

Smarter Cities of the Future

“Making things real...”



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ITAPA Conference
Bratislava, November 2013

The storyline

- ❖ **Compelling Context**
- ❖ **Cities – enabling local smartness**
- ❖ **Three examples of ICT-enabled transformation**



We live in an increasingly inter-connected world

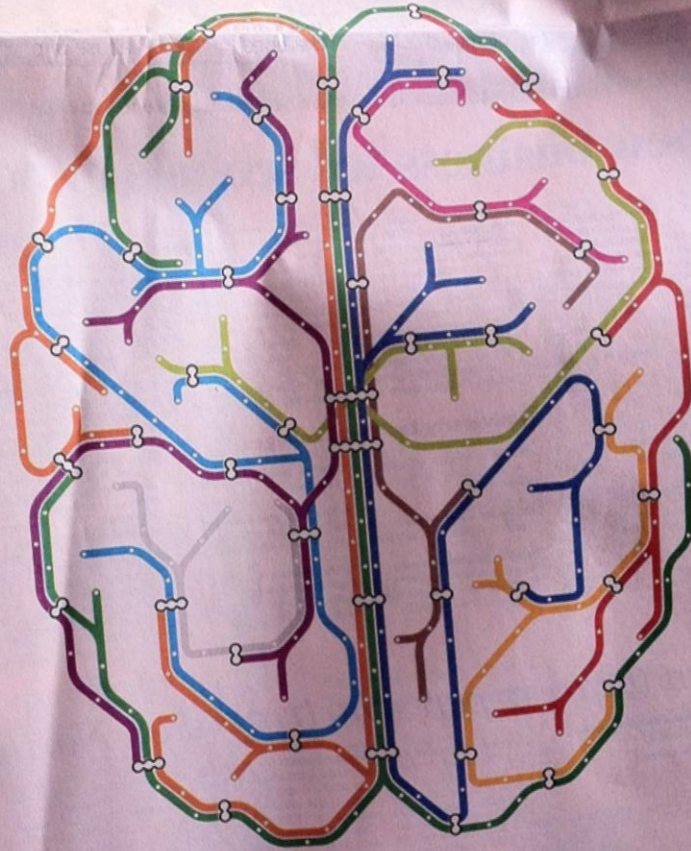


Doing things faster doesn't really help

*30 floors
...in...
15 days!*


*Industrialising
the current model
– just accelerates
consumption!*

In the future, transport networks
will think for themselves.

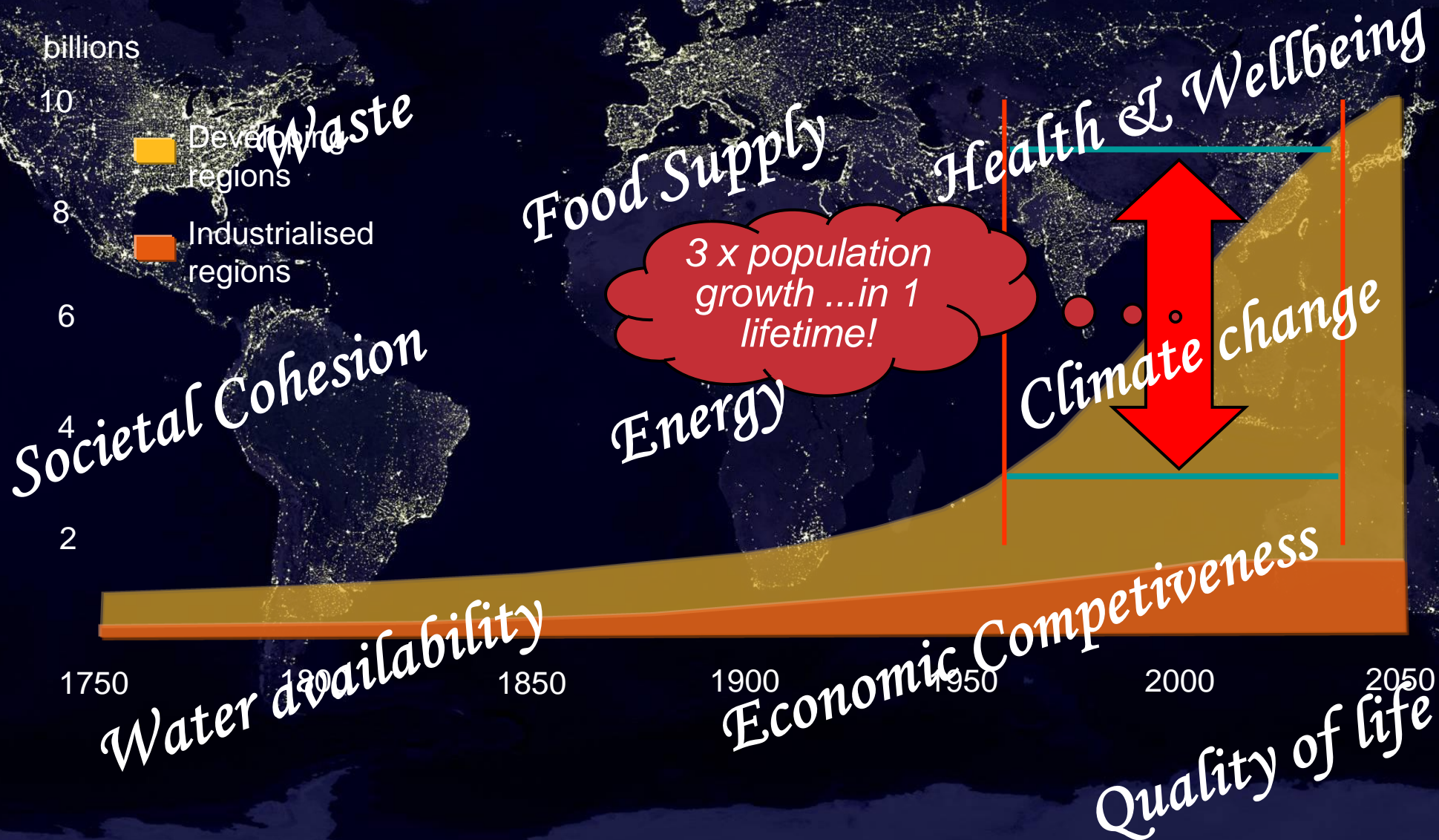


*Doing things
smarter does!*

Tomorrow's trains could be capable of adapting to changing travel patterns.
HSBC is helping finance the evolution of transport systems around the world
and making smart trains a reality. The future starts today.

HSBC 

And there's a compelling reason to do so!
...with profound implications



The storyline

❖ Compelling Context

❖ Cities – enabling local smartness

❖ Three examples of ICT-enabled transformation



<<Smart City>>

Definitions – moving to more holistic (cf technology based)

UK Dept for Business Innovation & Skills (BIS), 2013

6 characteristics of smart city

- a modern **digital** infrastructure
- recognition that service delivery is improved by adopting a **citizen centric** approach
- **intelligent** physical infrastructure
- **willingness to learn** from others and **experiment** with new approaches and **new business models**
- **leadership** with a clear and consistent vision...& a commitment to deliver

De Souza 2012

- *A smart city is **livable, resilient, sustainable, and designed through open and collaborative governance.***

Gartner , 2012

- “an urbanized area where **multiple public and private sectors cooperate** to achieve **sustainable outcomes** through the **analysis of contextual information** exchanged between themselves. The sectors could include **hospitals** or **emergency services** or **finance** and **so on**. The **interaction between sector-specific and intra-sector information flows** results in more resource-efficient cities that enable more sustainable citizen services and more **knowledge transfer** between sectors”.

European Commission (Smart City EIP), 2013

- “Smart cities should be regarded as **systems of people** interacting with and using flows of energy, materials, services and financing to catalyse **sustainable economic development, resilience, and high quality of life**; these flows and interactions become smart through making **strategic use of information and communication infrastructure and services** in a process of **transparent urban planning** that is responsive to the social and economic **needs of society**”

Caragliu et al. 2009

- A city...‘smart’ when investments in human and social capital and **traditional** (e.g. transport) and **modern (ICT) communication infrastructure** fuel **sustainable economic development** and a high quality of life, with a **wise management of natural resources**, through **participatory** action and engagement.

Wiki Smart cities can be identified along six main axes / dimensions:^[3]

- **Economy; Mobility; Environment; People; Living; Gover’ce**

World Bank Triple Helix Indicator (12) sets

- University; **Learning** ; Industry; Market; **Government; Knowledge; eServices; ICT** related Employment; Business R&D expenditure; IP; Knowledge Economy; **i2020**

<<Smart City>>

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De Souza 2012

- A smart city is **livable** through **open and**

Gartner , 2012

- “an urbanized area w
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- **analysis of context**
- themselves. The sec
- services or **finance**
- **specific and intra-s**
- resource-efficient citi
- services and more **knowledge transfer** between sectors”.

Common Themes...

...leadership philosophy

- Well governed
- Open
- Collaborative
- Customer-centric

...processes applied

- Systems thinking
- Integrated cross-sector
- Learning
- Agile / Innovative / Experimental

...outcome goals

- ‘Liveable’
- Resilient
- Sustainable

...use of ICT

- Exploits Information & Technology

...applied to

- Transport
- Energy
- Economy
- Wellbeing
- Built Environment
- Security
- Learning
- ...

...inter-connected city domains

EIP), 2013

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Metabolism
(Cycles)

STRUCTURE

Functions
(Activities & Services)

INFORMATION

PEOPLE

Environment

Infrastructure

Public Space

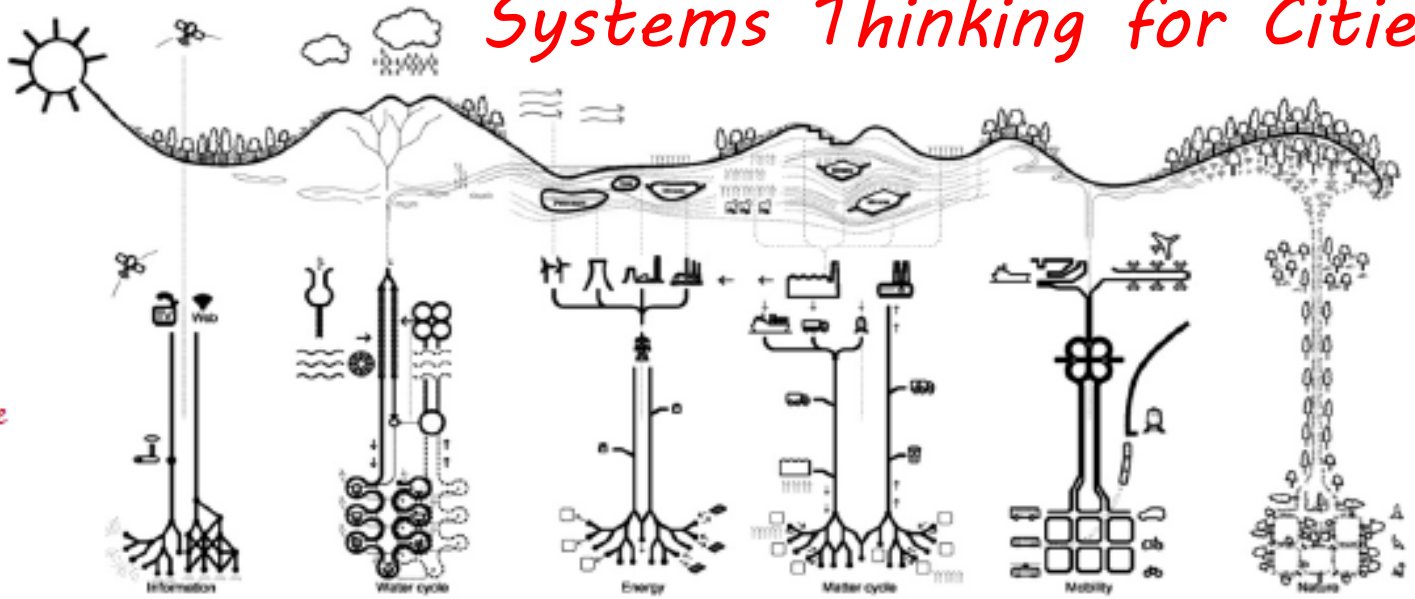
Nodes

Activities

Information

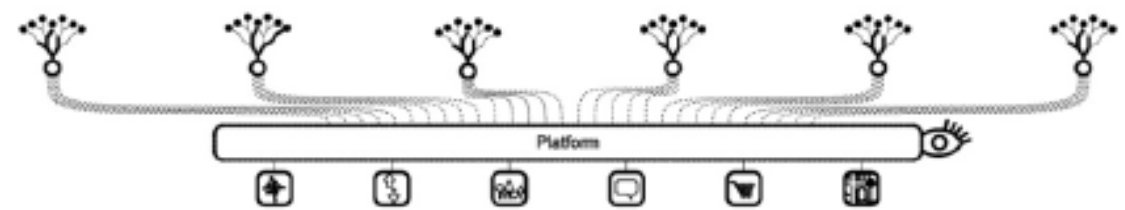
Government

Society

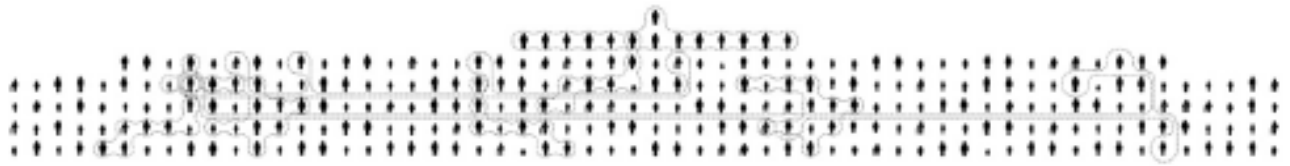


- Housing
- Industry
- Offices
- Shopping
- Leisure
- Health
- Education
- Culture
- Sports
- Administration
- Security
- Services

	1 Object	10 House	100 Building	1000 Block	10 000 Neighborhood	100 000 District	1 000 000 City	10 000 000 Metropolis	100 000 000 Country	1 000 000 000 Continent	10 000 000 000 Earth
•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•

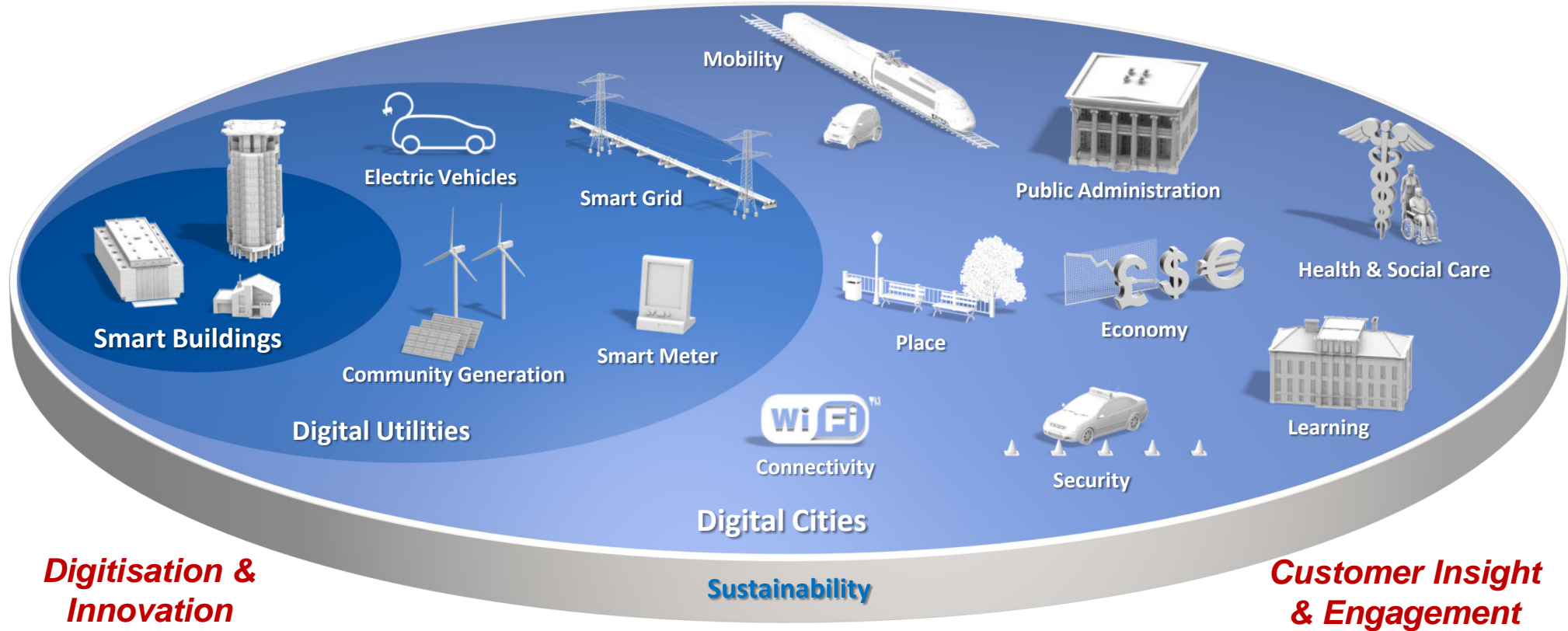


- People
- Organizations
- Companies



Cities – the logical “units of change”

Sustained Collaborative Leadership



Digitisation & Innovation

Sustainability

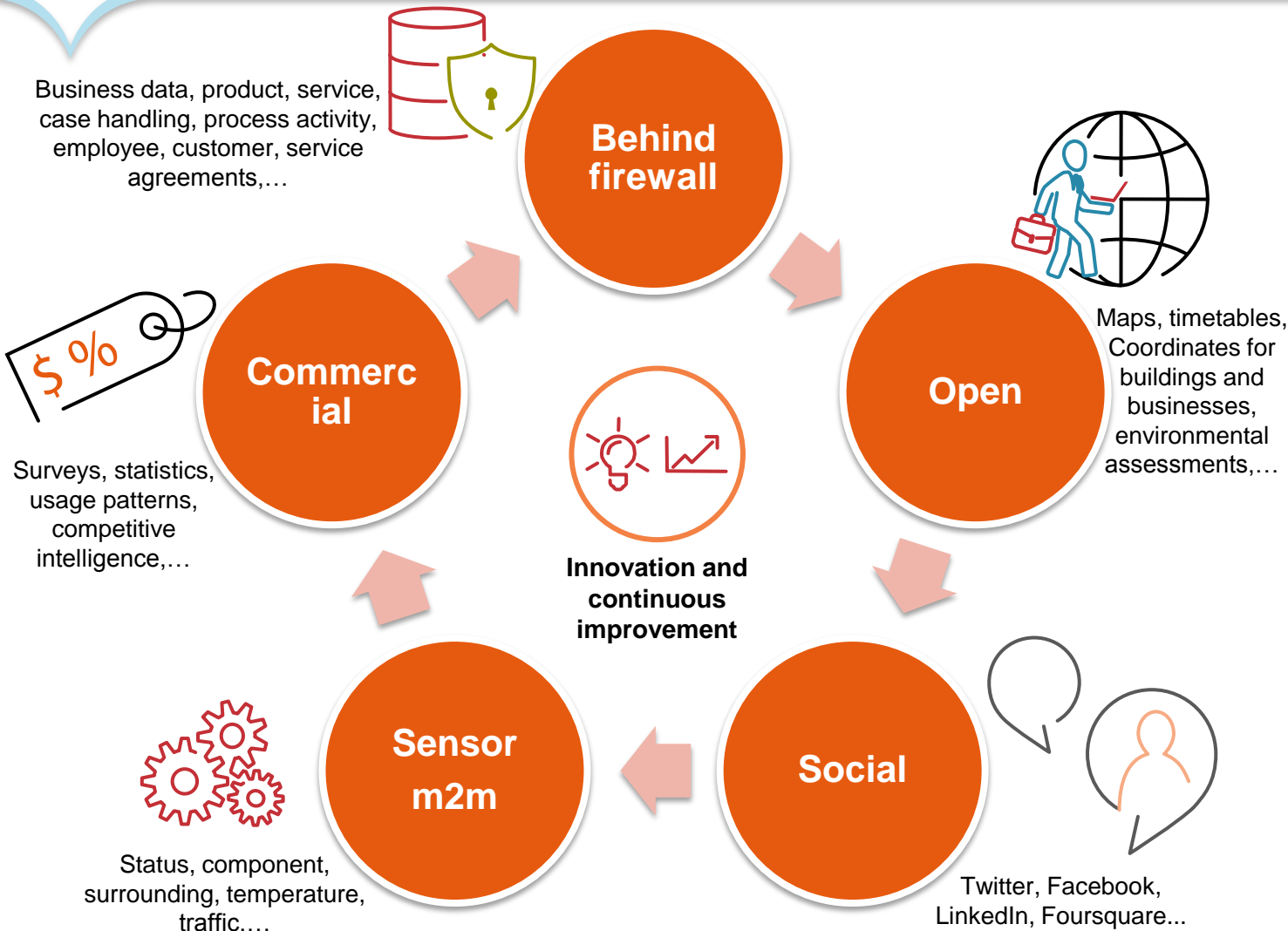
Customer Insight & Engagement

Wonder...

We have generated as much data in the past few years, as we have since humankind ever existed before that

...we are at the mere starting point of knowing the implications, and realising the possibilities

5 Data Pools – combining to create value



Parameters to tune

- Employees
- Culture
- Processes
- Infrastructure
- Software
- Competence
- Data sources
- Data quality



Potential Value

- Environment
- Compliance
- Economy
- Operations
- Public services
- Revenue opportunities
- Brand/Reputation

European Innovation Partnership on Smart cities and communities

Strategic Implementation Plan

Draft version 14

01.10.2013

European Commission EIP on Smart Cities & Communities

- Scale
- Acceleration of proven technology
- Collaboration (PPPP)
- Common Solutions
- Combined funding sources

**Sustainable Urban
Mobility**

**Sustainable Districts
& Built Environment**

**Integrated
Infrastructure &
Processes**

Citizen Focus how we build society into the process as an integral actor for transformation and beneficiary of gains

Policy & Regulation creating the enabling environment to accelerate improvement

Integrated Planning how we work across sector and administrative boundaries; and manage temporal goals

Knowledge Sharing how we accelerate the quality sharing of experience to build capacity to innovate and deliver

Metrics & Indicators enabling cities to demonstrate performance gains in a comparable manner

Open Data understand how to exploit the growing pools of data; making it accessible – yet respecting privacy

Standards providing the framework for consistency commonality and repeatability, without stifling innovation

Business Models, Procurement & Funding integrating local solutions in an EU and global market

Decisions

Insight

Funds



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City-owned assets – a broken basic foundation stone

Real scale opportunity for a different approach!

London Complexity

- **73 parliamentary constituencies**
 - 200+ Government buildings & land
- **1 Metropolitan Authority**
 - 153 hectares land; 14 buildings; 1 congestion zone
 - Metropolitan Police –180 police stations
 - Transport – 260 Tube Stns; 249 miles track; 2,400 bridges; 221 escalators & 71 lifts
 - 100+ Fire Stations, and 70+ Ambulance stations
 - Legacy Devlpt Corp – 46 hectares land, &10 bldngs
- **33 Local Authorities**
 - 1,970 Cllrs; 2 cities; 3 royal boroughs; 29 boroughs
 - 100+ commons &parks; 66+ street markets
 - 17 waste authorities
 - 25 cemeteries, and 6 crematoria
- **1 Health Local Area Team**
 - 30 Clinical Commissioning Groups; 70+ hospitals
- **Justice:**
 - 53 Courts; 65 offices; 9 prisons
- **8 Royal Parks**
- **5 Royal Palaces**
- **240 museums**
- **22 universities (+ 7 foreign); 60 colleges**
- **7 Power stations**
- **4 Water utilities; 1 Water & Sewage Utility**
- **34 Thames Bridges**
- **9 Airports**
- **1 Port**



...and it continues...

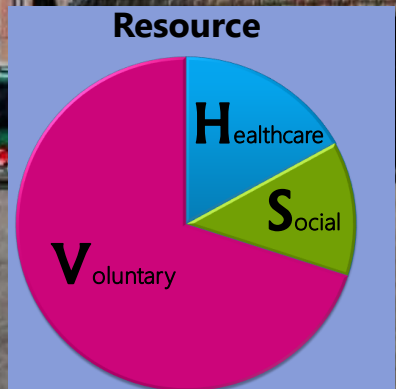
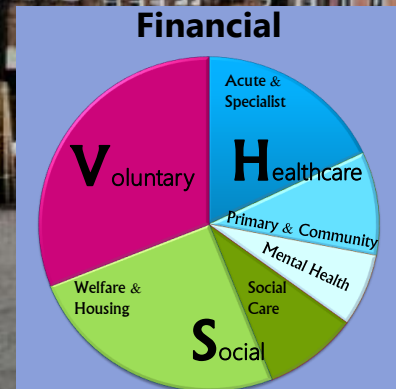
- **The Average local Authority comprises...**
 - 20,000 social housing properties
 - 15,151 street lights
 - 909 allotments
 - 590 bus stops
 - 550 miles of footpaths
 - 200 commercial vehicles in the fleets
 - 182 traffic lights
 - 1 Town Hall (some have more)
 - 58 primary schools
 - 46 Doctors surgeries

Collaborative Rented (aaS) solution

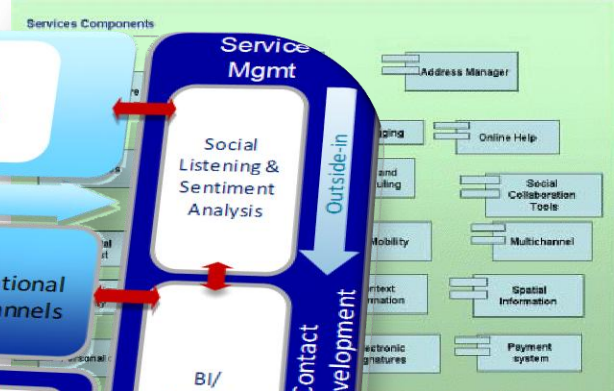
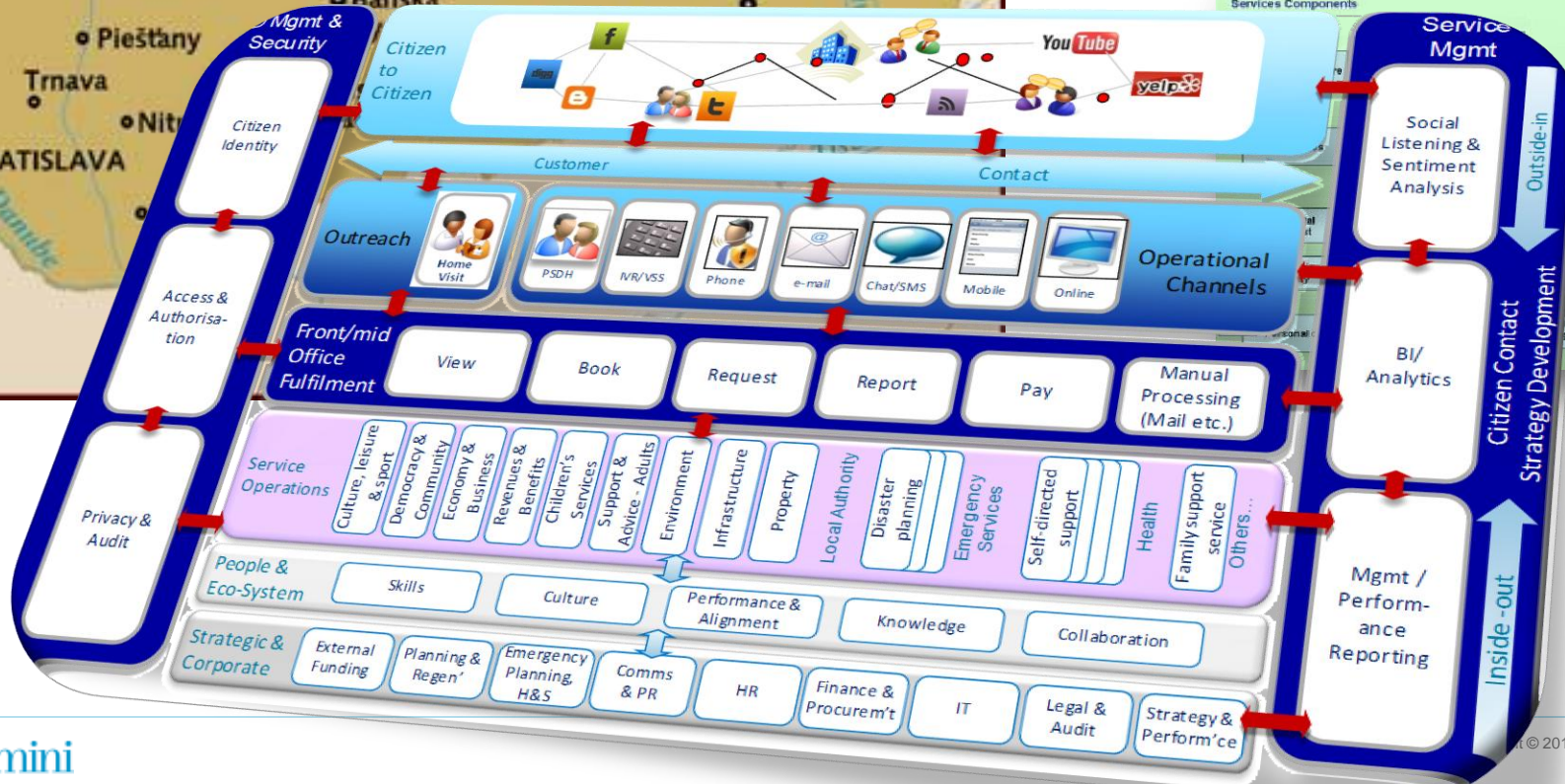


Transforming Health & Wellbeing outcomes

Care Optimiser the 'grit in the oyster'

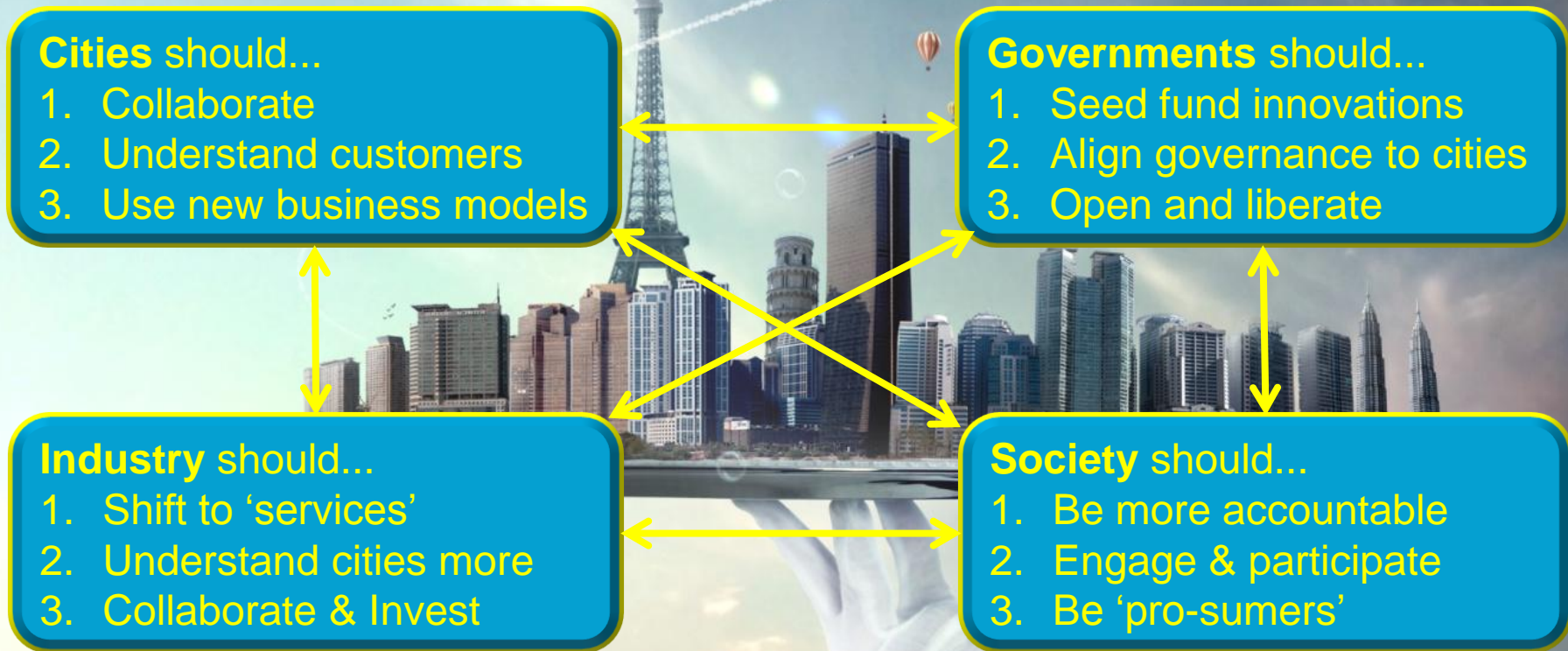


Information Platforms



Smarter Cities of the Future

Requires change all around!



...focus on similarities, not differences