

JESSICA for Smart and Sustainable Cities

Defining Smart and Sustainable Cities

Professor Mark Deakin, Edinburgh Napier University



Definitions....

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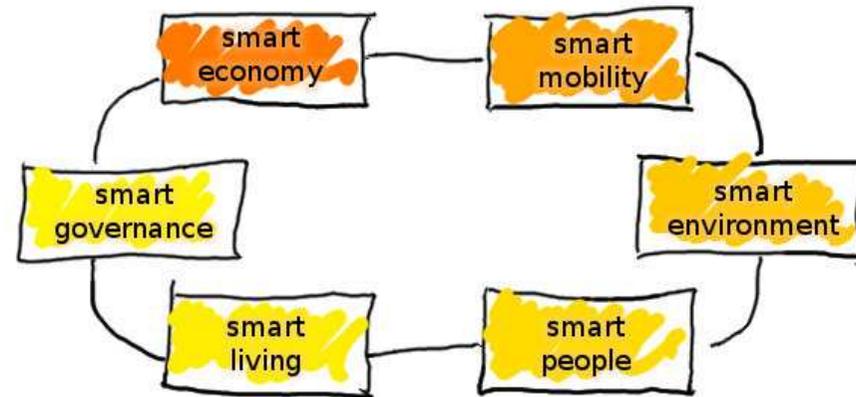
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Giffinger, et.al (2007: 11)

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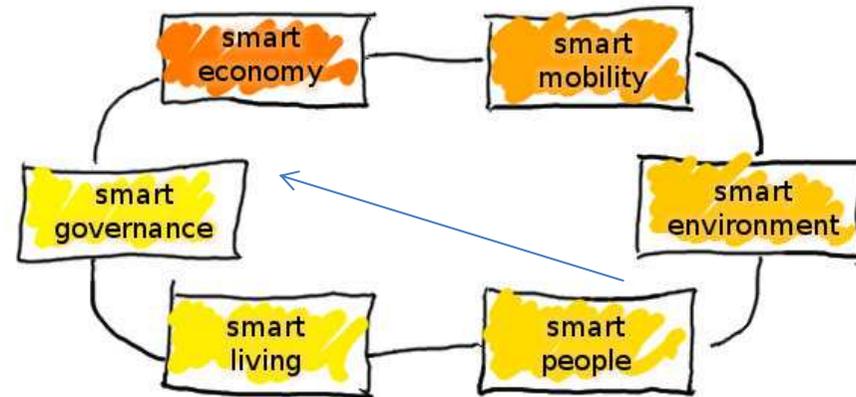
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"A Smart

combinat Another more recent definition of smart cities cuts
independe across this and suggests cities are smart:

Giffinger, "when investments in human and social capital and
traditional (transport) and modern (ICT)
communication infrastructure fuel sustainable
economic growth and a high quality of life, with a wise
management of natural resources, through
participatory governance"

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people, gov

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capital, par

competitive

a 31 point

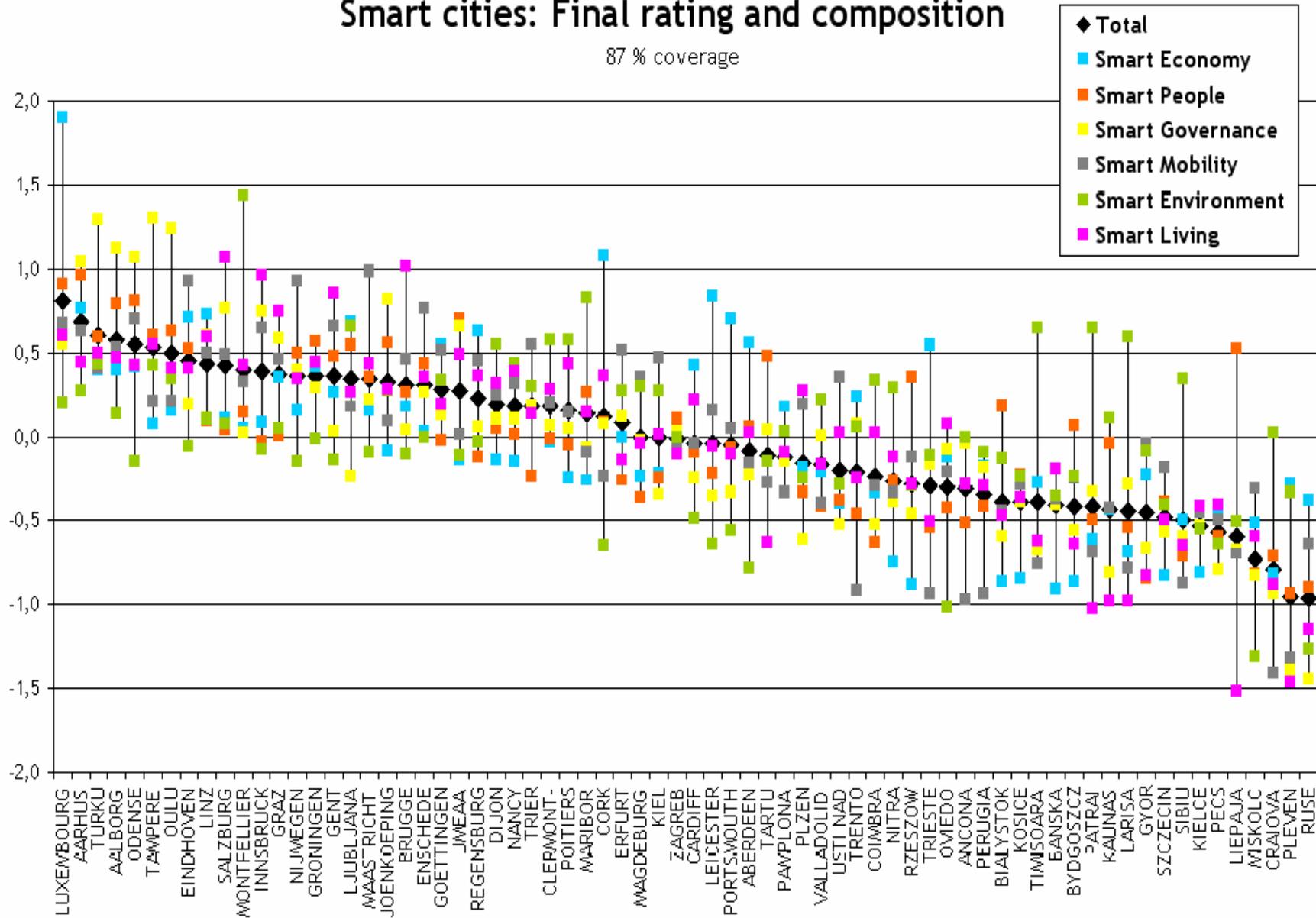
Caragliu, et.al (2011: 70)

a 31 point factor analysis and set of 74 performance indicators.

Evolution...

Smart cities: Final rating and composition

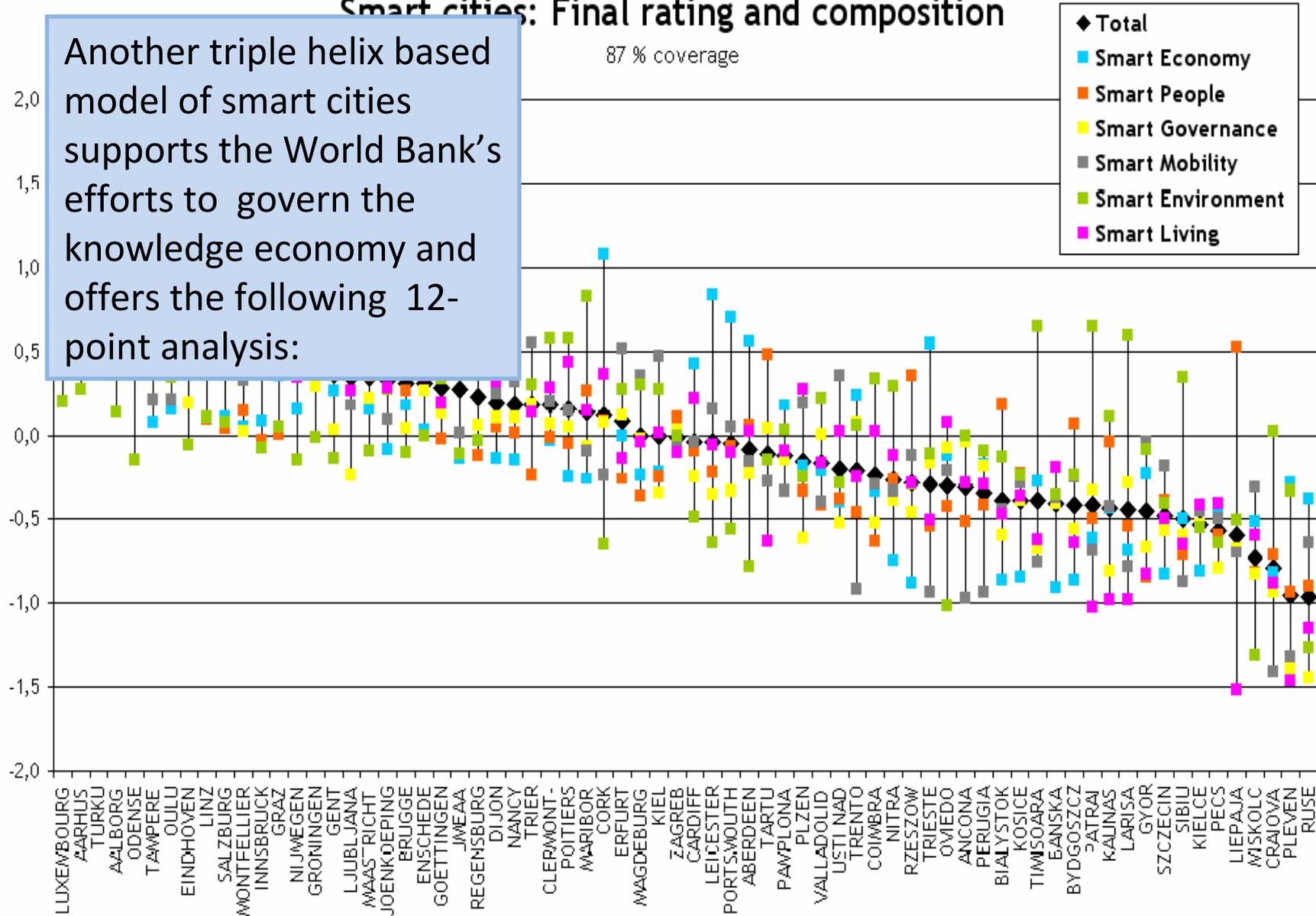
87 % coverage



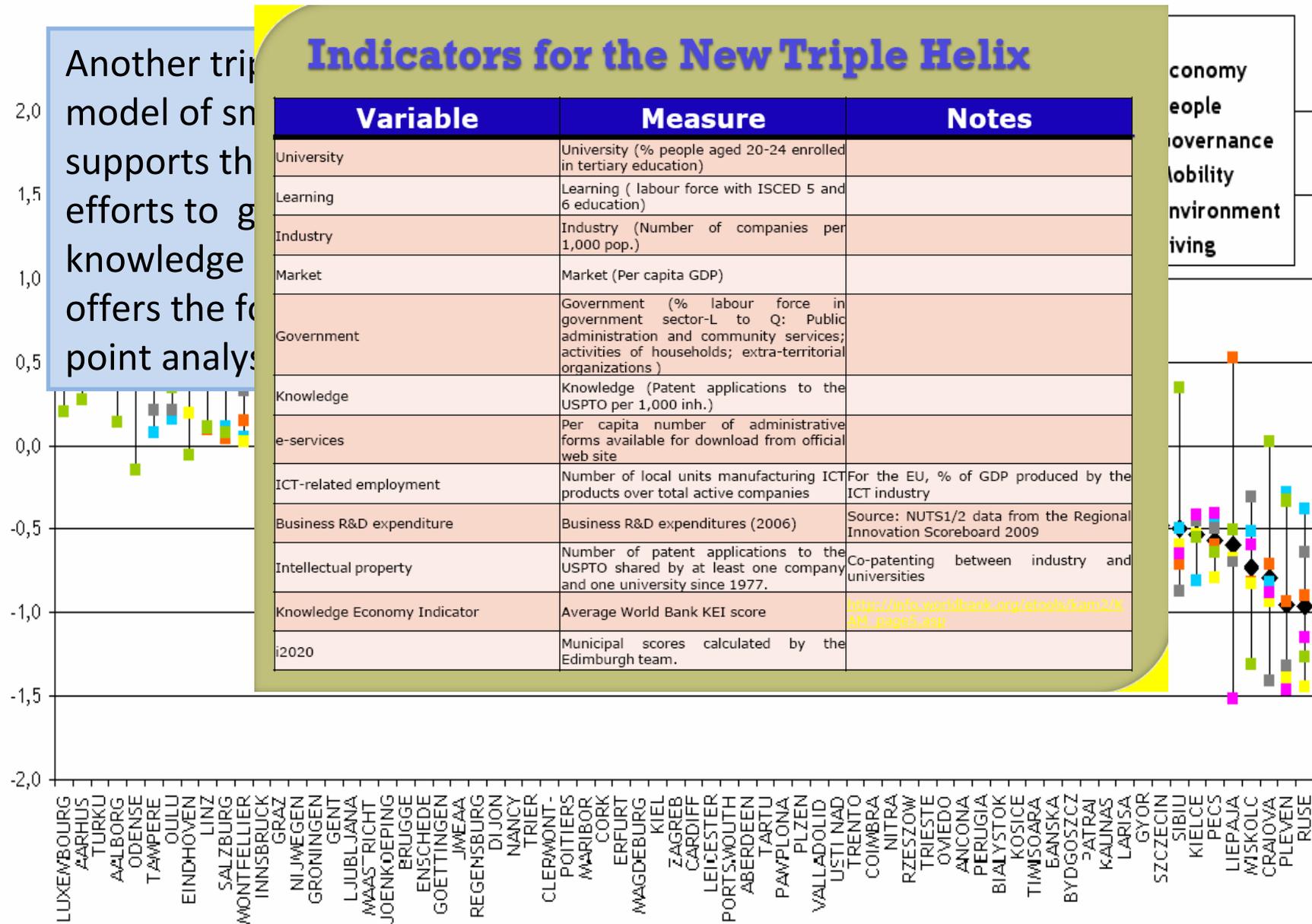
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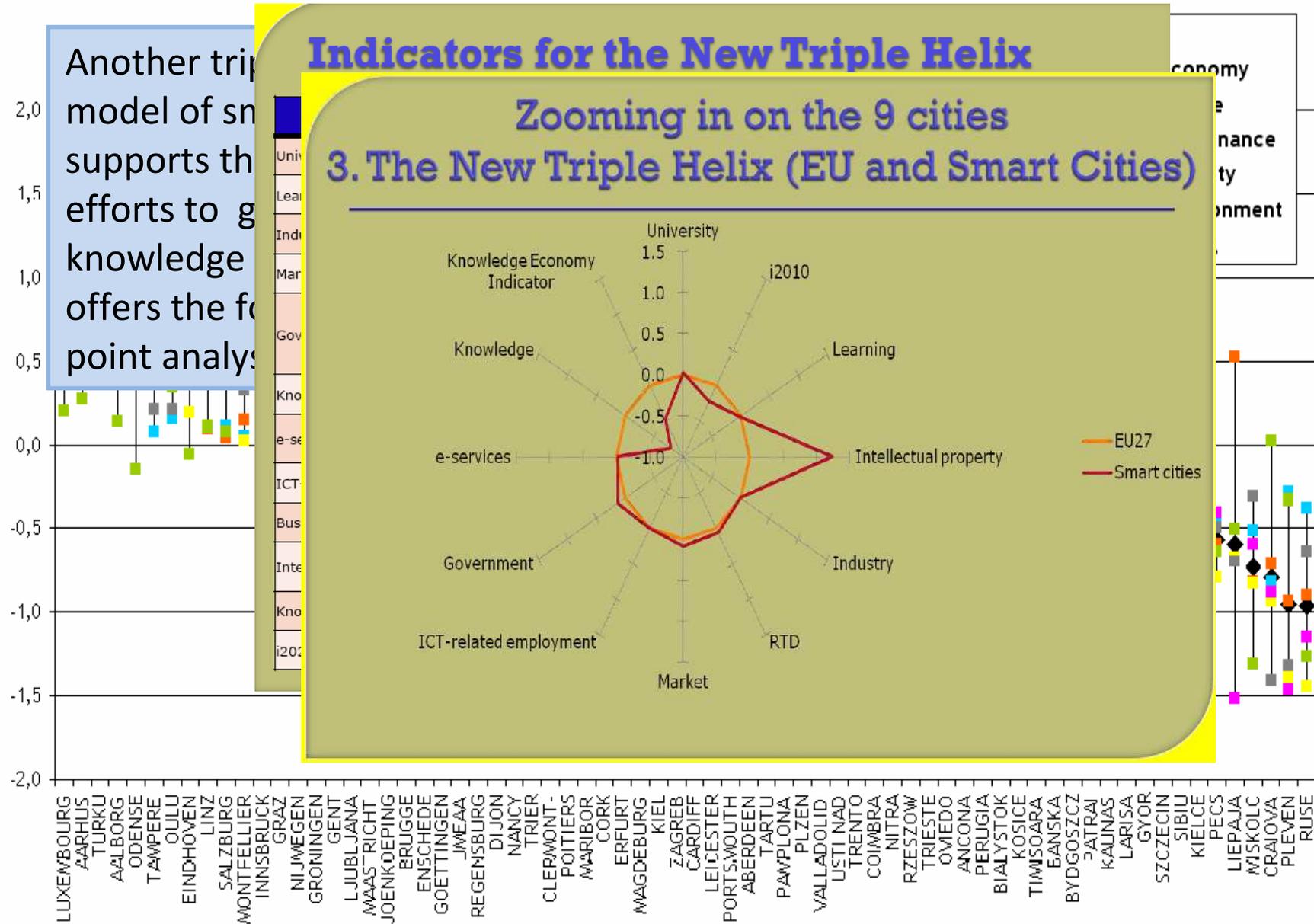
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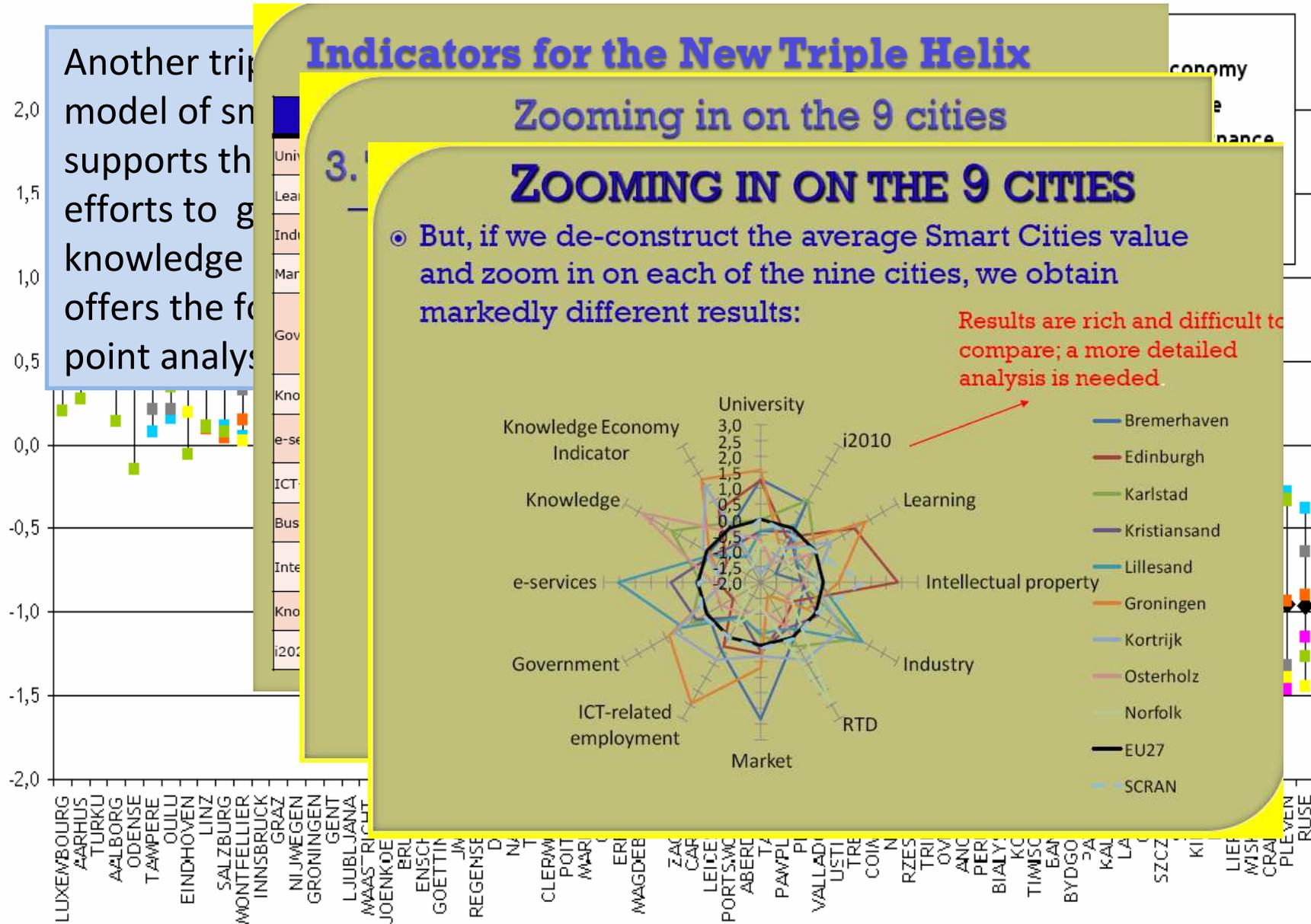
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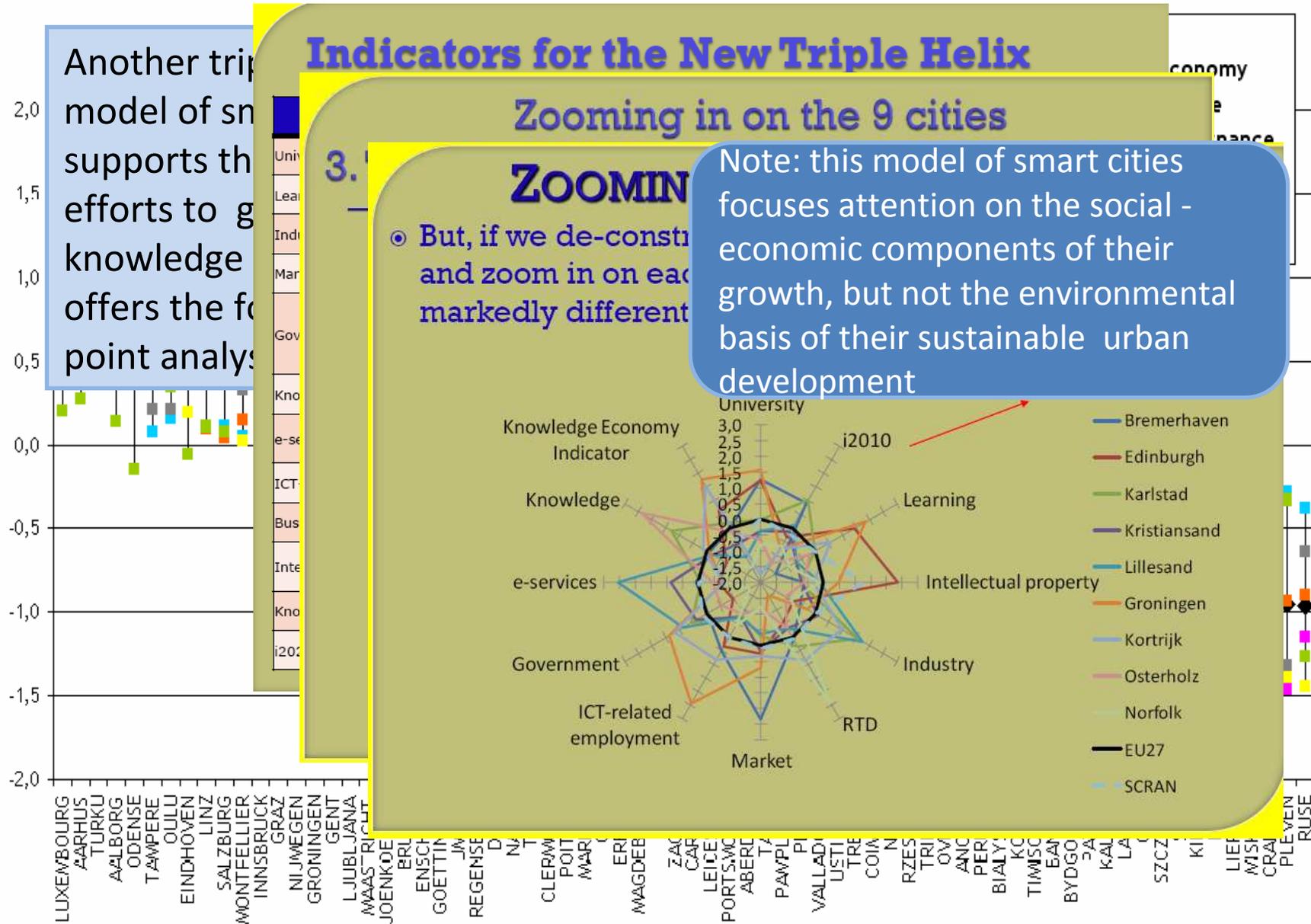
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What might a smart city look like ...



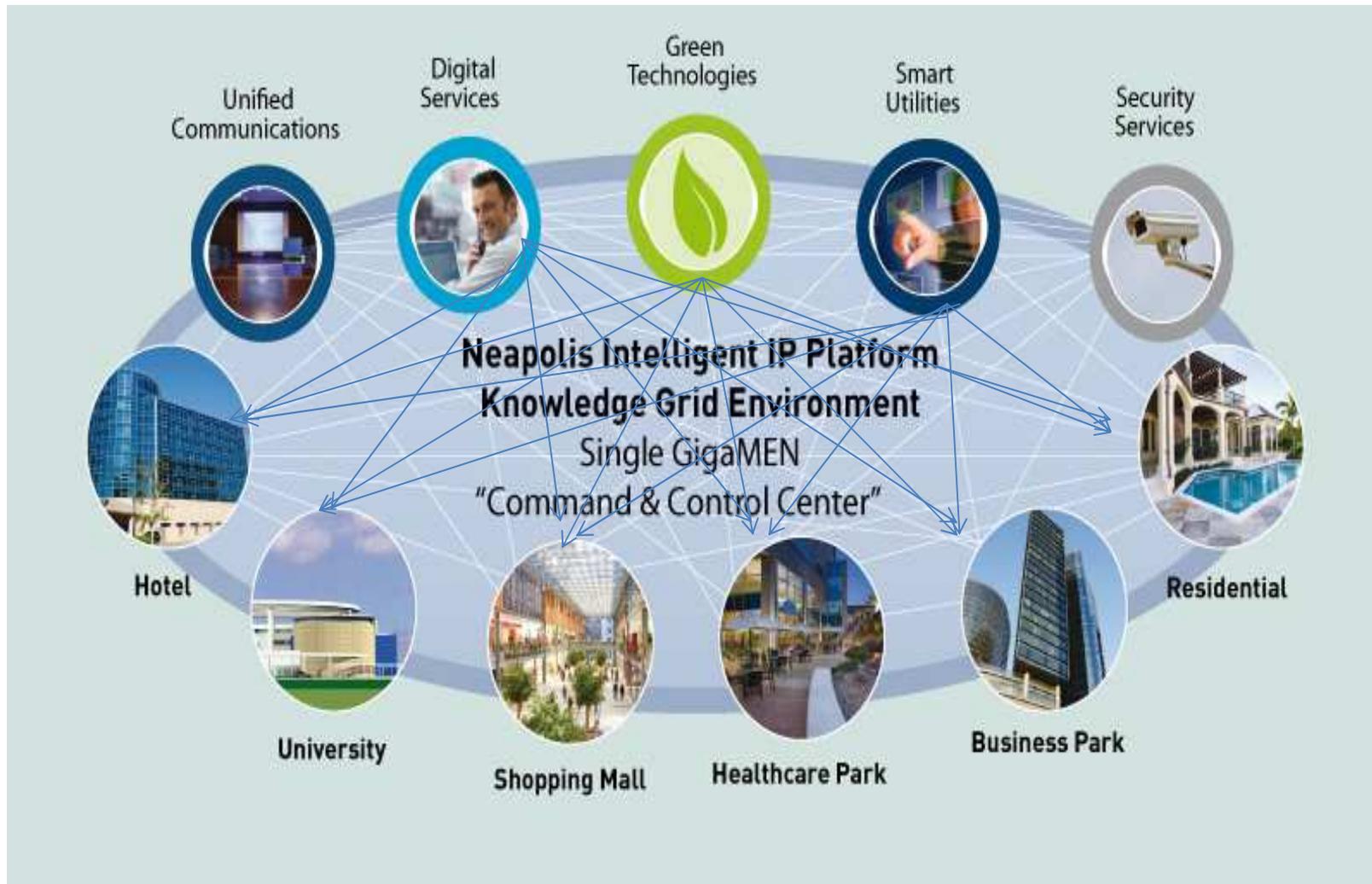
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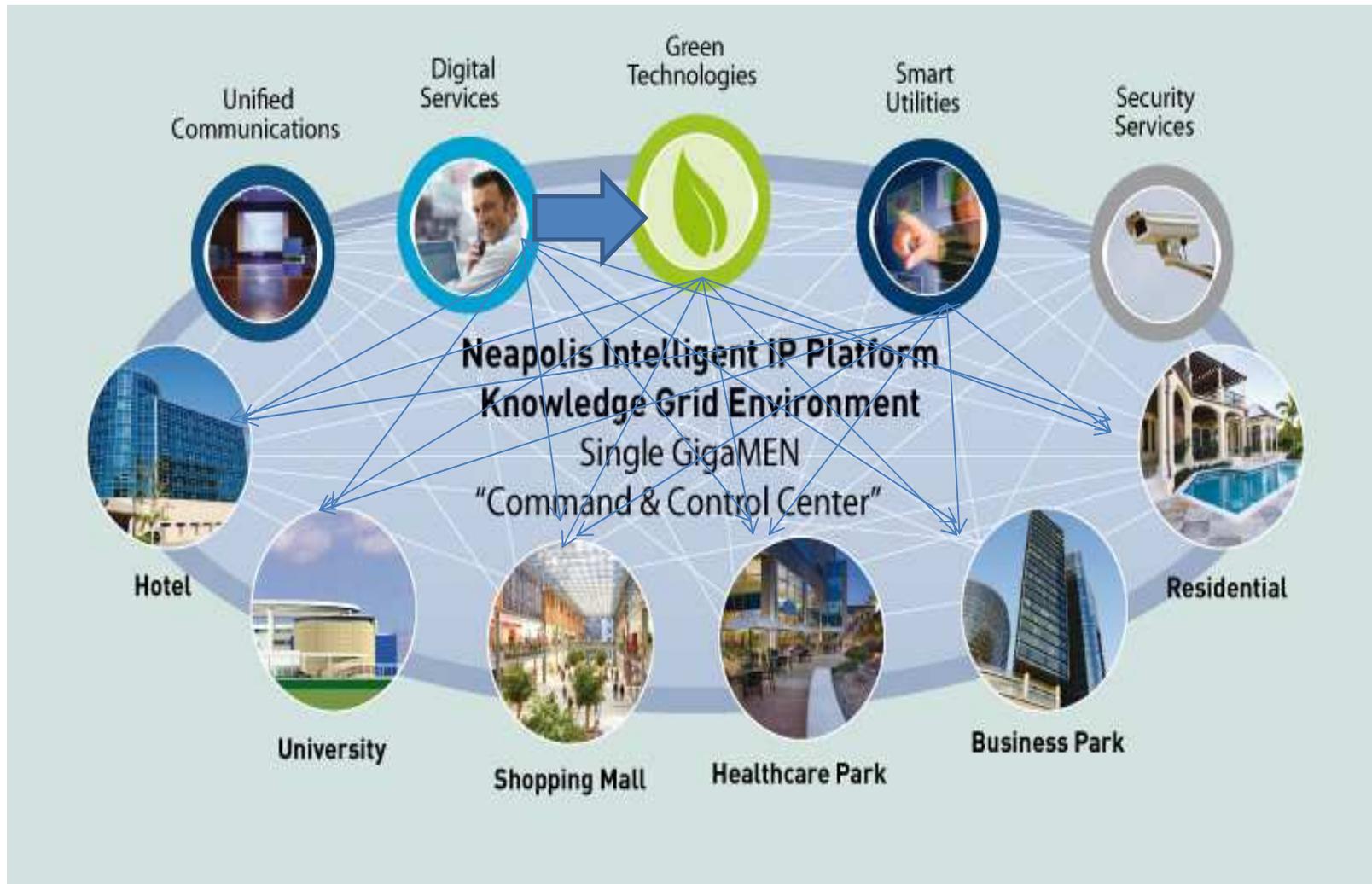
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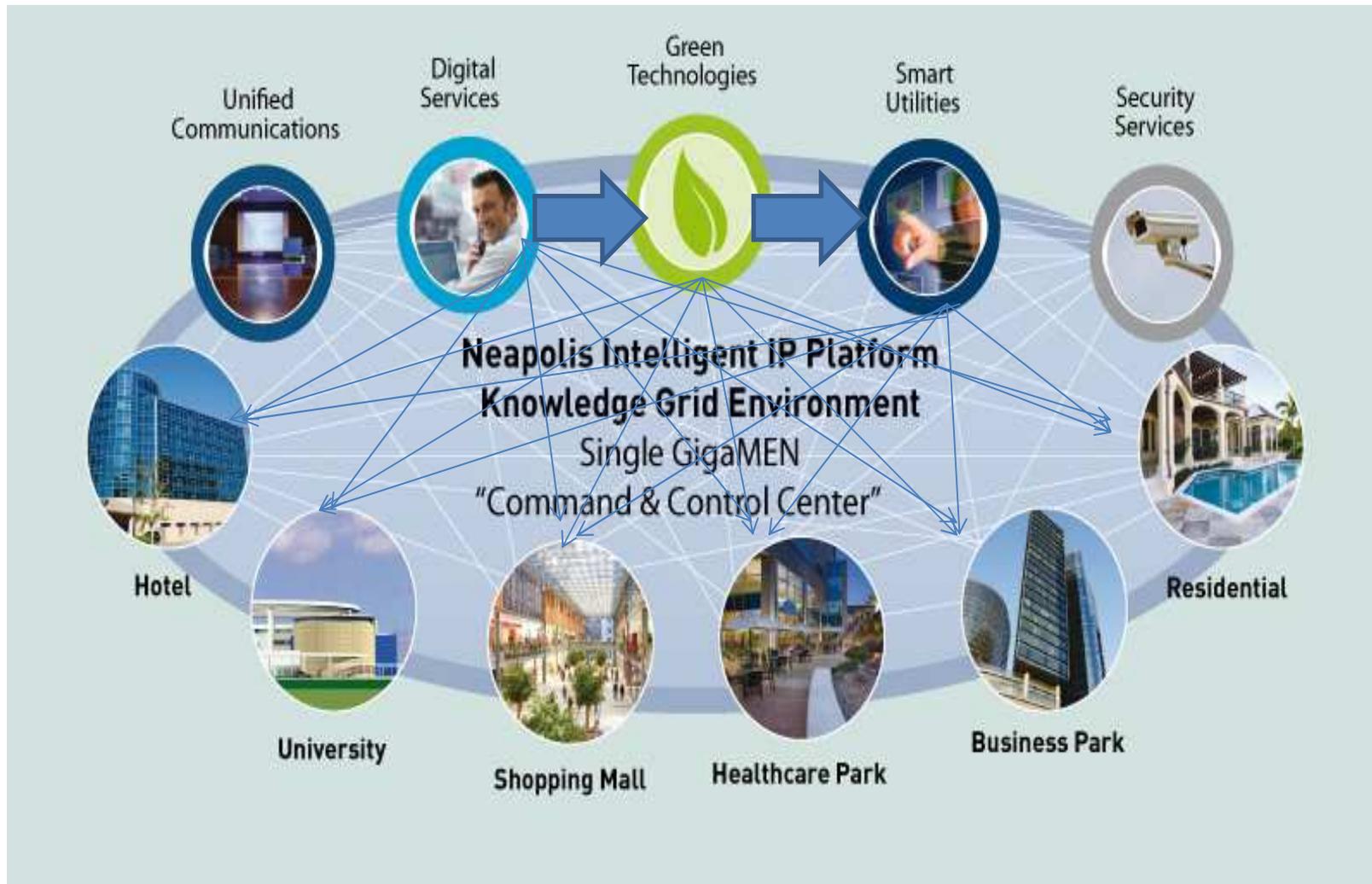
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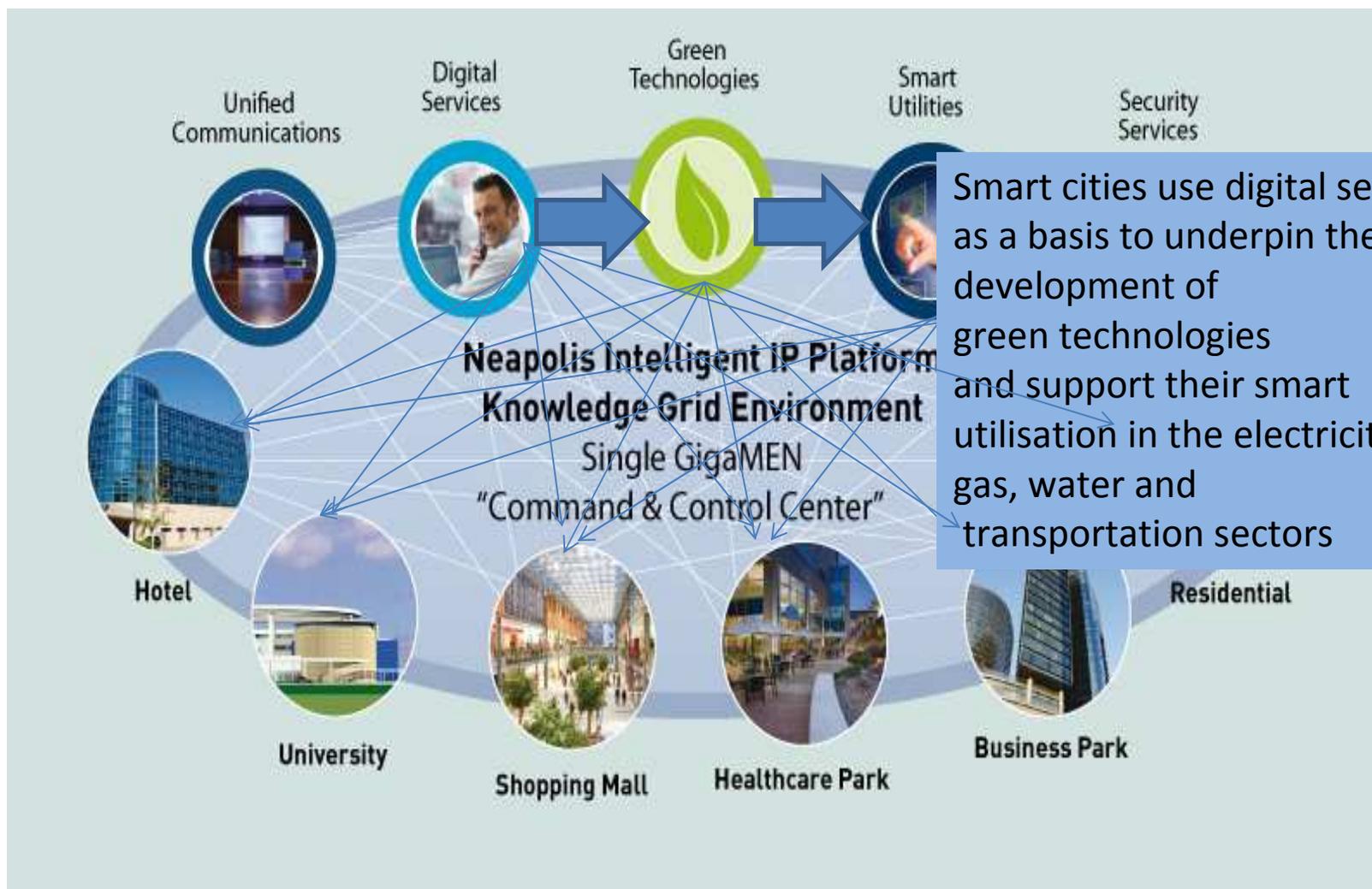
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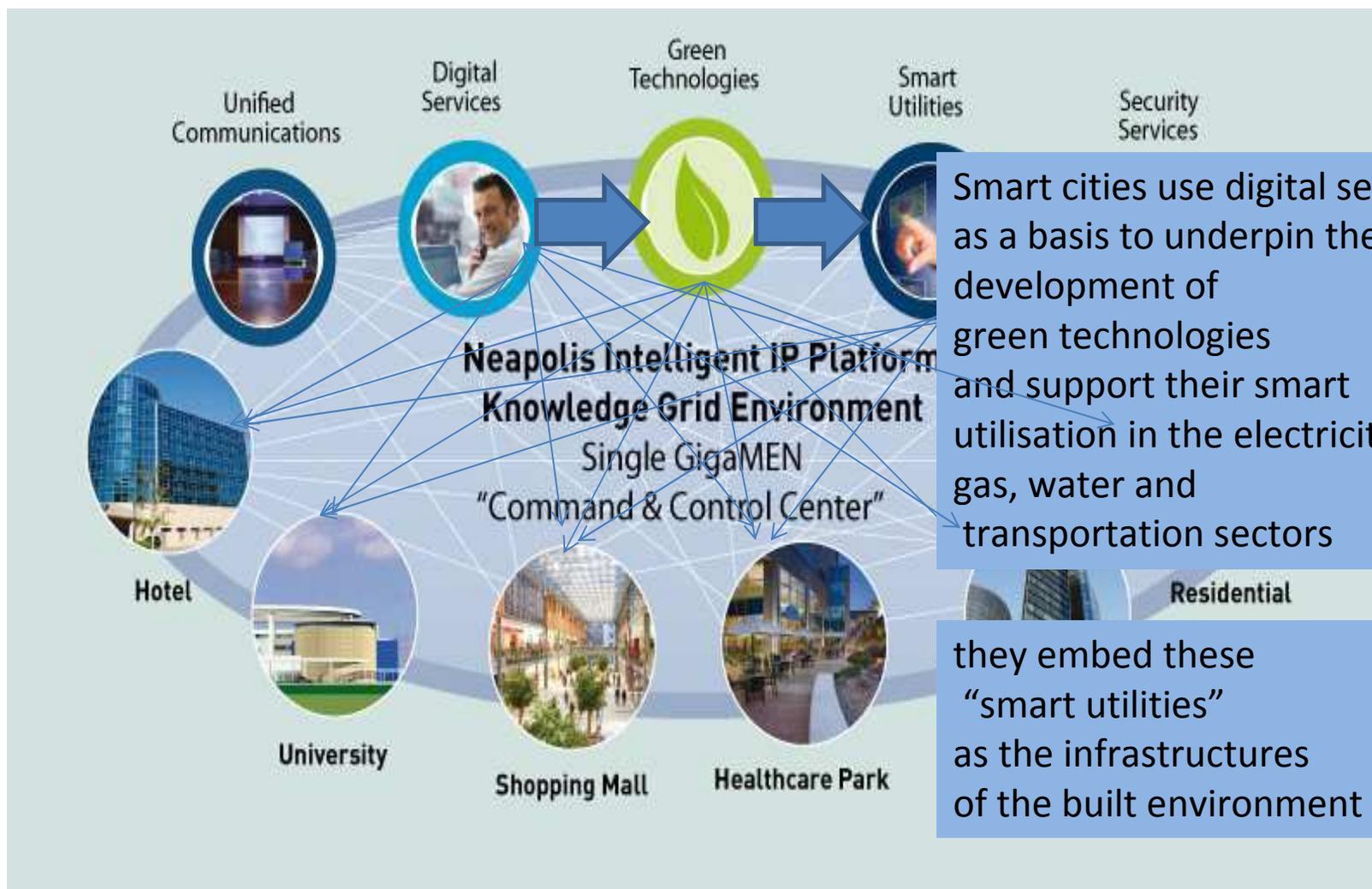
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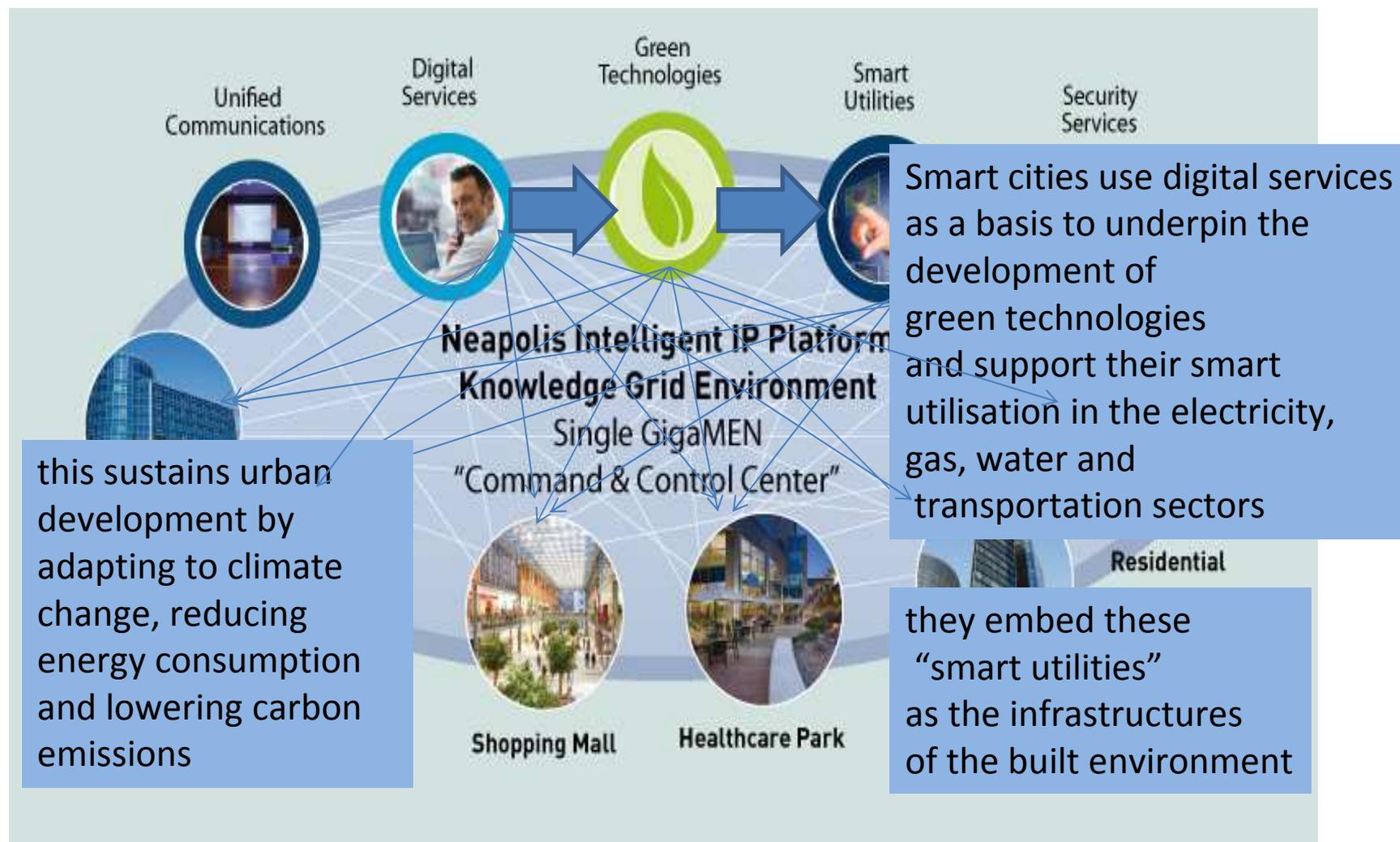
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Master-plans



Master-plans





Master-plans

Digital Strategy

*The Digital Strategy aims to create a **'digital masterplan'** for the Manchester city-region.*

This plan will be used to guide future investment and bring together industry, research bodies and community representatives to develop new ideas for services that will benefit residents, local business and the wider community.

One of the key aims for the Strategy is to put in place super-fast broadband across Manchester. We aim to do this by creating a new 'open access' network, putting in place fibre to the premises connections, advanced wireless and a new internet 'Hub' exchange.

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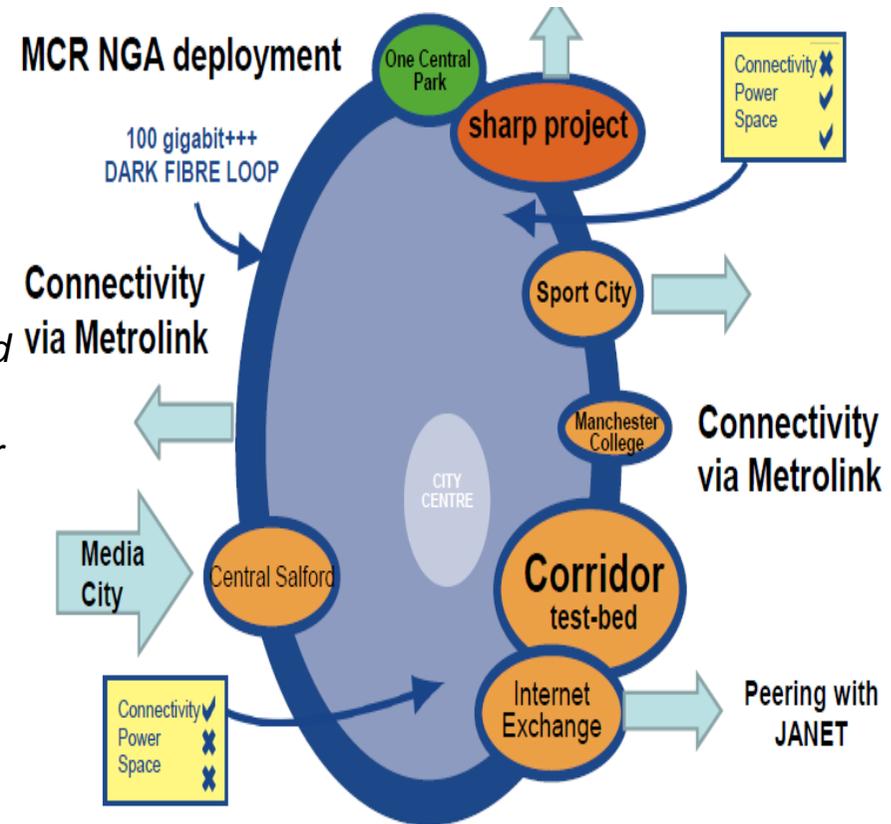


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Digital Inclusion+Living Lab+Open Access+Co-ownership

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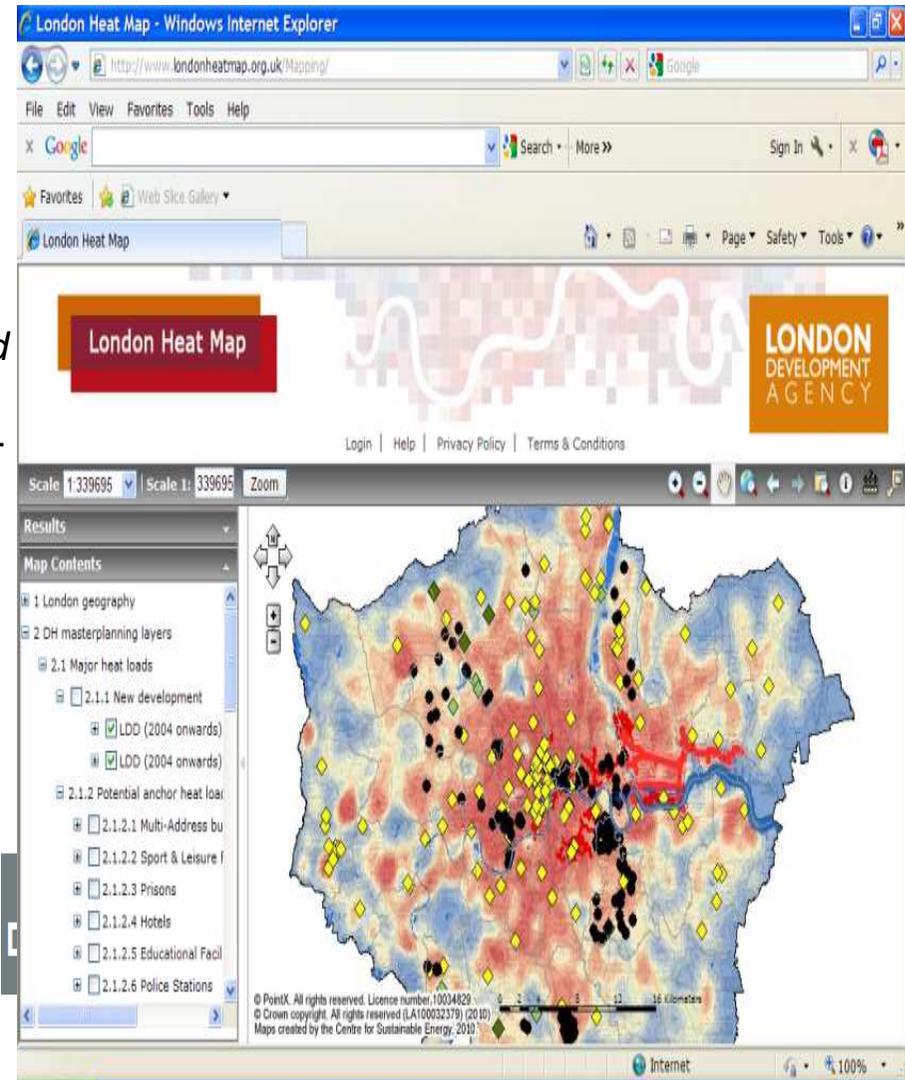


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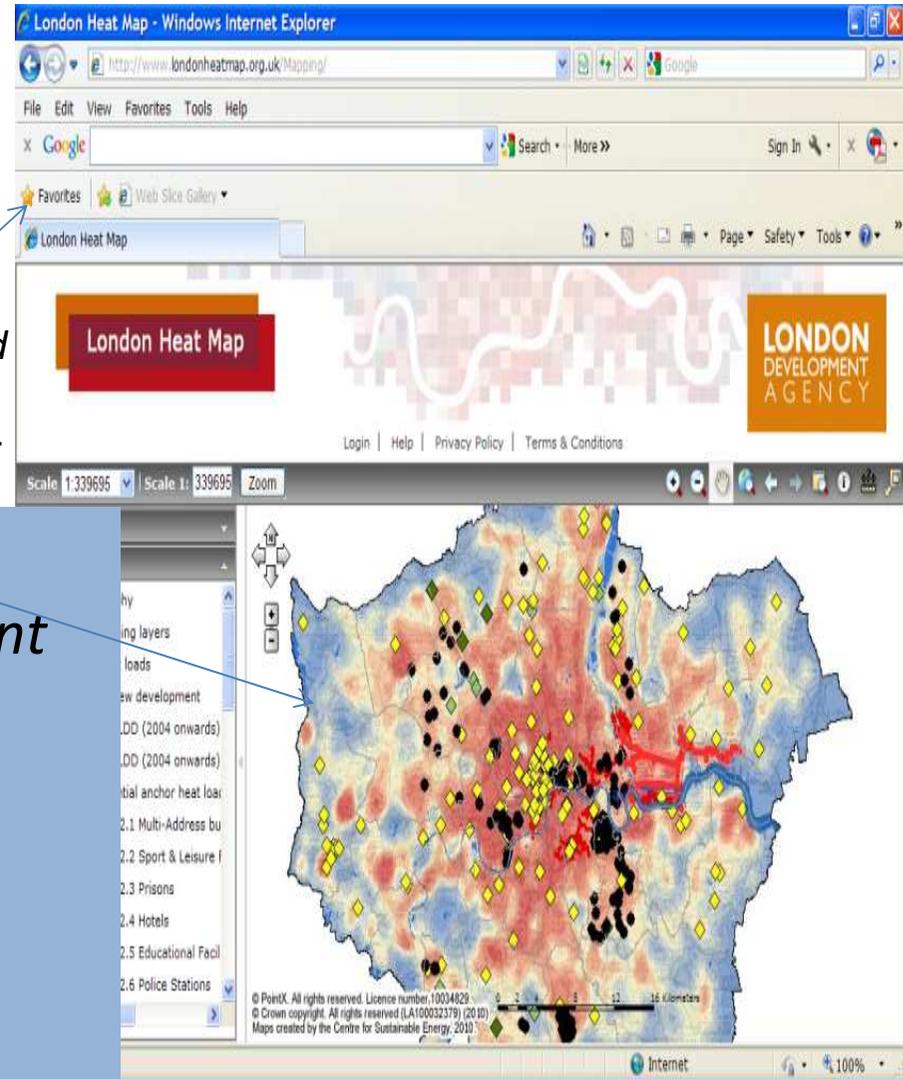


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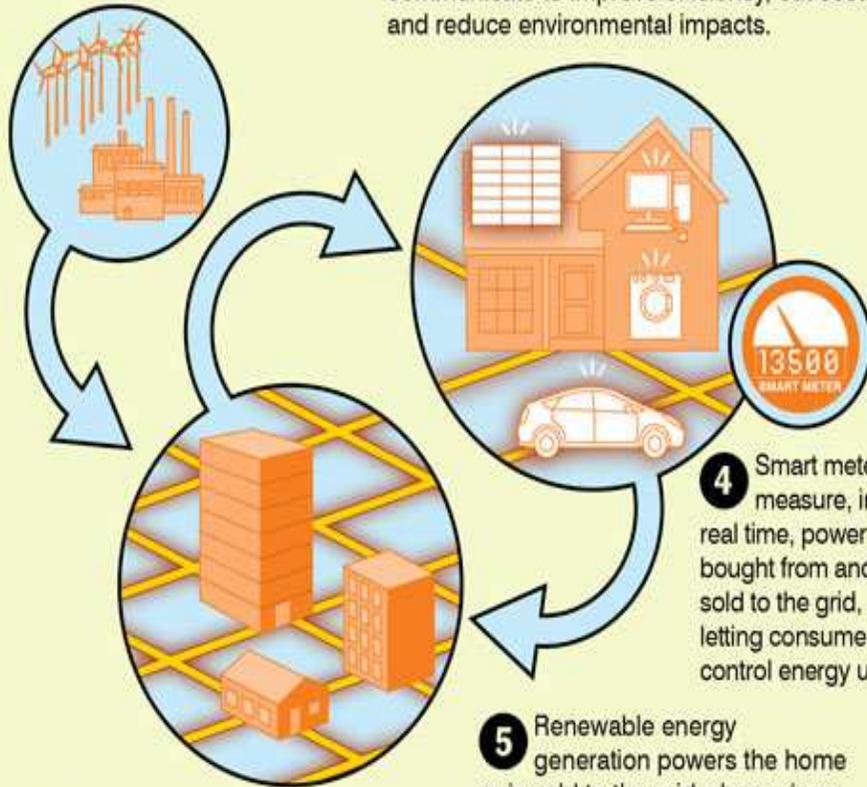
and the **digital master-plans** underpinning the development of green technologies and supporting their smart utilisation as the embedded infrastructures of the built environment



Smart grid basics

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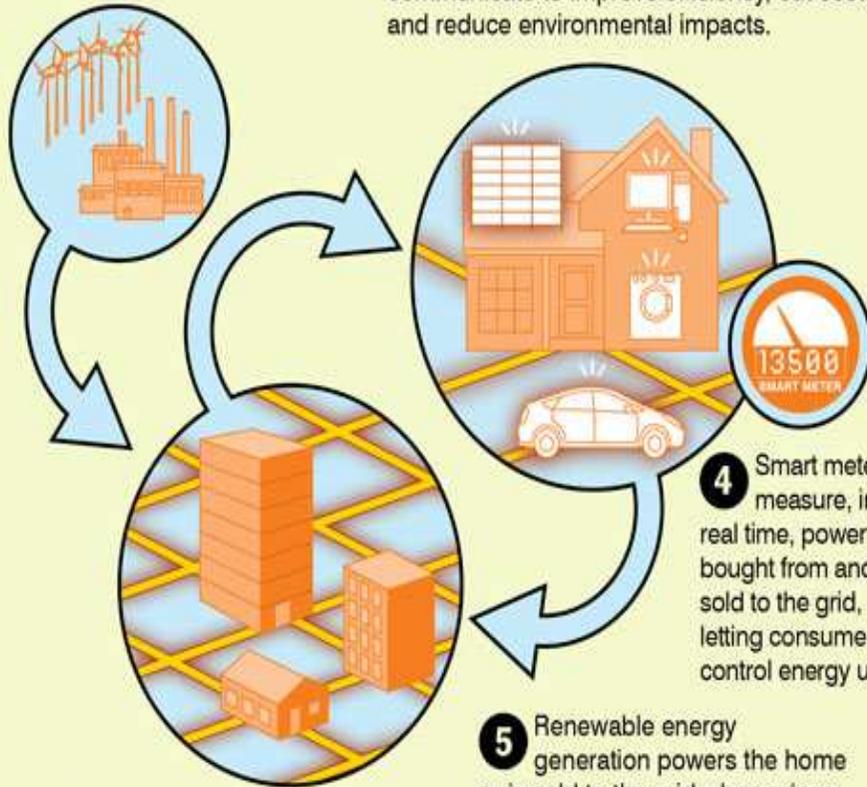
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Icons by Carol Zuber-Mallison

Smarter buildings¹

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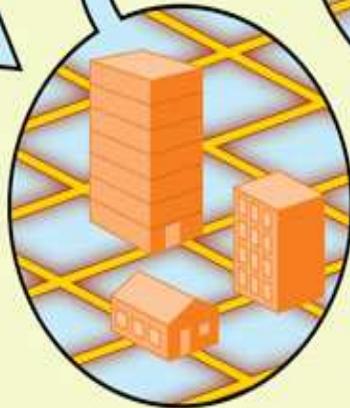
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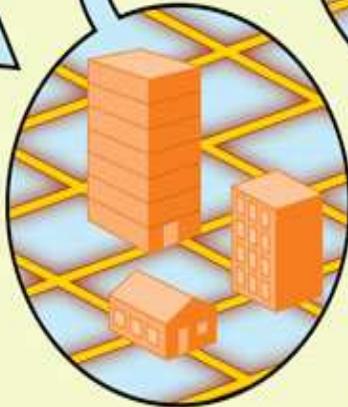


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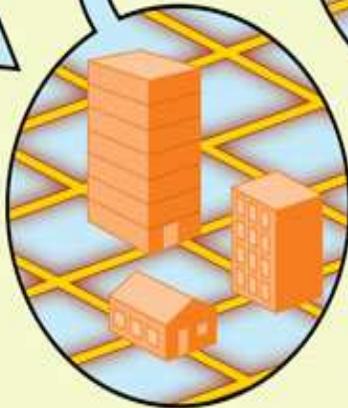


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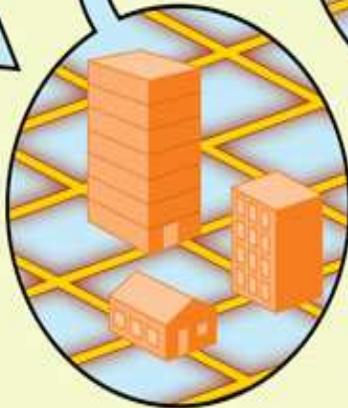


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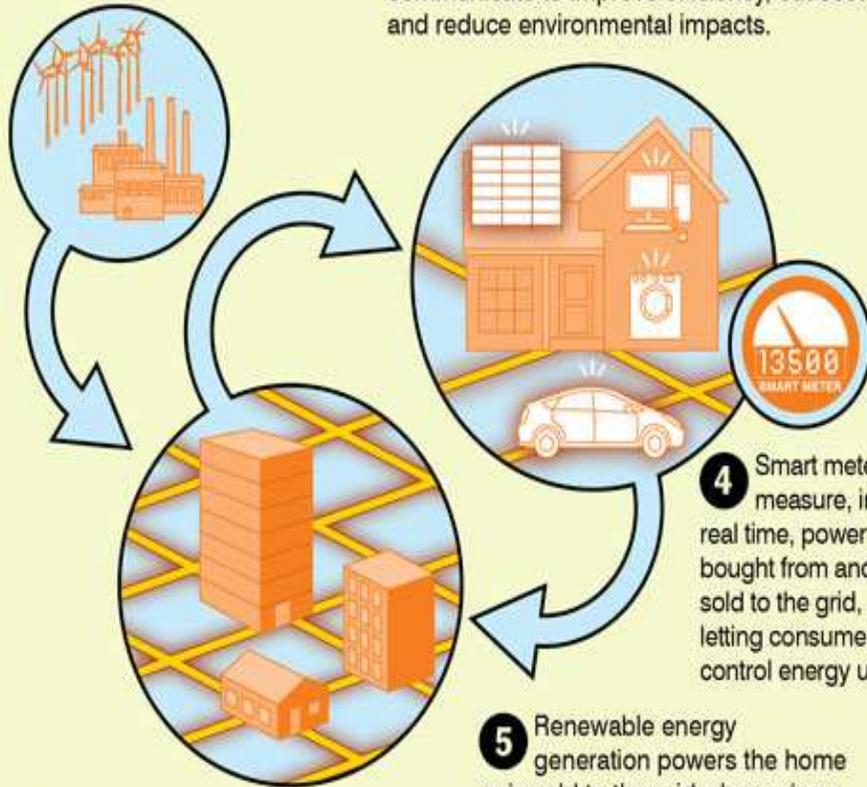
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- commercial, public and government buildings can also benefit from low energy lights, combined heating, cooling and ventilation systems, and building energy management systems.

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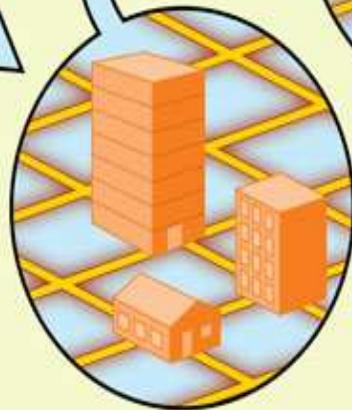
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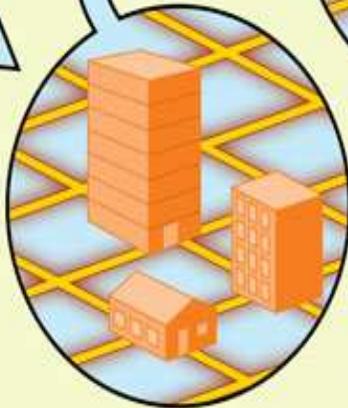
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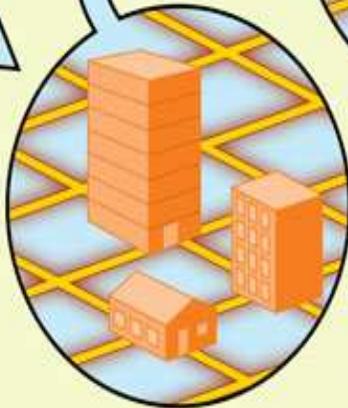
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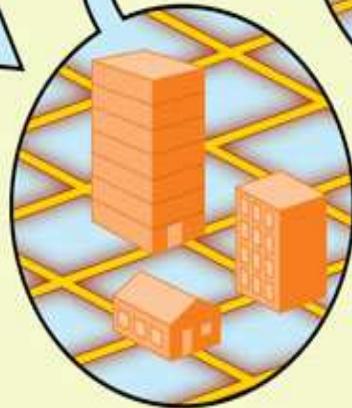
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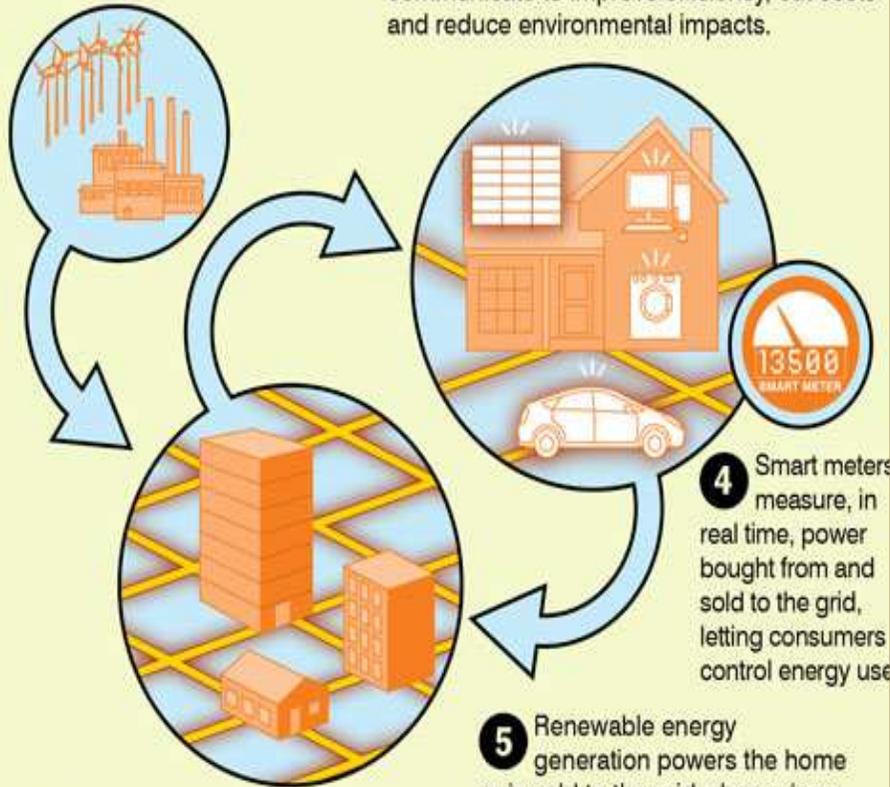
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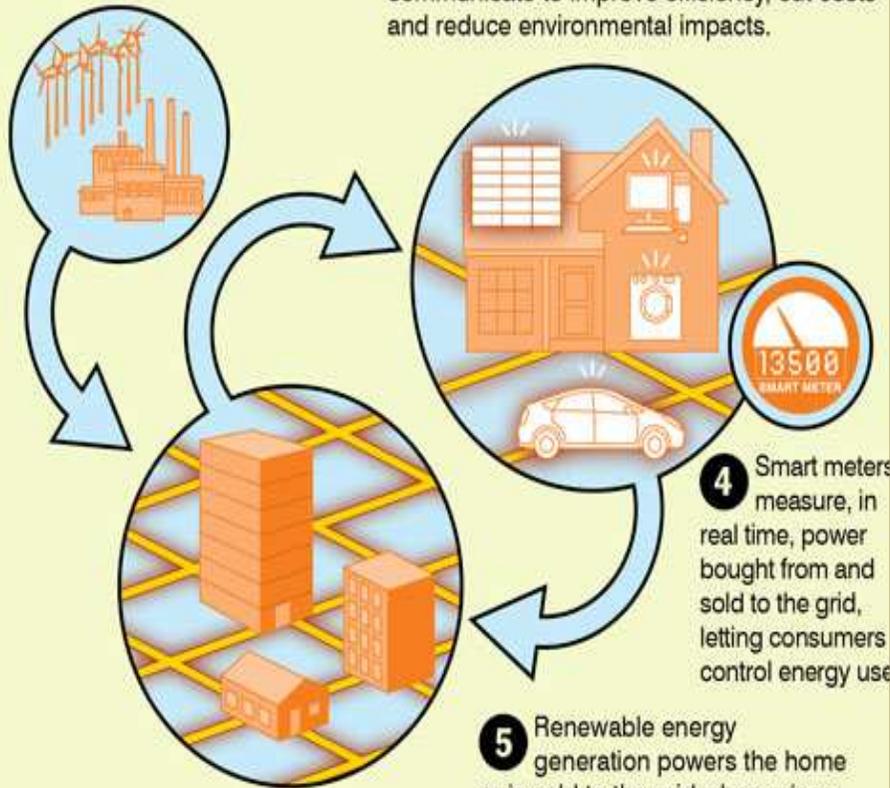
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- BBP has also supported new approaches to fit-out of new build developments at 201 Bishopsgate and The Broadgate Tower, which achieved 97% of fit-out waste re-used or recycled and 1,693 tonnes of waste diverted from landfill.

Smart Transport

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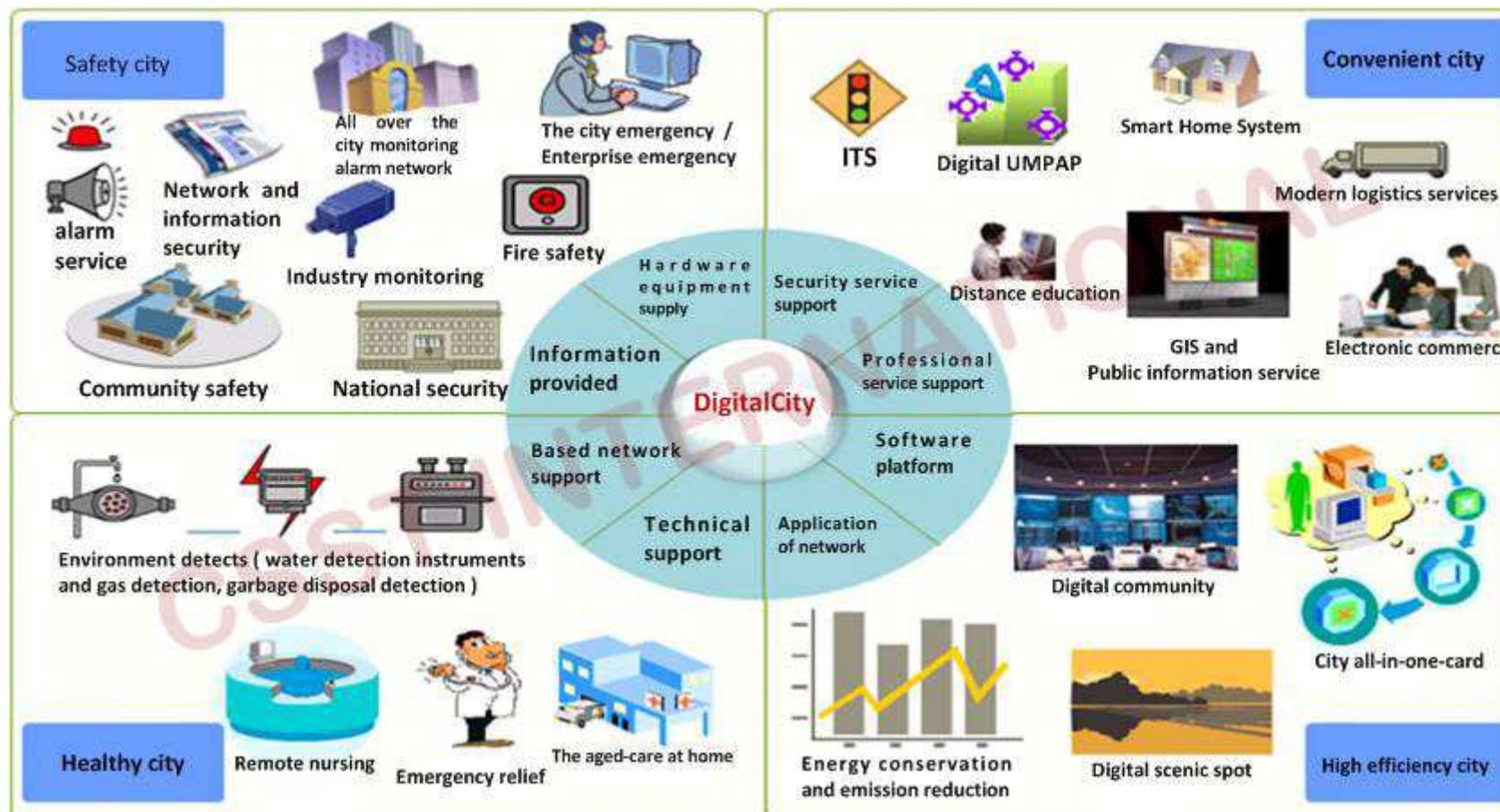
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- *A significant proportion of traffic in any modern city is made up of vans and trucks delivering to the hundreds of different stores. Smart logistics projects make use of rail and water freight to deliver goods to the city, which are then consolidated and dispatched using cycle or electric vehicle.*

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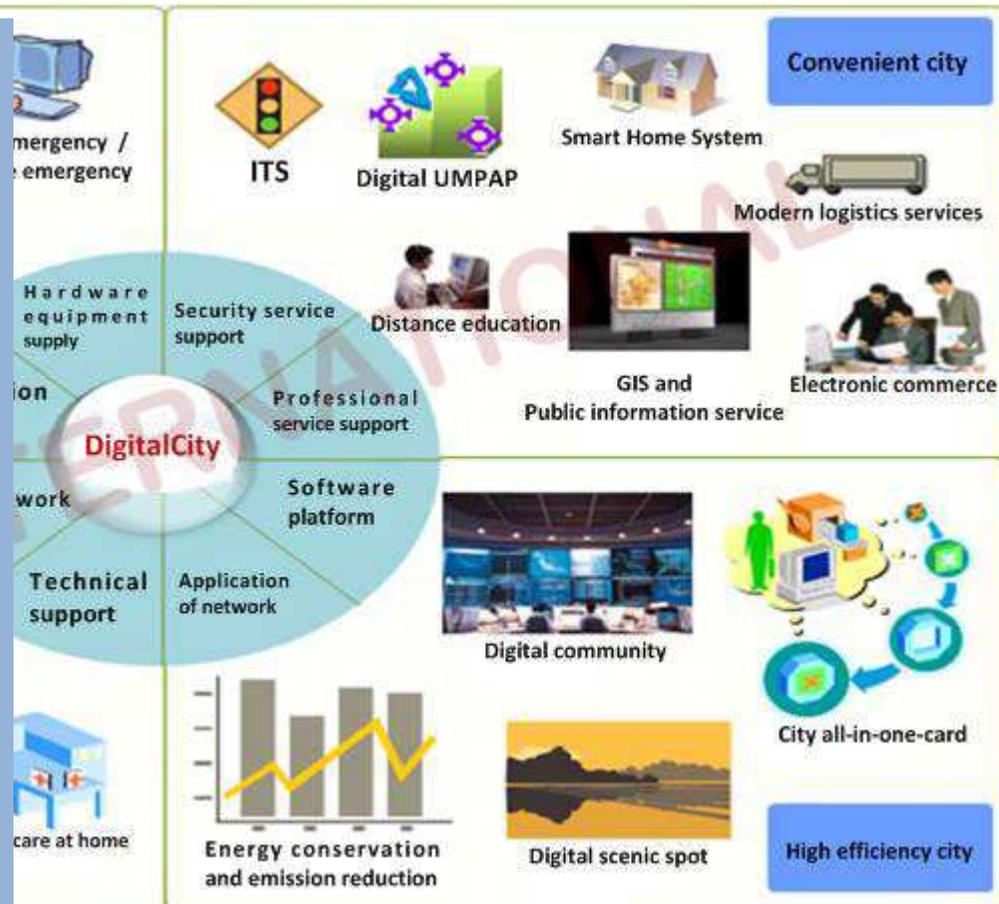


Smarter Public Service Planning



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integrated into and supporting all of this is a parallel infrastructure made of sensors picking up data which is then stored on servers, accessed by city authorities, businesses and citizens, increasingly via the 'cloud' and in a way that enables all parties to concurrently analyse and share data.

increasingly people will want to consume data wherever they are, and whole-city WiFi will become increasingly important .

EU Policies and Initiatives

Smart Citizens and Smart Government

- [European Smart Cities Project](#)
- [Interreg IVB North Sea Region's Smart Cities Project](#)
- [European Network of Living Labs \(ENOLL\)](#)

Smart Energy and Climate Change

- [European Technology Platform for Electricity Networks of the Future \(Smart Grids ETP\)](#) began its work in 2005
- [Smart Energy Networks](#), an R&D programme

Smart Regions

- *The Smart Specialisation Platform, established by the European Commission to assist Europe's regions exploit their full potential and become competitive on a global scale.*

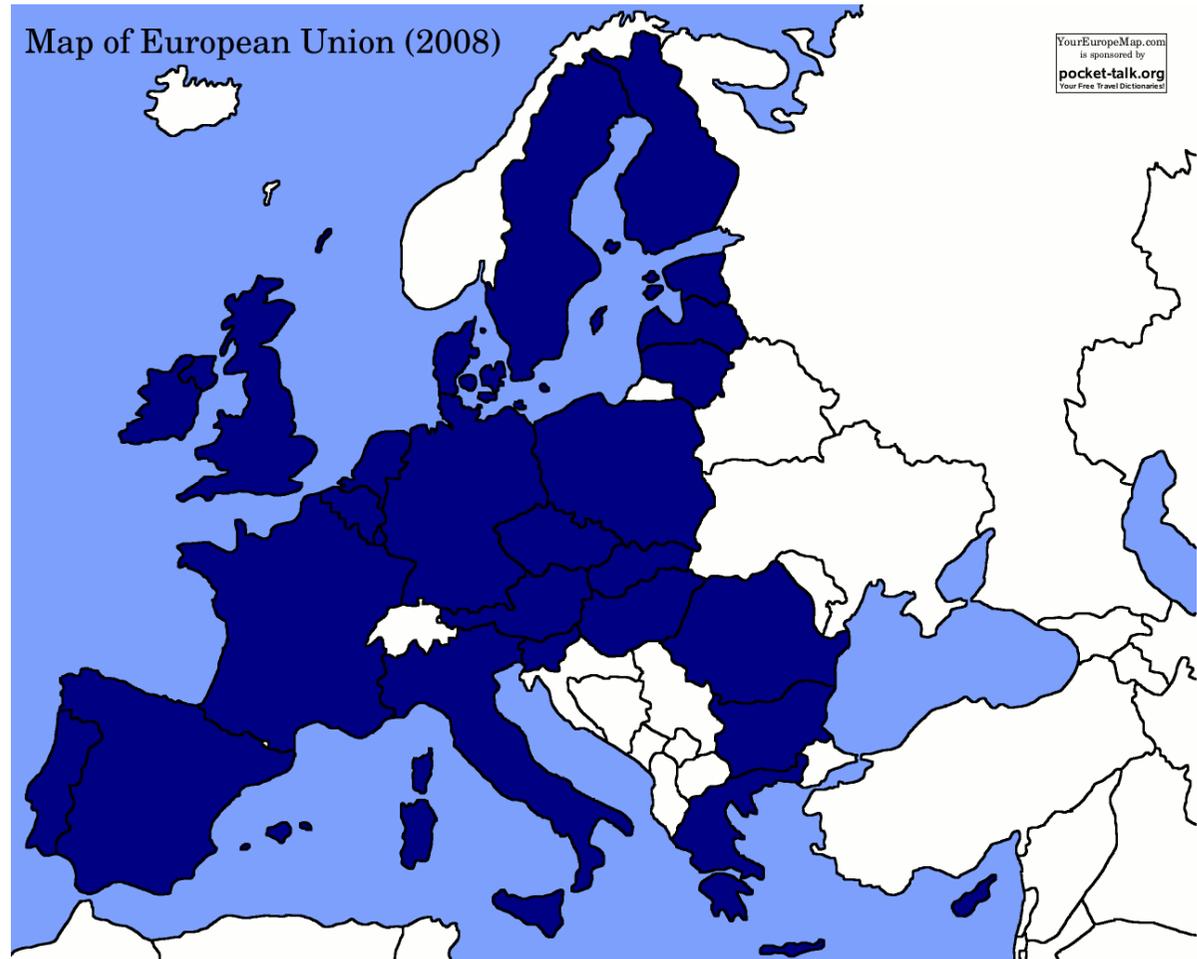
Smart Cities

- [European Initiative on Smart Cities](#) *This project provides a framework for those cities and regions wishing by 2020 to progress towards a 40% reduction of greenhouse gas emissions, through increased take up of energy efficient and low carbon technologies.*
- [Smart Cities and Communities](#)

Industrial Initiatives

- **IBM Smarter Planet** initiative emphasises the importance of capturing, analysing and utilising data as part of what they call the Decade of Smart.
- **Cisco Smart+Connected Communities** initiative provides the ICT infrastructure and service delivery platforms to support smarter working, in new and existing cities.
- **GE Ecomagination** brand captures a variety of smart and sustainable innovation across its product and service range.
- **Siemens Infrastructure and Cities** division looks at supporting sustainable solutions for the Smart City, and will be launching the Siemens Crystal (Urban Sustainability Centre) in London in 2012 to showcase their products.

EU Policy Environment



EU 2020 goals:

Smart growth

Sustainable growth

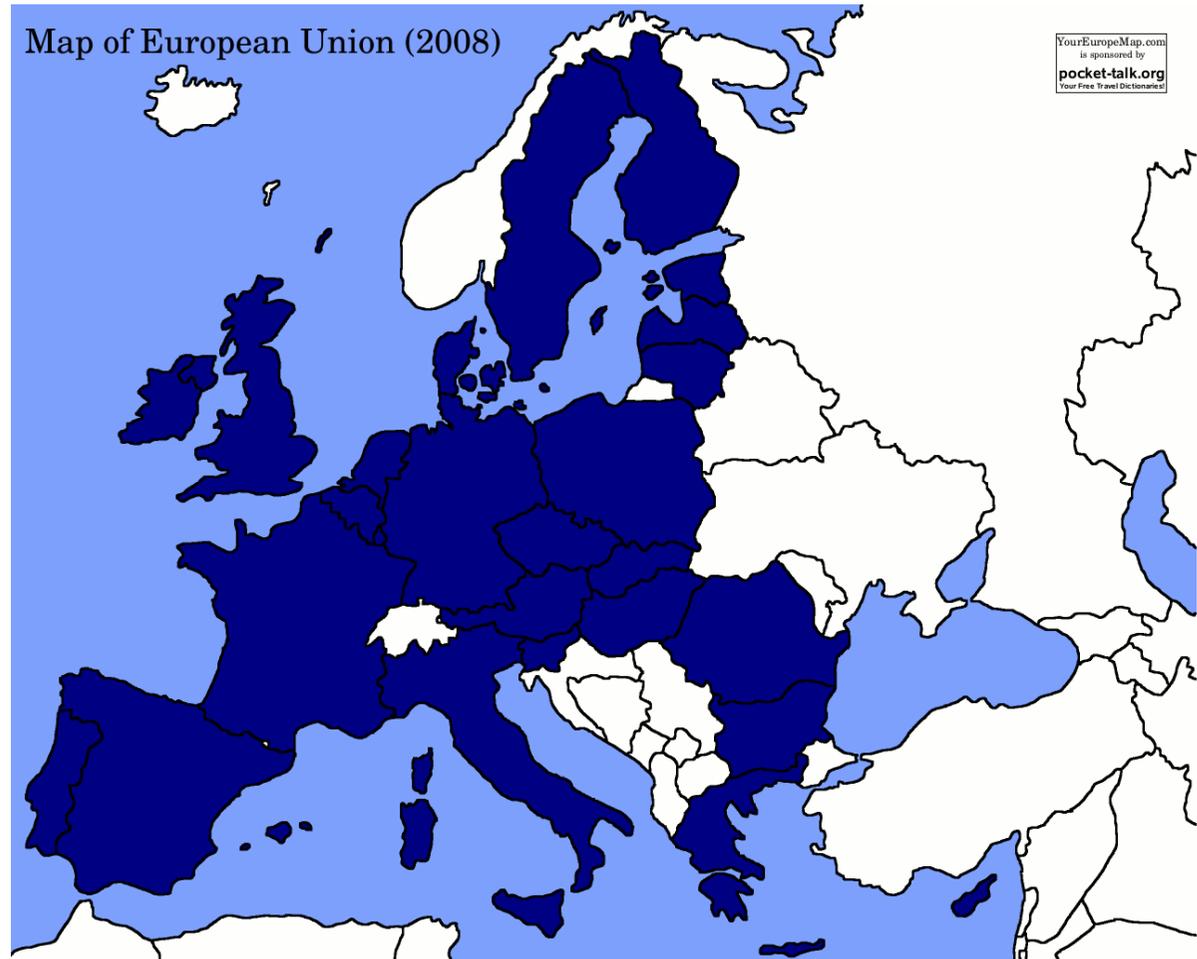
Inclusive growth

EU Policy Environment

20%

reduction in
greenhouse gas
emissions from
1990 levels

EU 2020 goals:
Smart growth
Sustainable growth
Inclusive growth



EU Policy Environment

20%

3%

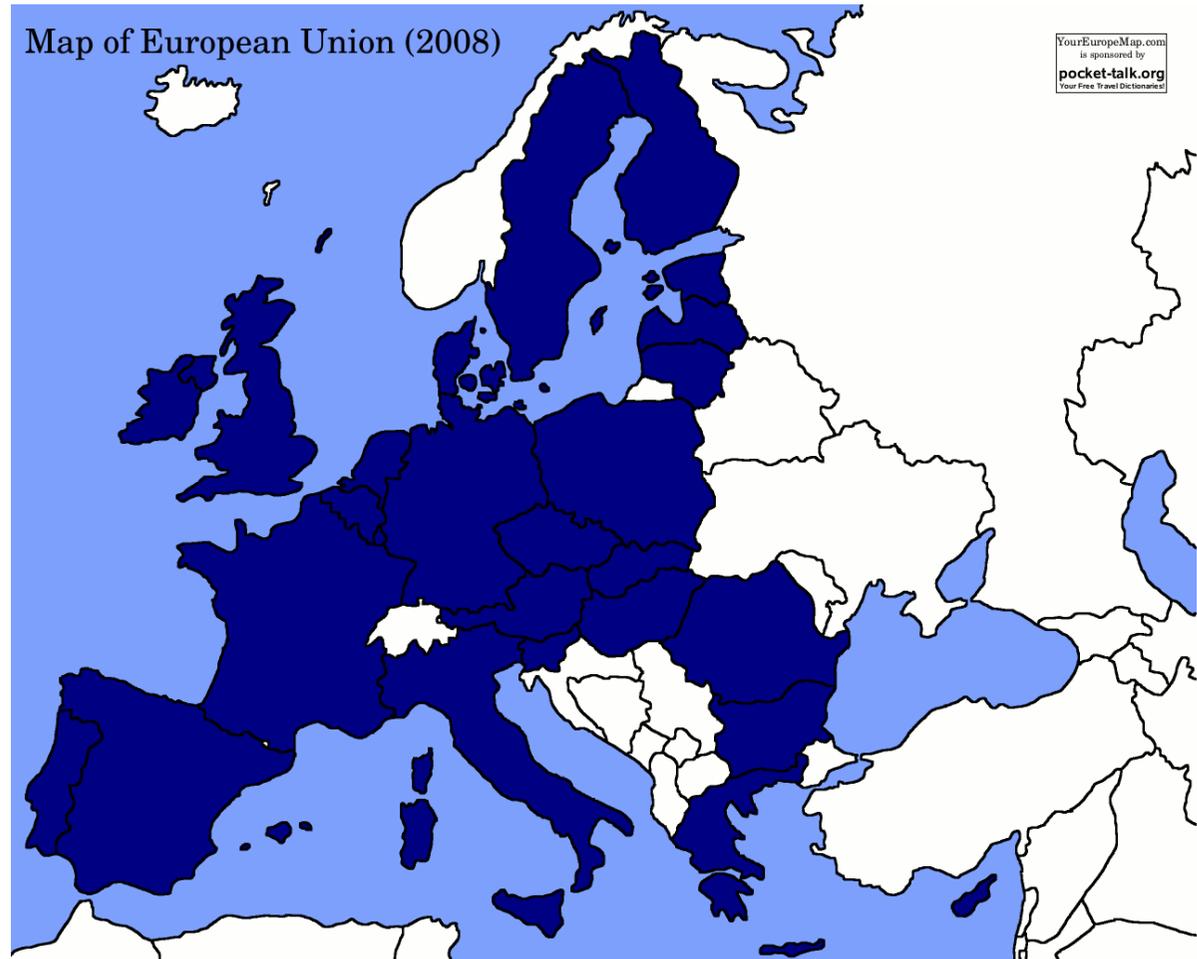
reduction in greenhouse gas emissions of the EU's GDP (public and private combined) to be invested in R&D/innovation

EU 2020 goals:

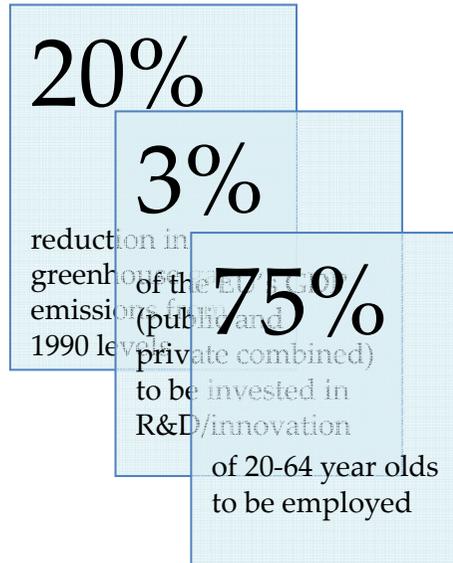
Smart growth

Sustainable growth

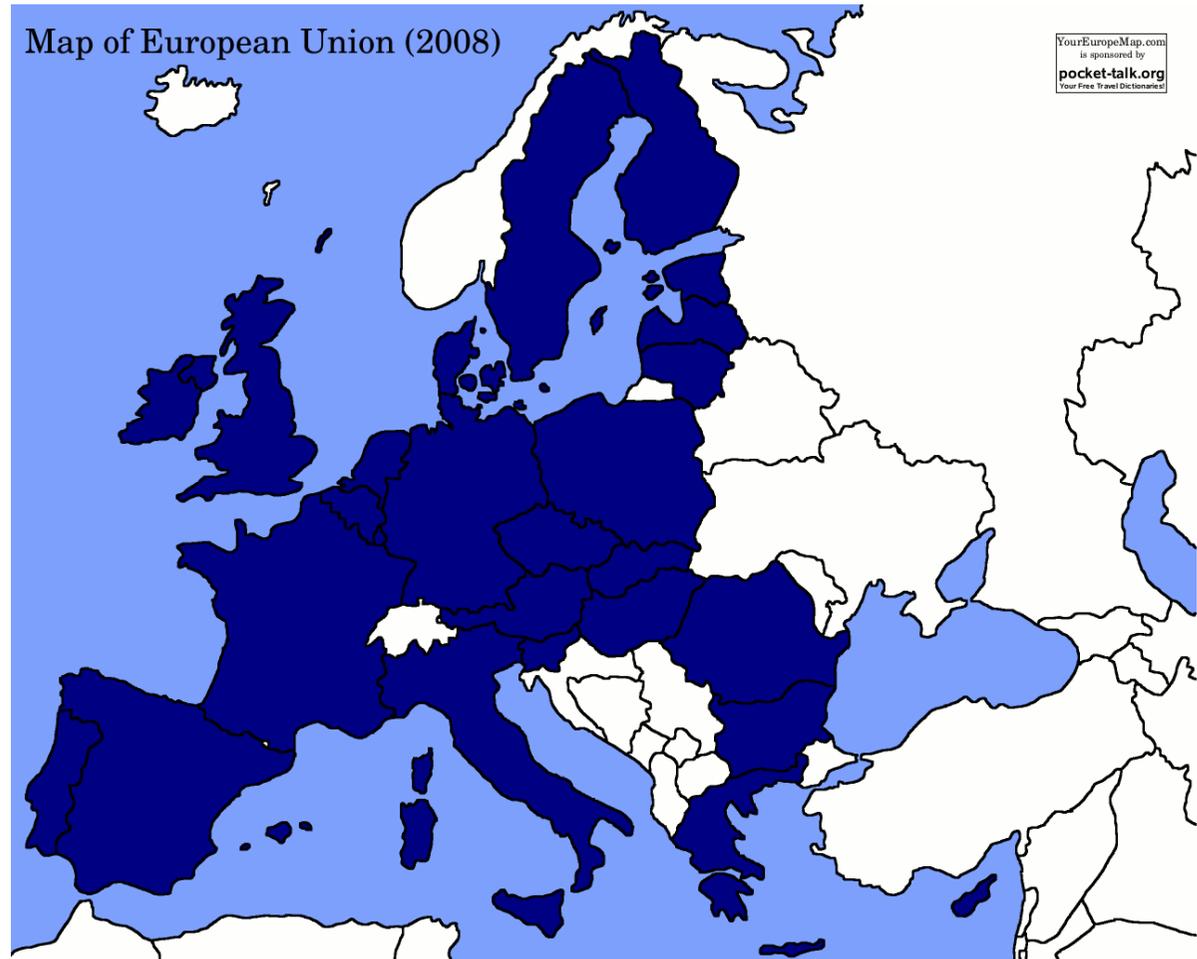
Inclusive growth



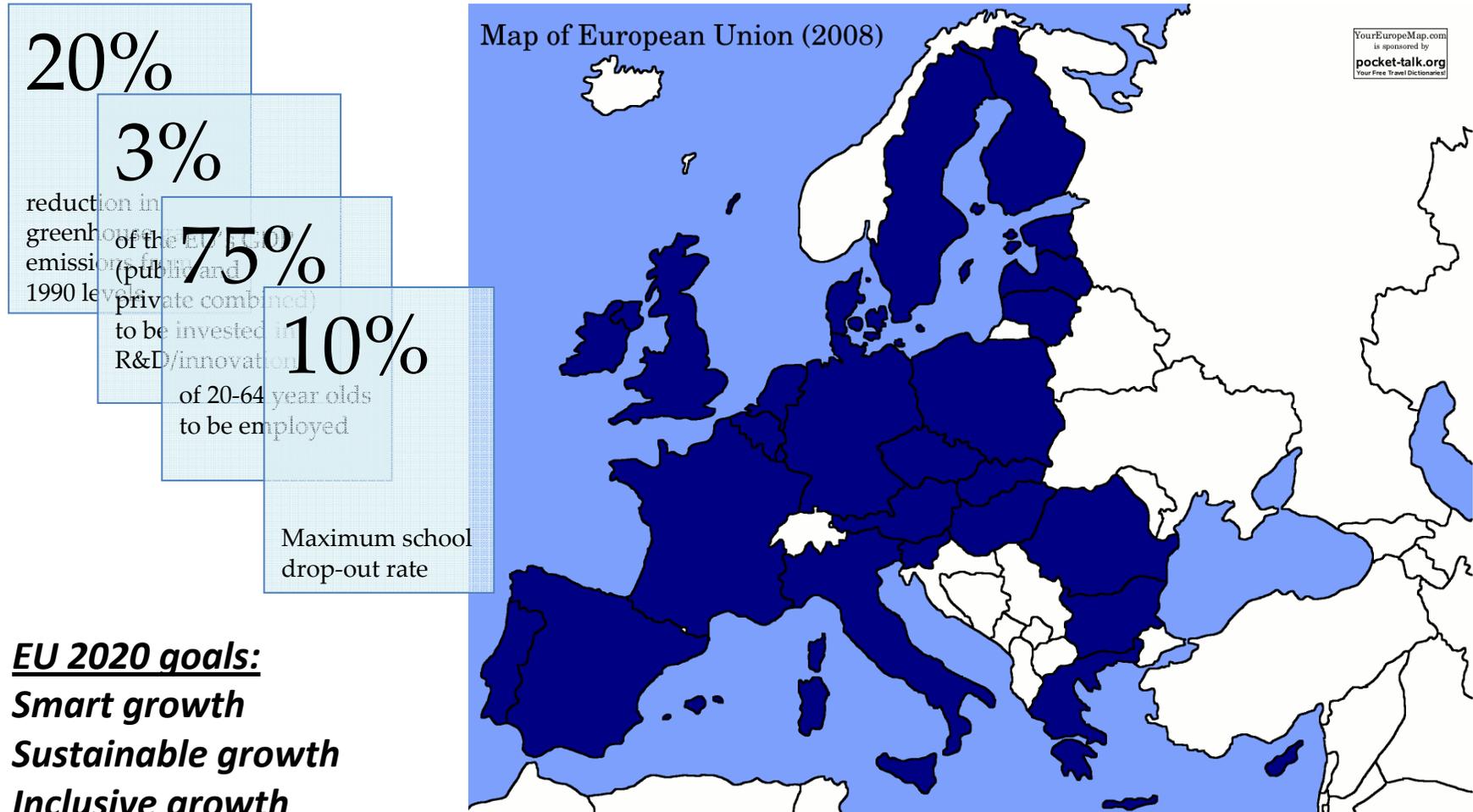
EU Policy Environment



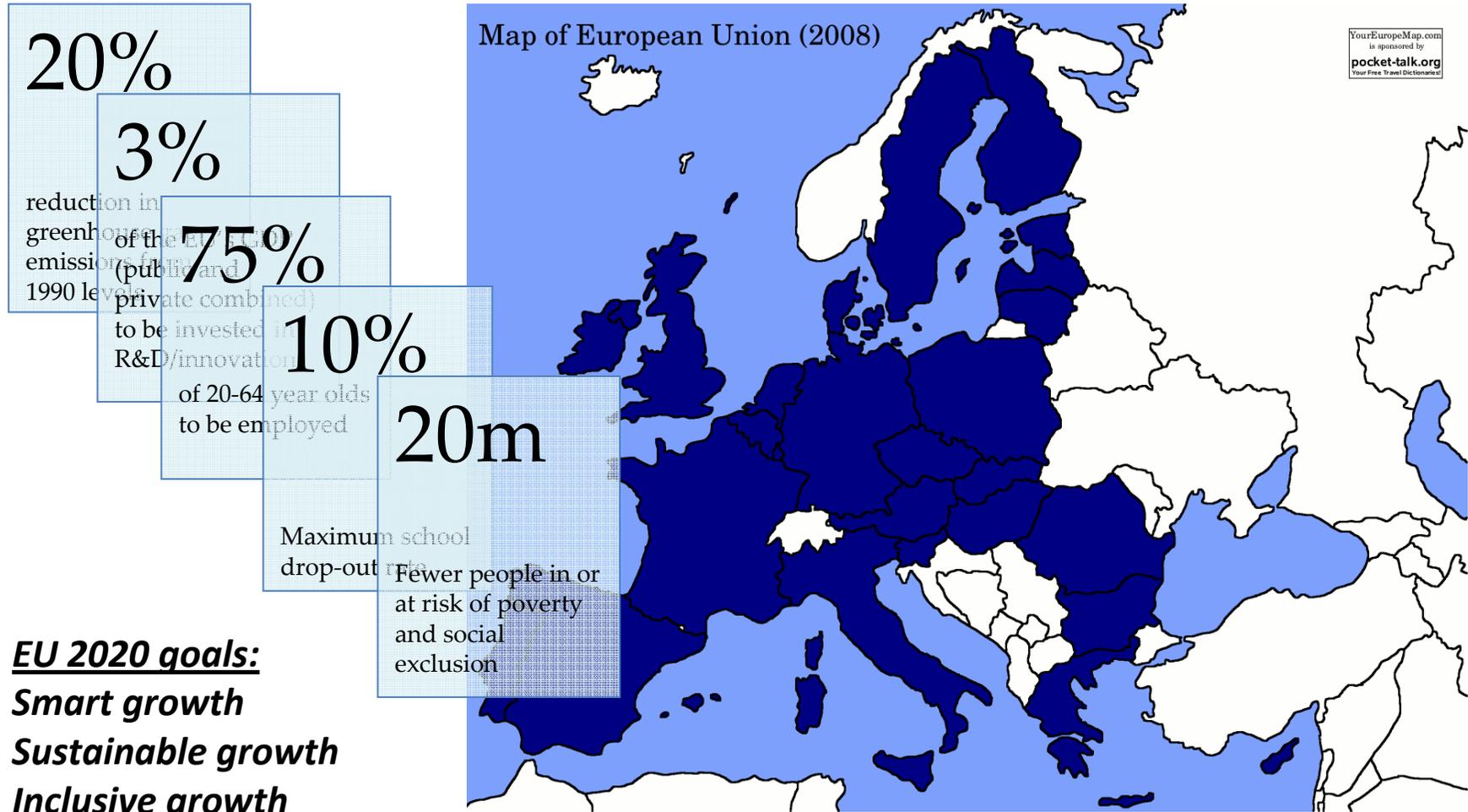
EU 2020 goals:
Smart growth
Sustainable growth
Inclusive growth



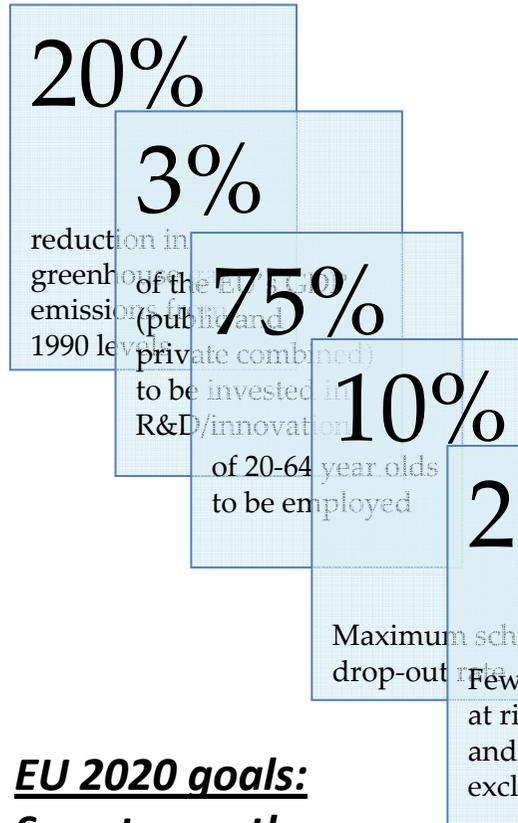
EU Policy Environment



EU Policy Environment



EU F



EU 2020 goals:
Smart growth
Sustainable growth
Inclusive growth

Smart and Sustainable Cities Contribution

- Smart city developments will create a range of new jobs and services ([Siemens expects 40 billion Euro of green revenue by 2014](#) and IBM's smarter planet solutions revenues are [growing faster than the rest of their business](#)).
- Smart cities make the best use of scarce resources, making them more productive and competitive. The smart cities agenda can be used to focus businesses and public authorities on the opportunity to:
 - extract more value from their existing infrastructure and capital, via research , technical development and innovation.
 - create new products and services that generate economic growth and which meet social and environmental challenges.
- Smarter grids can do more to reduce energy use, lower carbon emissions and tackle climate change.