE

Fundamental services—such as roadways, mass transit and utilities—make a city desirable and livable, but the key to keeping them viable is readiness for constant change.

Energy

Water

Transportation

PEOPLE

Smarter cities use the system of systems to their advantage when supporting the needs of each citizen through social programs, healthcare and education.

Social programs

Smarter care

Education

SMART CITY INVESTMENTS

:

· **South Korea** : Songdo (Incheon) privately developed city : $35-$42 billion,

· **India:** Lavasa, IPO $437 million (planned), ,

· **China** is the country where the transformation is more quickly: 18+ cities have announced smart city plans. Ningbo:“smart city action plan” $6.4 billion in 5 years, 87 individual projects Beijing, Shanghai, Wuxi, Chengdu, Wuhan, Kunming, Foshan, Shenzhen, Shenyang ($40 million), Hunan cluster (8 cities) and Guangzhou.

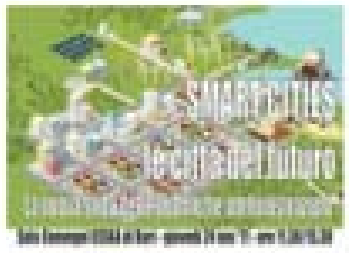
· **United Arab Emirates**: Masdar, $22 billions

· Many other leading Smart Cities: King Abdullah Economic City (KAEC, Saudi Arabia),Malta, Skolkovo (Russia), PlanIT Valley (Portugal), Dubuque (US:Iowa), Holyoke (US:Massachusetts), San Diego (US: California), Amsterdam (NL EUR1,1 billion by 2012), Ho Chi Minh City (Vietnam), Singapore, Sydney, Yokohama & Fujisawa (Japan), Curitiba (BR).

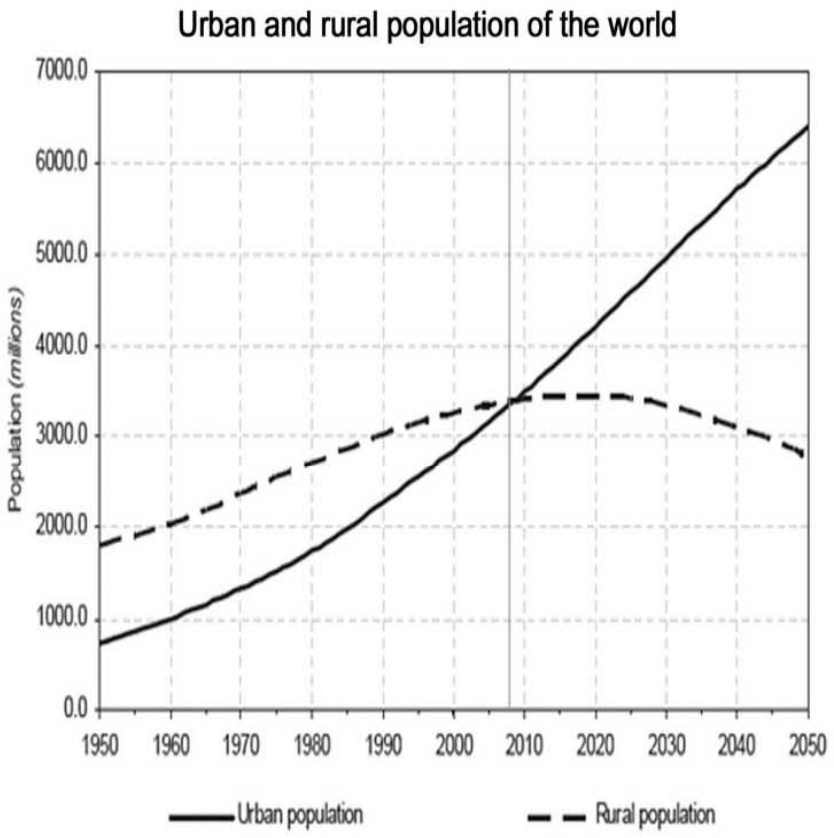
IN ITALY

Smart City revolution is coming to Italy, too. Some early projects were already done in the past, for example European Smart Cities project compared Ancona (51st), Perugia (52nd), Trento (45th) and Trieste (49th) with other early smart EU cities, more recently the Rete città intelligenti was promoted by ForumPA with IBM, including smaller towns effort like Monteveglio with Transition Town or those involved in the ZeroCO2 Communities project.

IN ITALY CONT'D



RAPID URBANIZATION



Rapid Urbanization

Financial pressures

CHALLENGES

Cities are 50% of the world's population, 75% of its energy consumption and 80% of its carbon emissions - and cities are growing.

Cities face huge challenges: congestion, pollution, blackouts, crime, debt and rising costs - while competing with each other for investment, jobs and talents.

Cities need to become **smarter: more efficient, sustainable and livable.**

AND

CITIZENS MUST BE SMART!

AND POLITICANS DO NOT INTERVENE !

THANK YOU SO MUCH!

Refrences;
•http/ict4green.wordpress.com; Donato Toppeta
•www.ibm.com/smartplanet
•Wikipedia ; watering ancient roma
•www.pbs.org/wgbn
•Tempo Engineers&consultants library