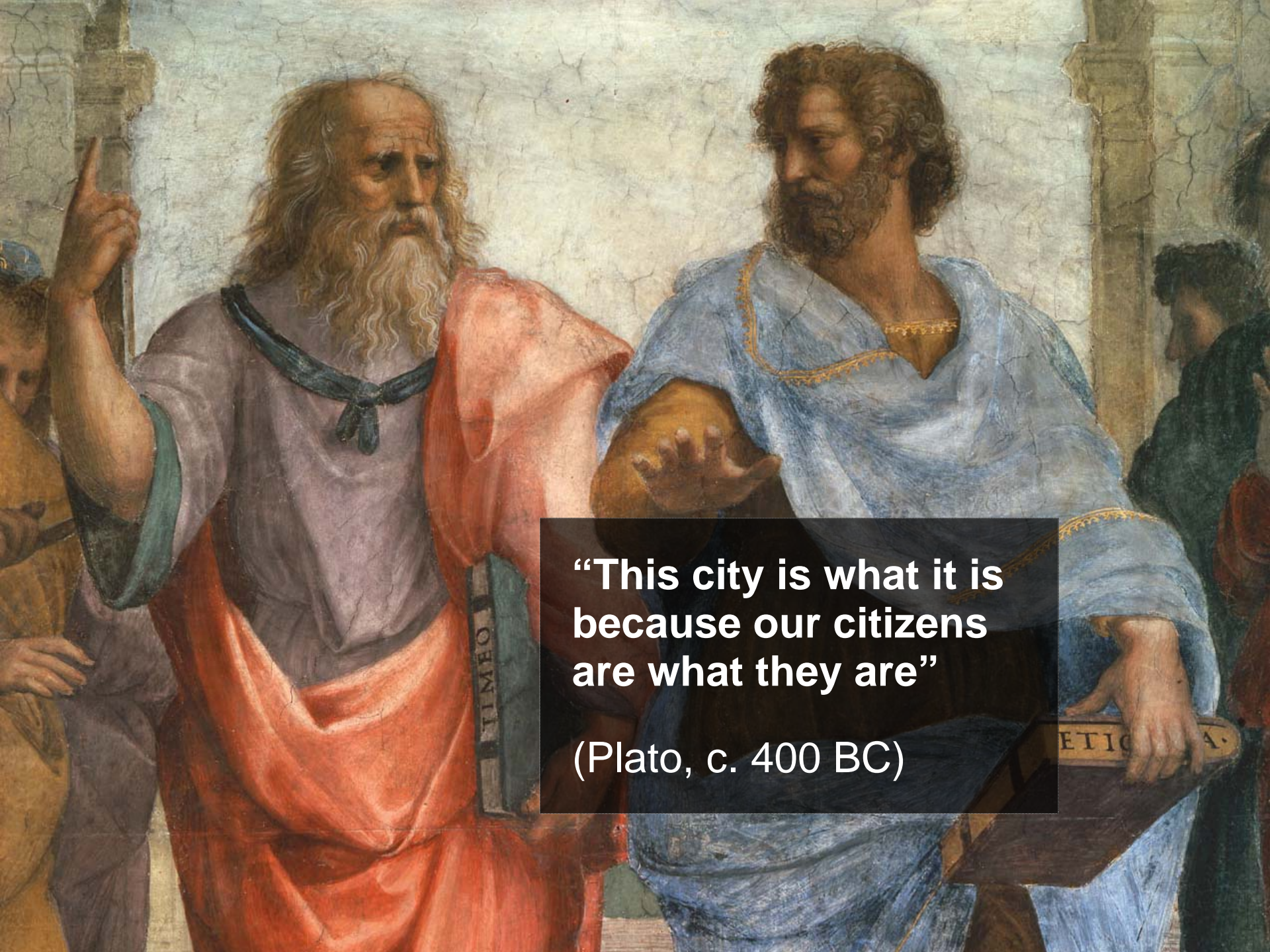


A smarter city to serve community, environment and economy

Major Cities of Europe



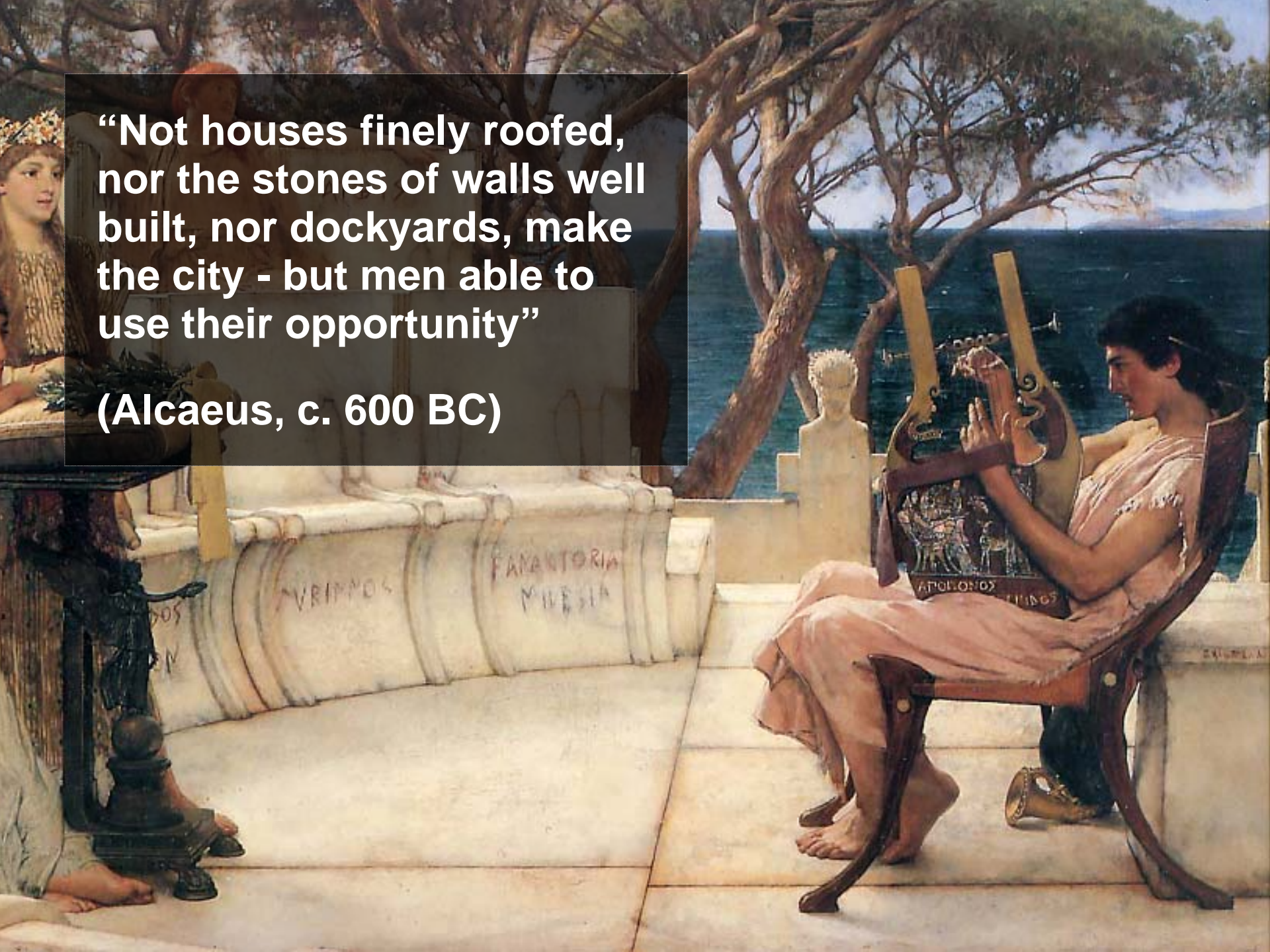


**“This city is what it is
because our citizens
are what they are”**

(Plato, c. 400 BC)

**“Not houses finely roofed,
nor the stones of walls well
built, nor dockyards, make
the city - but men able to
use their opportunity”**

(Alcaeus, c. 600 BC)



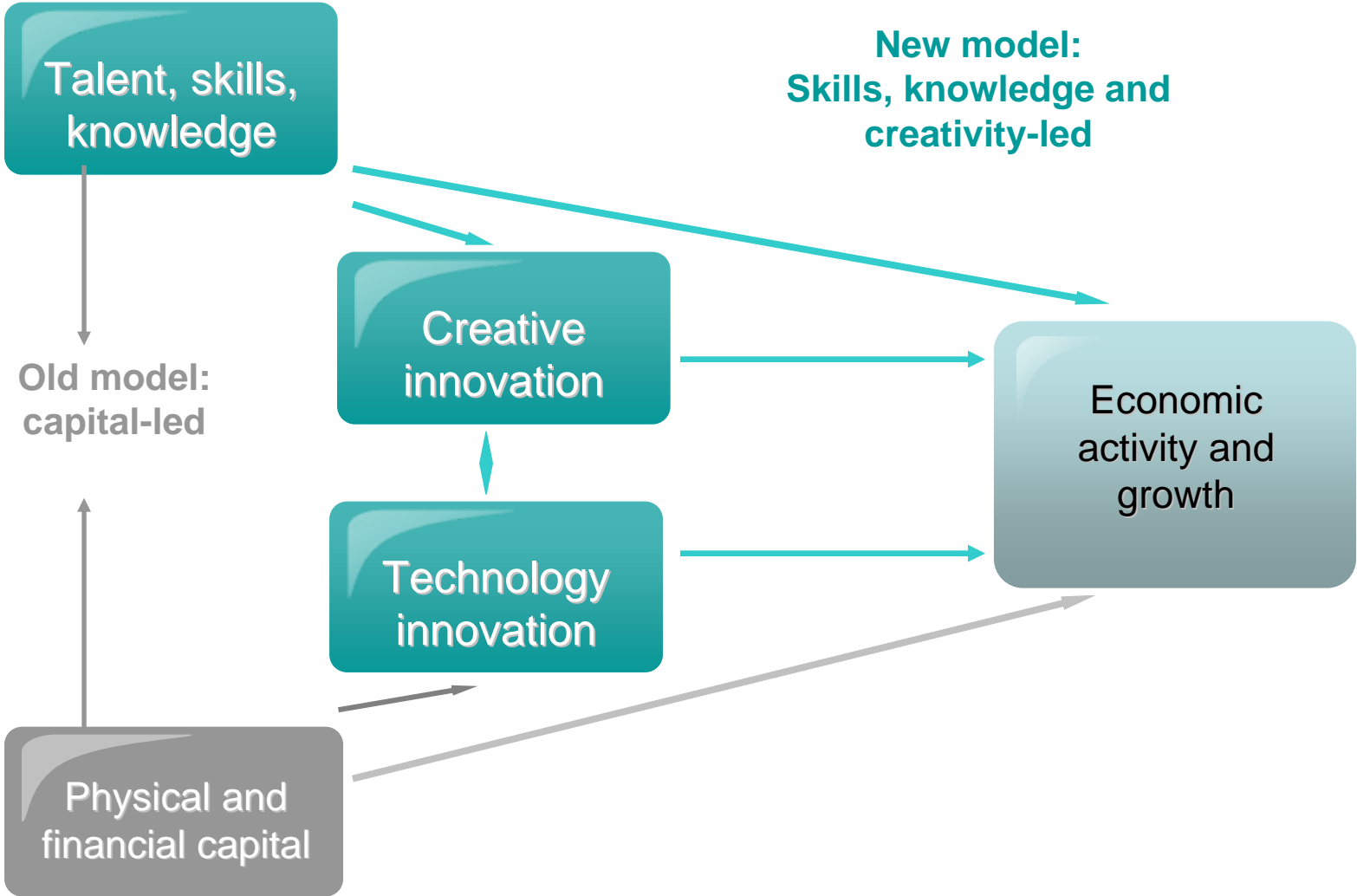
**Cities in an era of talent and
innovation-led growth**

**Optimizing city systems for an
innovation-enabling environment**

What steps should leaders take?



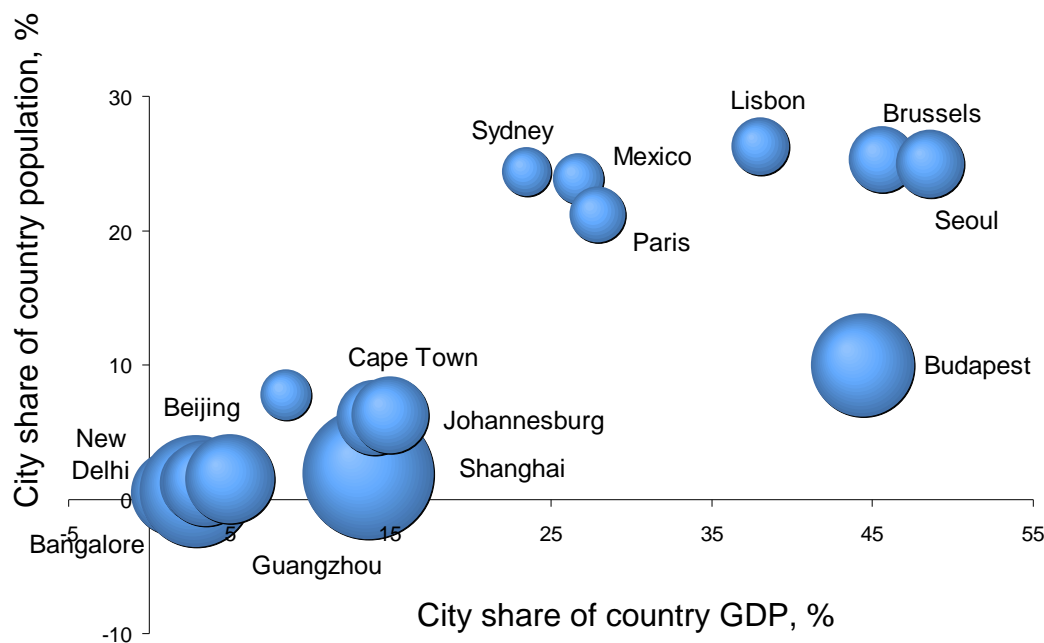
In the future, skills, creativity, knowledge and innovation will act as the key drivers of economic growth and activity



Why? (1) As focal points of economic activity cities are positioned to benefit from the new talent-intensive economic growth

- **World's top 100 cities accounted for a third of global GDP in 2008**
- **Cities contain an increasingly large share of the world's highly skilled, educated, creative and entrepreneurial population**
- **Cities support large-scale business networks that absorb and extend innovation**

Top cities act as economic activity hubs
(size of the bubble – ratio of city share of national GDP to its share of national population, 2009)

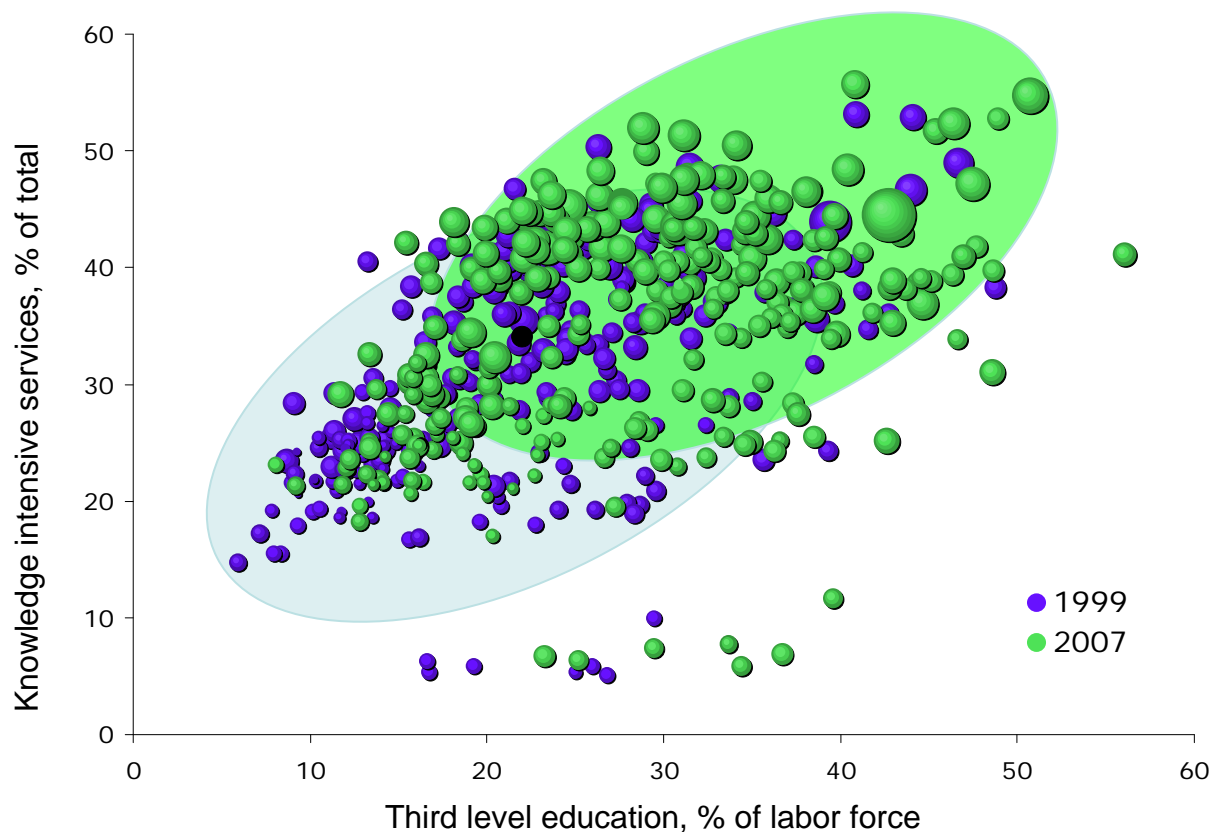


Source: UN Habitat 2010, and IBM Global Center for Economics Development analysis

Why? (2) Skills and knowledge are already having a significant impact on economic growth and activity amongst cities and regions

- **Leading regional and urban economies combine**
 - a strong base of skills and talent, and
 - a high share of knowledge-intensive industries in the overall economy
- **Economies are becoming more skills and knowledge-intensive over time**

Skills and knowledge are driving growth in income
(Regional and urban data, 1999-2007, size of the bubble reflects income per capita, US\$ PPP)

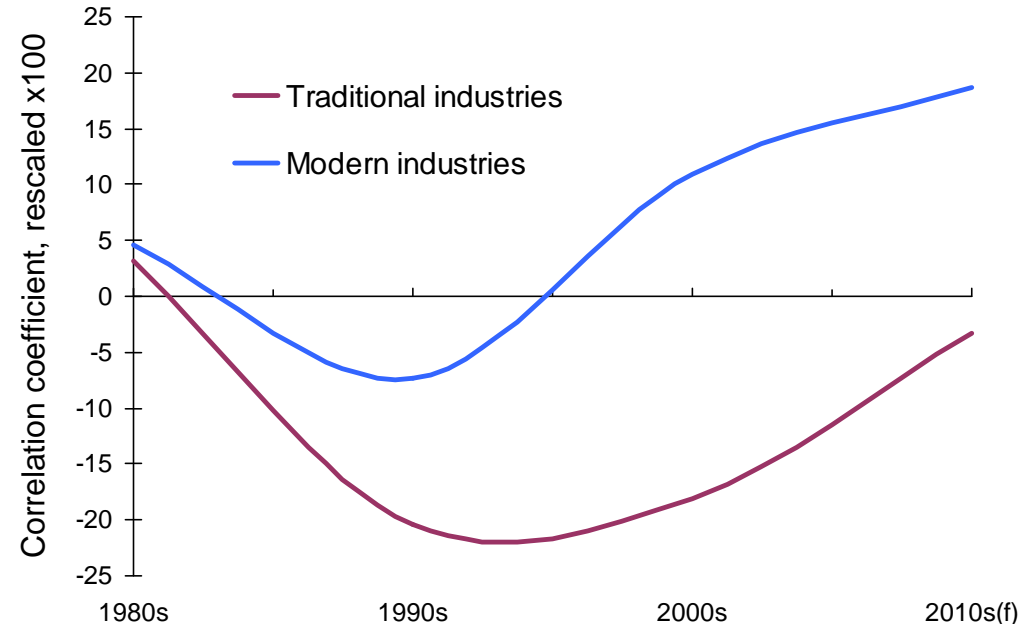


Source: OECD Regional Statistics database, 2010 and IBM Global Center for Economics Development analysis

Why? (3) The importance of the links between talent and innovation in jointly driving economic growth is rising across all industries

- **Skills, knowledge and creative and technological innovation are increasingly linked in modern industries**
- **Traditional industries are now at the inflection point of change from the old model of growth to the new**

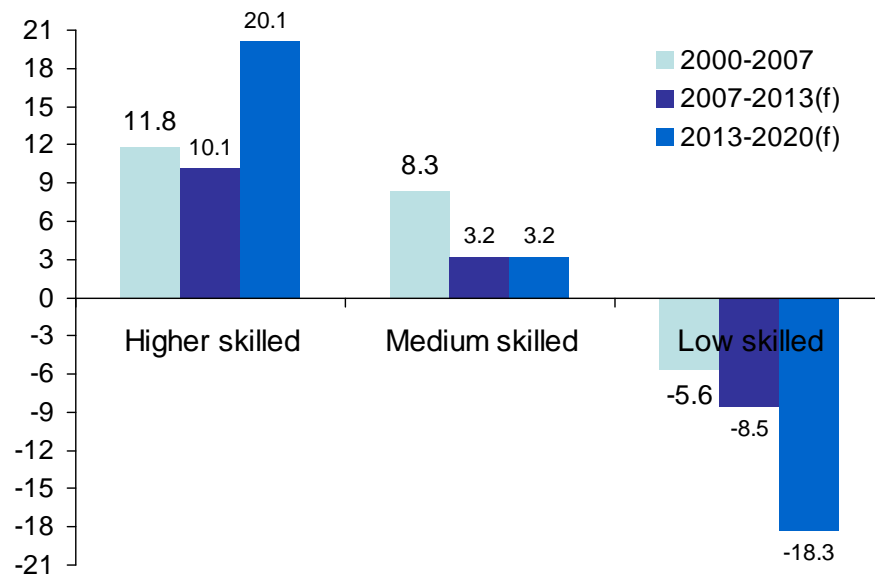
Links between skills, knowledge, creative and technological innovation contributions to growth
Annual average correlation



Why? (4) As skills, knowledge, creativity and innovation grow in importance, demand for higher quality workers is increasing

- Decline in the demand for low qualifications is accelerating since 2000
- Dramatic increase in demand for high qualifications is expected in the next decade
- Assuming current demographic trends, demand for international students in the OECD will rise from 6% in the mid-1990s to 30% by 2020
- Economies are increasingly competing for highly skilled workers

Change in demand for skills in EU27
Net increases in excess of demographic factors, millions of jobs



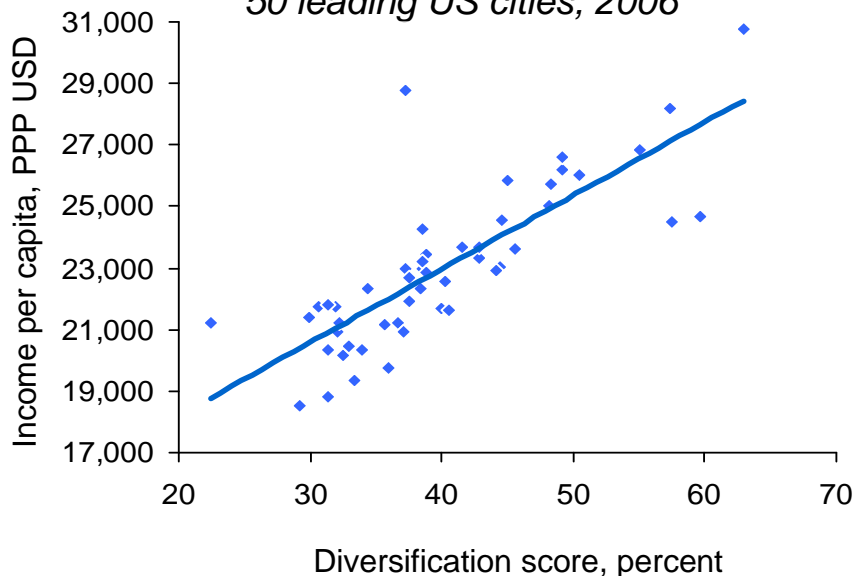
Source: CDEFOP, 2009 and 2010, and IBM Global Center for Economics Development analysis

Why? (5) Cities are competing globally for more diversified and internationally mobile talent

- Diversity of skills, creativity and knowledge has a positive effect on cities' income per capita
- By 2030, the stock of highly educated migrants will more than double on 2010
- Internationally, flows of skills and talent are also becoming more cities-centered

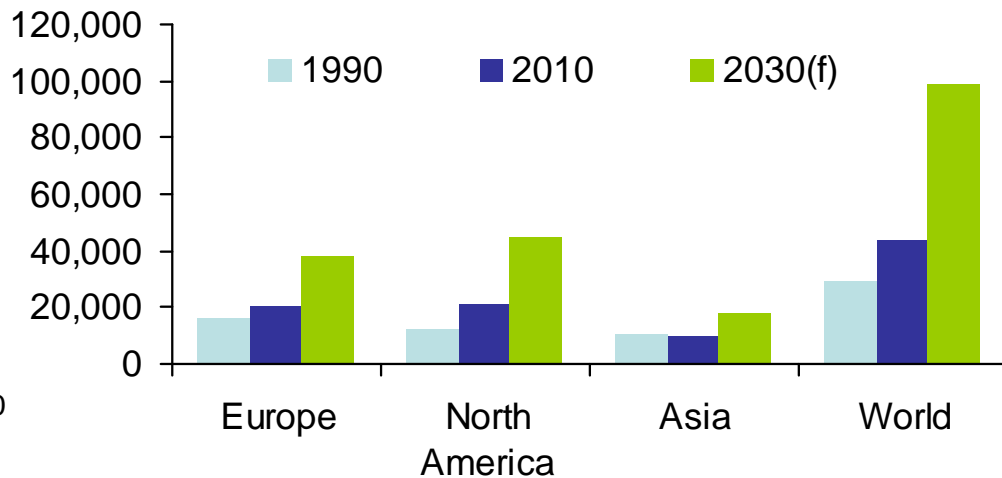
Diversity of skills, creativity and knowledge is positively linked with income

50 leading US cities, 2006



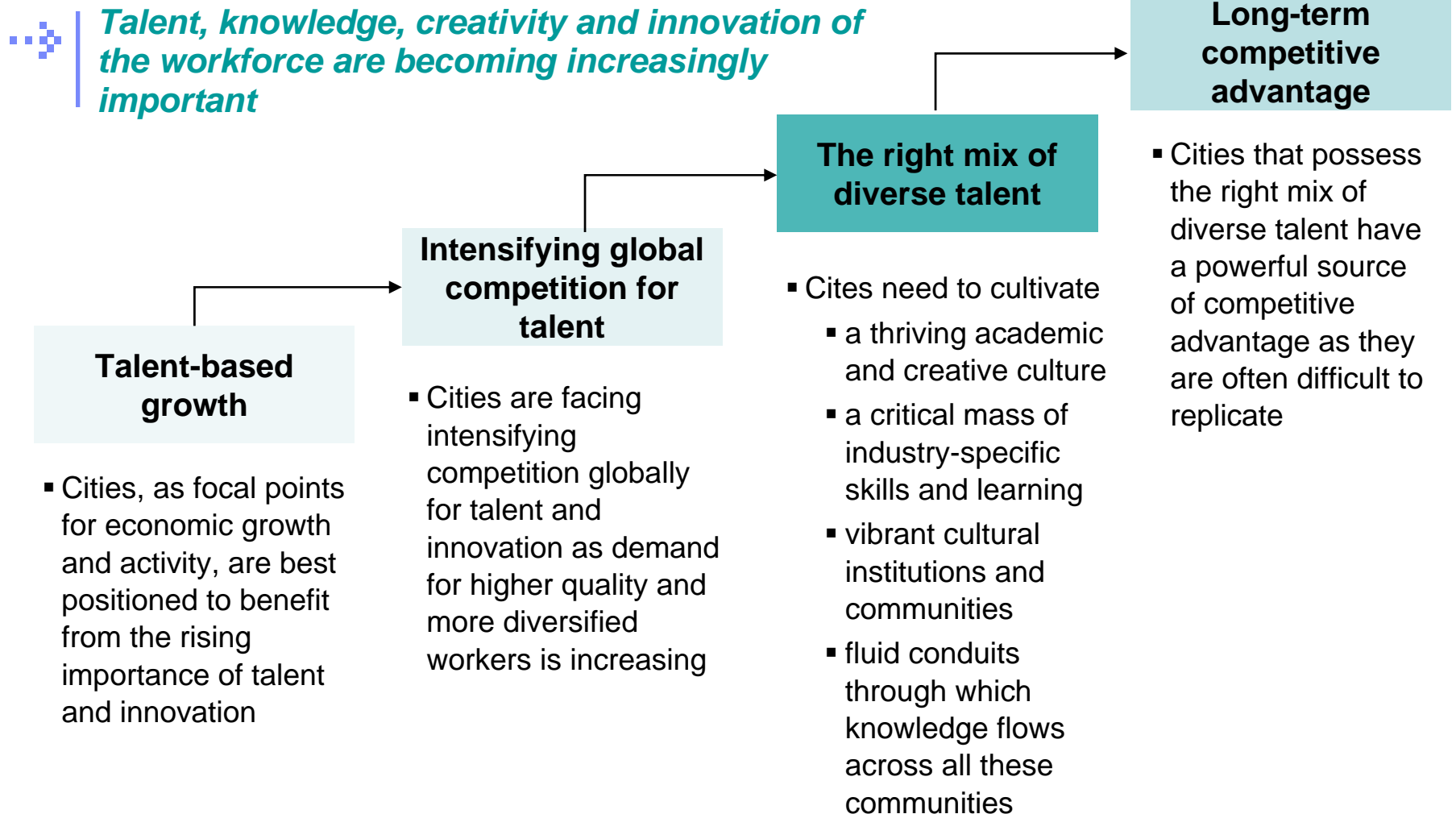
Inflow of highly educated migrants

thousands, 1990-2030



Source: UN Human Development Report, 2009, Diversification score is based on data from Impresa Consulting, 2006, and IBM Global Center for Economics Development analysis

Attracting, retaining, creating and enabling talent and innovation can act as a powerful, long-term competitive advantage for cities



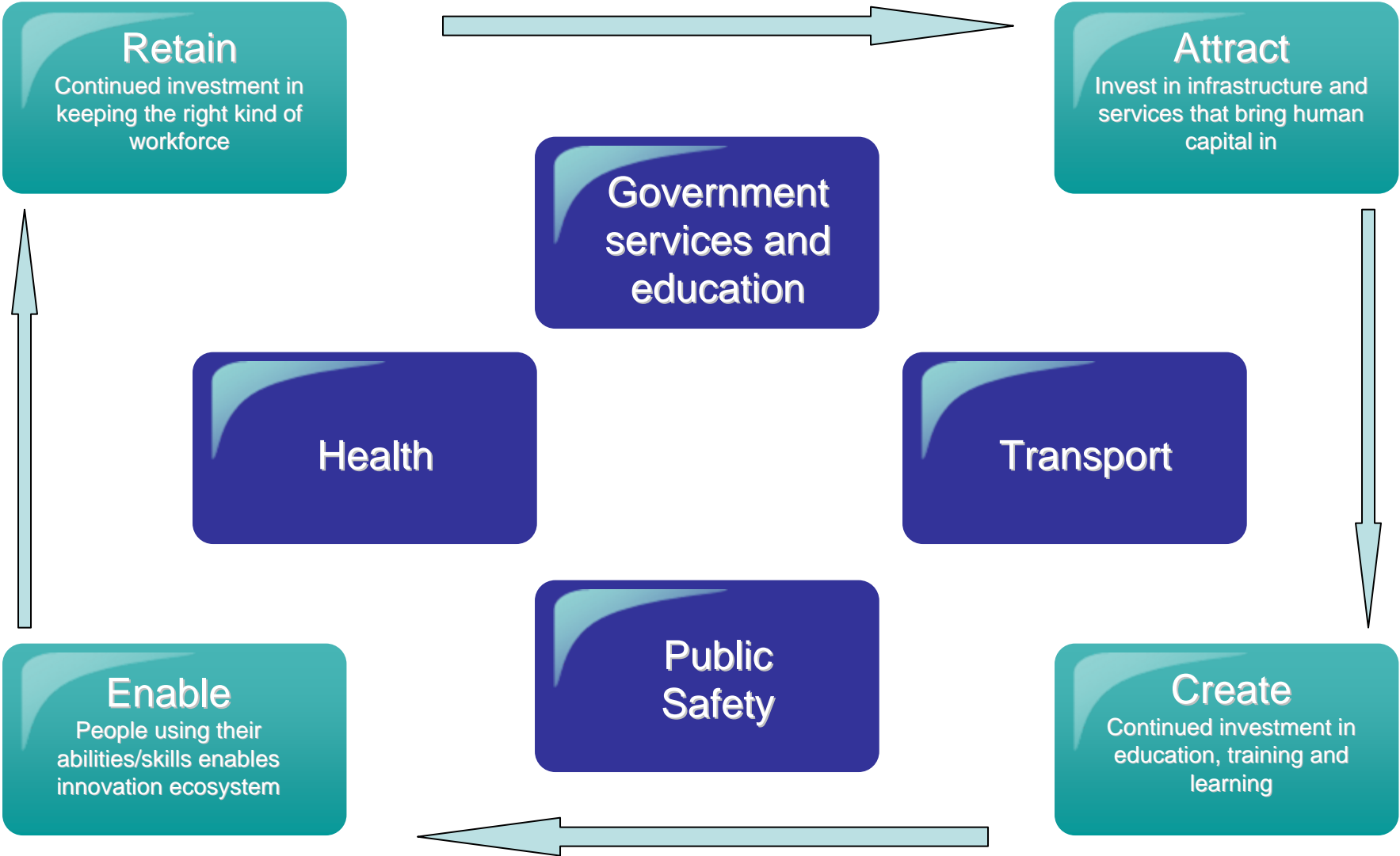
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What steps should leaders take?

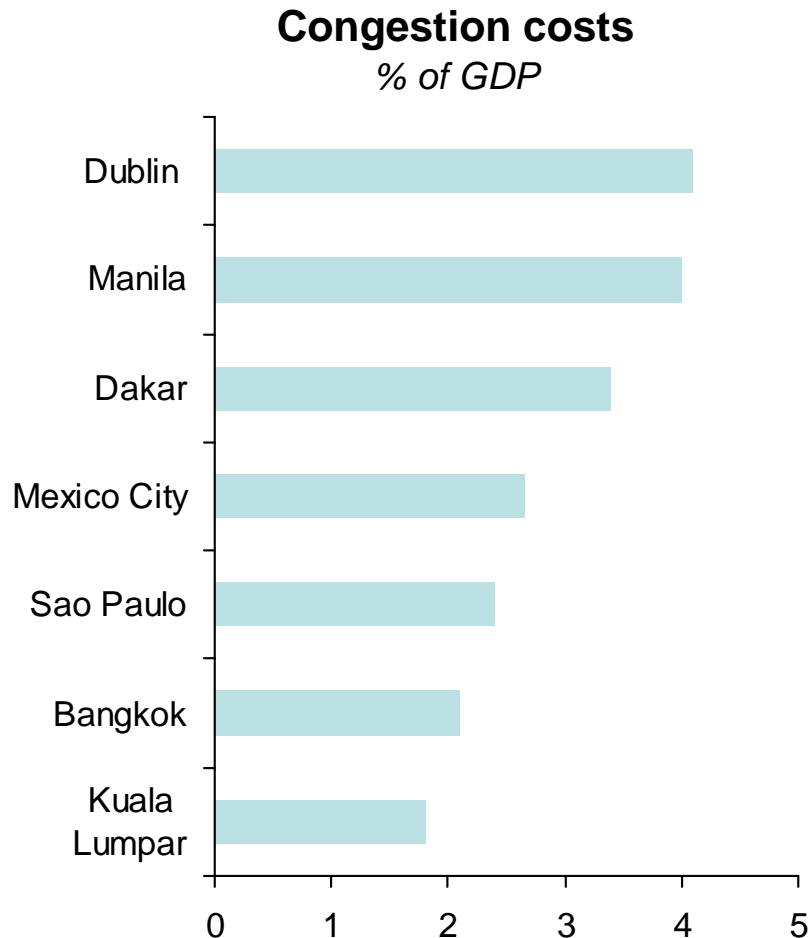


The city's core systems play a crucial role in the attraction and expansion of skills and innovation



Source: IBM Global Center for Economic Development analysis

Congestion is one of the main urban **transportation** problems faced by almost all cities and incurs significant costs



- **Congestion negatively impacts the quality of life in a city by**
 - decreasing personal and business productivity
 - lowering air quality
 - creating noise pollution.
- **Congestion pressures faced by cities will intensify going forward**
- **Car ownership in Sao Paulo is increasing at the rate of 1,000 cars a day**
- **Traffic is growing four times faster than the population in Mumbai, Delhi, Ahmedabad, Bangalore, Chennai and Hyderabad**

Source: Ley and Boccardo, 2010; CSO, County Incomes and Regional GDP 2010

Singapore's Intelligent Transportation System delivers flexible, efficient, demand-responsive transport for a mobile highly-educated



A seamless, smarter national transport fare system was created

- Enables riders to use a single card of their choice to pay for all modes of travel as well as vehicle congestion charging and car parking
- Creates a user-centric service that simplifies and streamlines fare payment for riders



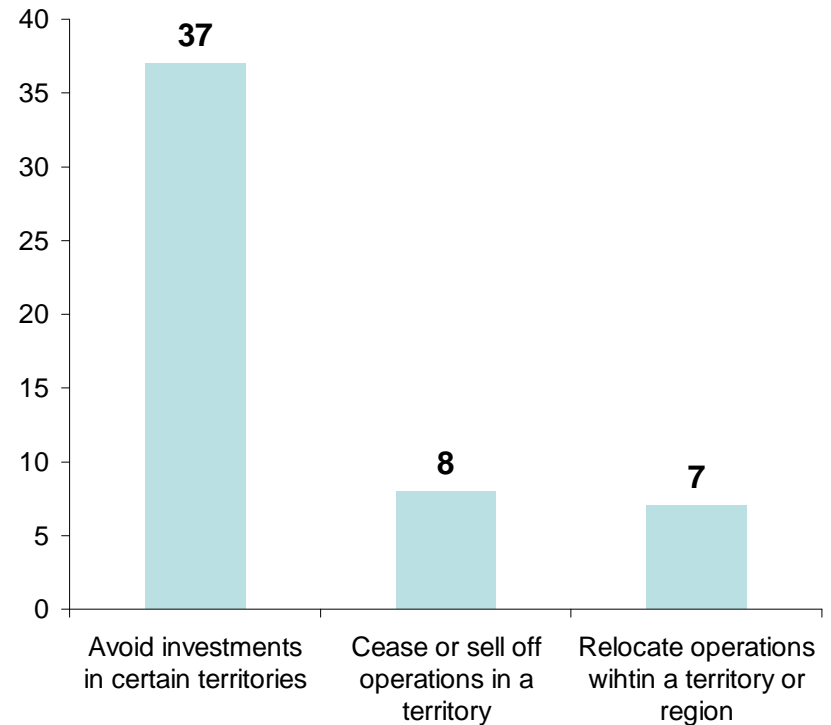
Benefits

- \$40 million annual savings from reduced congestion on expressways alone
- Gains in workforce productivity equivalent to more than 5 million man-hours
- LTA can optimize routes, schedules and fares from the insights from the 20 million trip-related transactions generated each day
- 80 percent reduction in revenue leakage from "lost" transactions
- 2 percent reduction in the overall lifecycle cost of the fare processing system
- Doubling the system's performance capacity to 20 million fare transactions per day
- Usage of mass public transport increased by 14.4 percent to 4.5 million between 1996 and 2007

Poor public safety has a negative impact on skilled and innovative workers and businesses

- **Levels and quality of human capital are linked to overall levels of public safety**
 - Higher individual and average levels of education increase demand for public safety
- **How cities respond to threats to public safety, such as violence and terrorism, are of utmost importance for business location decisions**
 - Crime and poor public safety have a deterrent effect on foreign direct investment and domestic entrepreneurship, especially in highly skills-intensive sectors


Corporate location responses to political violence and terrorism
% respondents (past five years)





Madrid has raised public safety to a new level through coordinated emergency response

Centro Integrado de Seguridad y Emergencias de Madrid provides a unified view of complexity, reduces response time, connects first responders of all kinds – has reduced response times 25%.

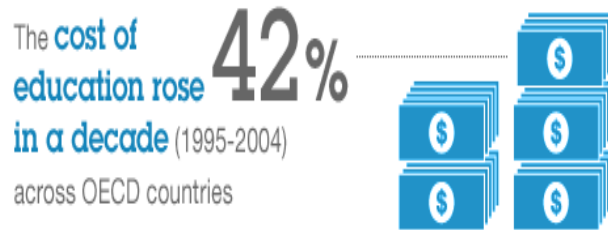


Collaboration for preparation

Gauteng Province's Emergency Operations Centre provides a common operating picture, and interoperability across emergency management operations and public safety departments, to help manage large events, natural disasters and other emergencies.

School and higher education systems are straining under rising costs with static or shrinking budgets

Education systems are straining under rising costs



With **better management, measurement and processes**, it is estimated **effectiveness of school systems could be raised**

22%
at the existing spending levels

- Cities are facing fiscal and taxation challenges in the aftermath of the recent financial crisis
- Yet, demand for knowledge workers with specialized skills is growing by 11 percent a year
- Many jobs will require lifelong training and continuous updating of skills
- These challenges are bringing pressure on governments to deliver efficient, responsive, individualized and citizen-centric education and government services

New South Wales Australia leverages smarter education to improve service delivery for students and reduce costs

- **The Edmund Rice Education Australia Flexible Learning Centre Network (EREA FLCN) manages enrolment and student information for over 500 students enrolled at 13 sites in New South Wales**
- **An integrated document management and email system was implemented to provide**
 - tailored reporting to meet funding and government reporting requirements
 - built in alerts during the enrolment phase to identify any students with specific needs

Benefits



- **Improved service for students, enhanced enrolment information and more detailed student reporting**
- **Substantial productivity improvements arising from immediate online access to student data**
- **Elimination of paper-based data collection leading to faster and more accurate management of student data by teaching staff**
- **Tracking of emerging trends in student needs to support planning for future resource requirements**

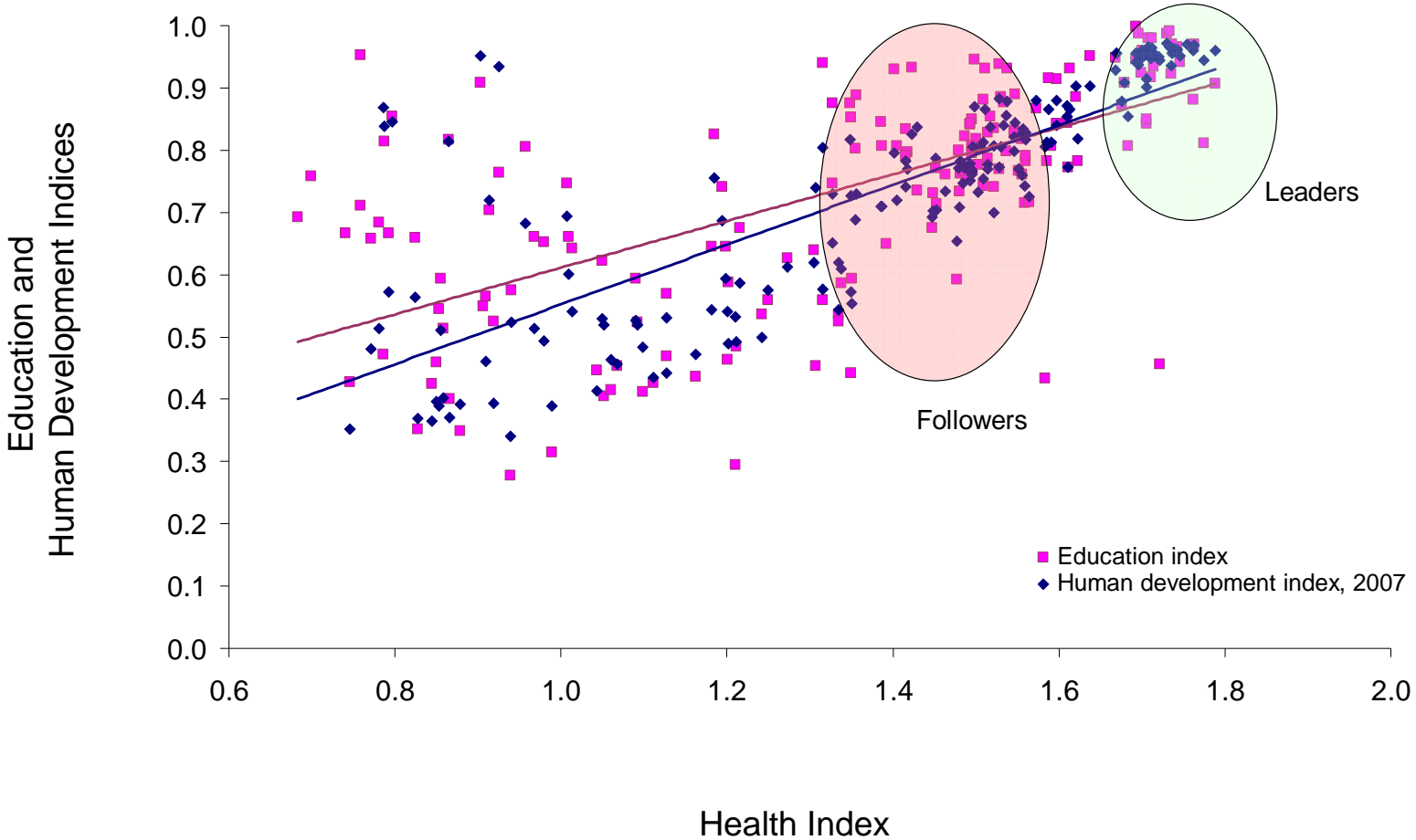


**Leveraging the power
of the community**

Connected citizens
contribute – and that can
make many things better.

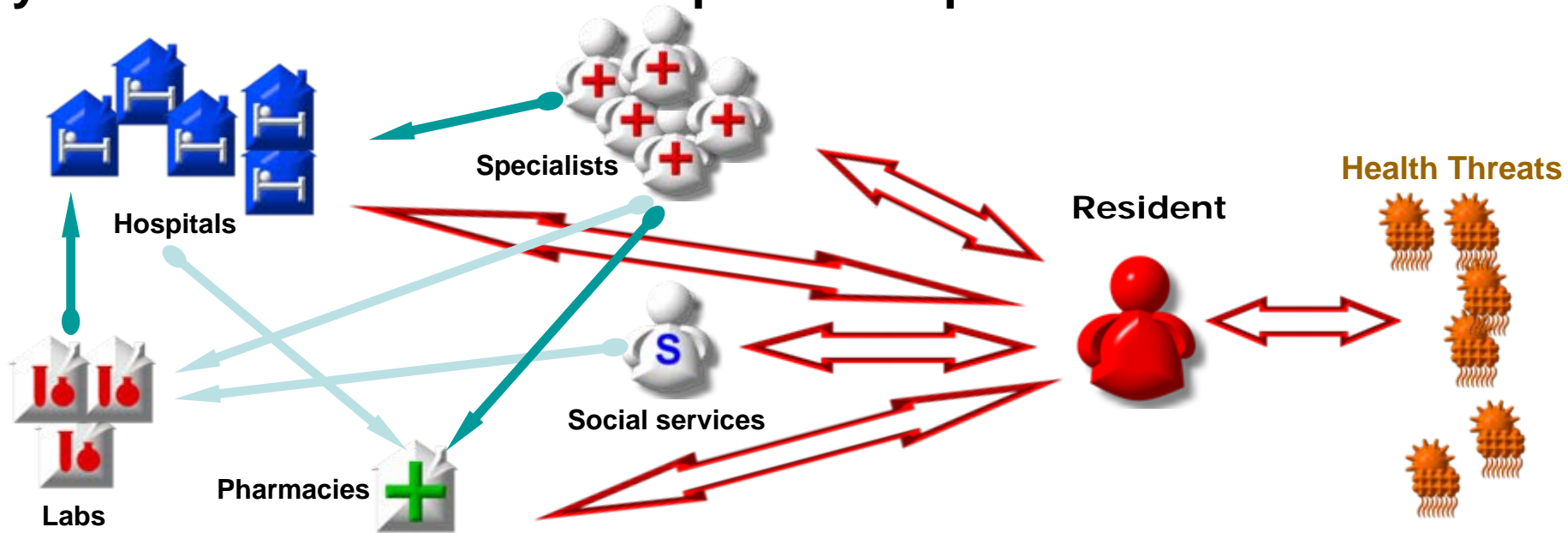
Health is fundamental to the quality and productivity of a workforce and is crucial for a city's overall survival and attractiveness

Better health is positively correlated with higher quality of skills and knowledge



Source: UN Human Development Report, 2010 database, <http://hdrstats.undp.org/en/indicators/> and IBM Global Center for Economics Development analysis

Xicheng district, Beijing is a leader in integrated healthcare systems and the detection of potential epidemics

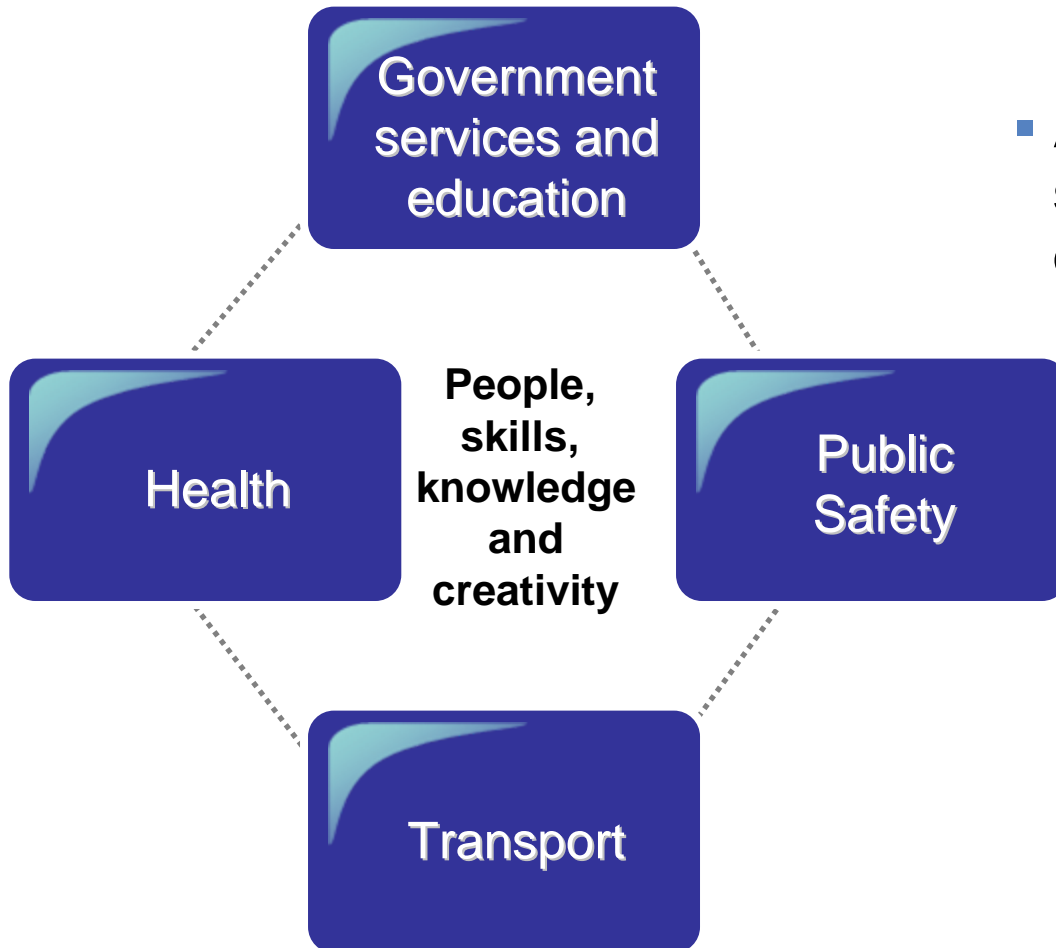


- 500 fragmented medical institutions unable to share information
- A unified management system streamlines healthcare delivery and provides a platform to integrate patient and medical data

- More efficient, less expensive delivery of care and early detection of potential epidemics
- Reduced public health risks, improved care, mobile data and records
- Citizens can obtain healthcare services in their local community rather than going to central hospitals


Source: IBM

Cities can optimize investments in core systems by cultivating a cross-systems perspective



- **A reliable, well-run transport system does not just reduce congestion**

- It improves the health and safety of a city's citizenry by reducing carbon dioxide emissions, stress and vehicular accidents
- It frees up more time for people to work or to relax
- Some cities have even seen significant increases in retail sales as vehicular traffic has decreased



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What steps should leaders take?

An aerial photograph of a city, likely Rome, showing a dense urban landscape with a large, circular stadium (Stadio Olimpico) in the center. The image is darkened to serve as a background for the text.

Decide what the city brand should be

**Drive policies conducive to skills, creativity
and knowledge-driven growth**

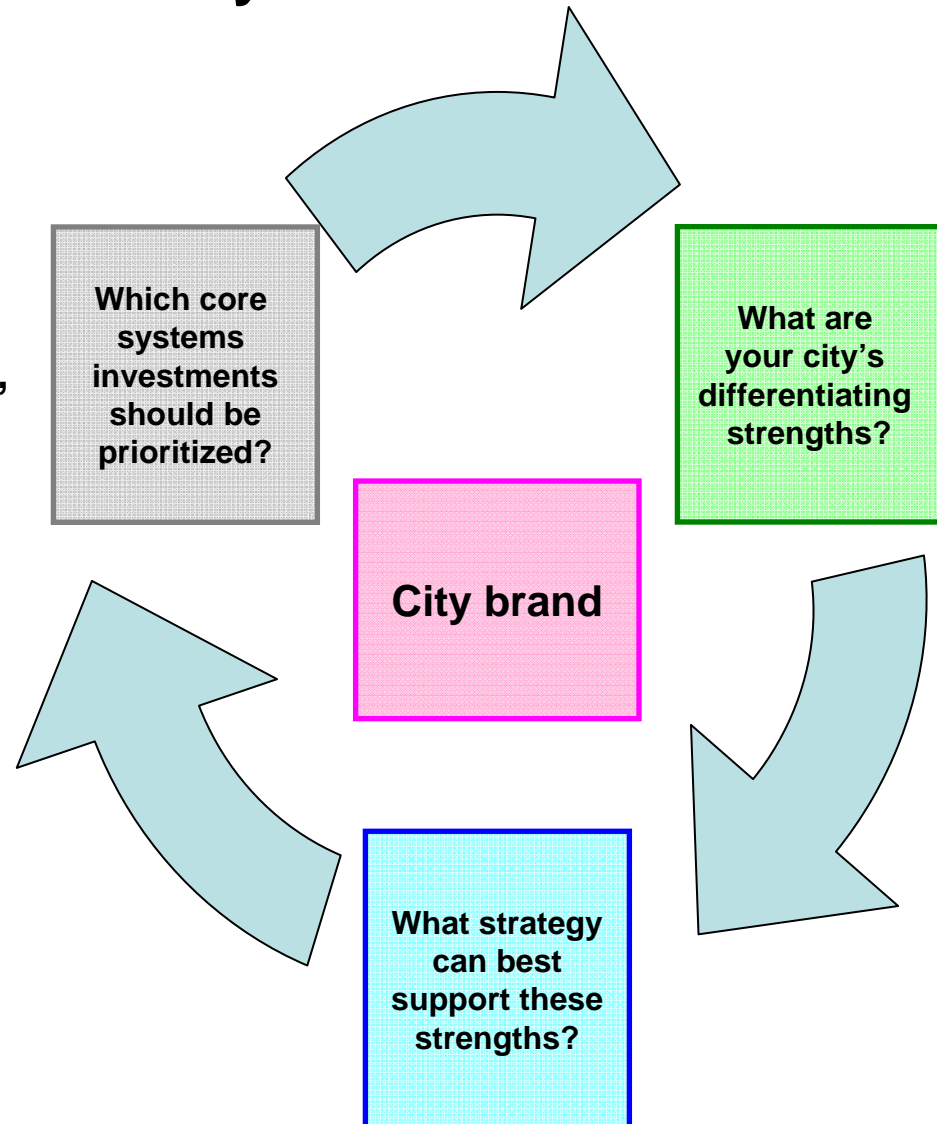
Optimize services around the citizen

**Use systems thinking in planning and
management**

**Apply enabling information technologies to
core city systems**

1. Decide what the “brand” of the city should be

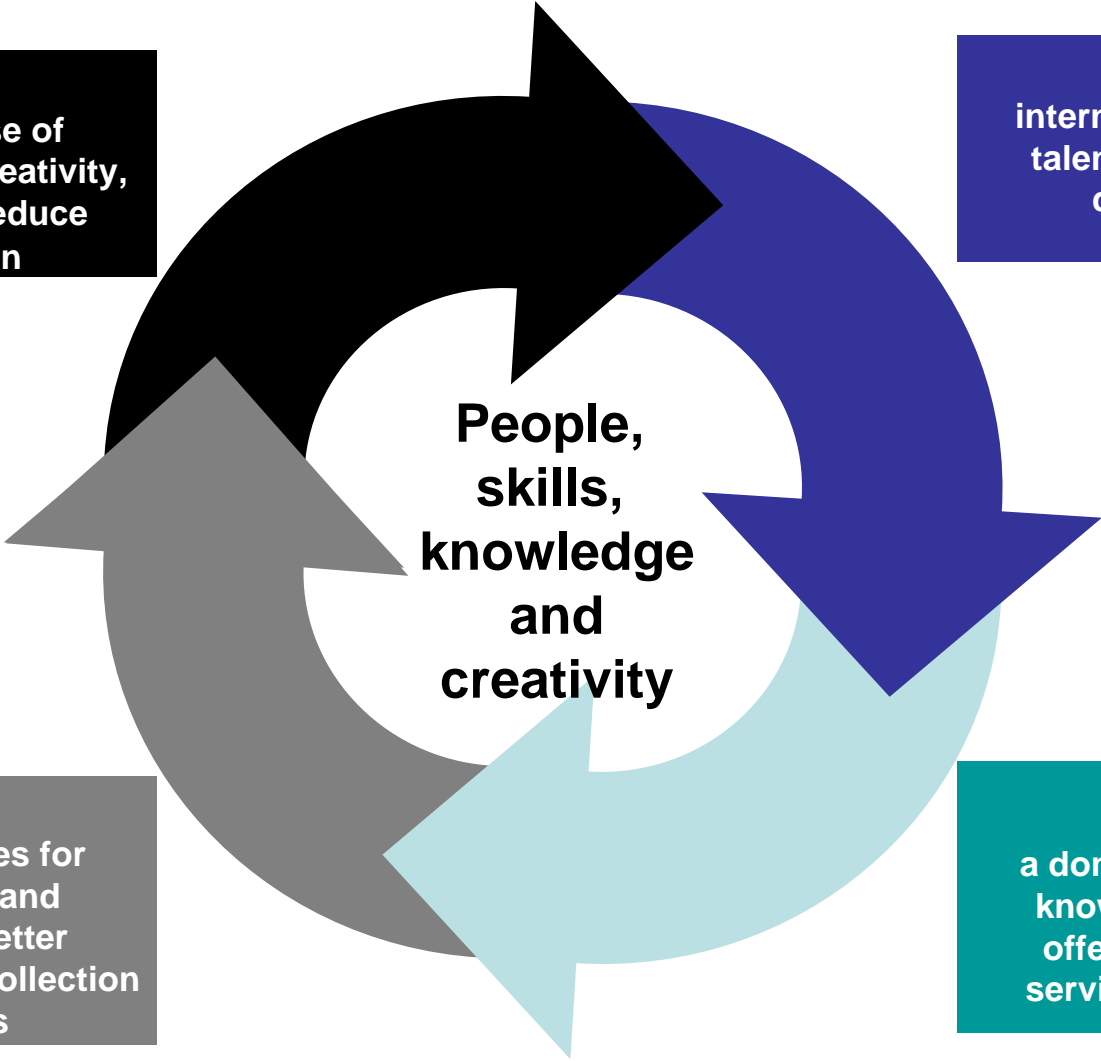
- Identify differentiating strengths
- Build strategies to emphasize them,
- Prioritize investments in core systems and design in line with the strategy



2. Adopt policies conducive to skills, creativity and knowledge-driven growth

Retain
the existing base of education, skills, creativity, and aptitude to reduce the brain drain

Attract
internationally mobile talent by enhancing quality of life services



Enable
better opportunities for deploying skills and abilities, using better deployment of data collection and analytics

Create
a domestic skills and knowledge base by offering education services and training

Source: IBM Global Center for Economics Development analysis

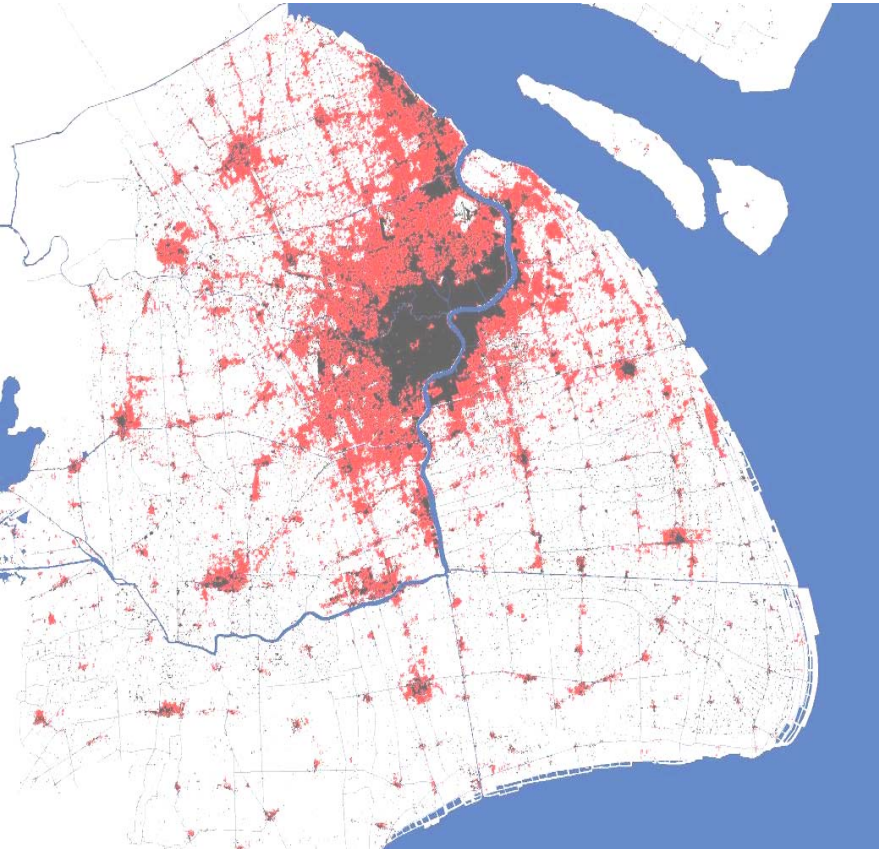
3. Optimize services around the citizen

- From standardized to tailored services
- Create digital linkages across core systems for analysis and action
- Transparent approaches that encourage direct citizen engagement

- *Remember Plato... this city is what it is because our citizens are what they are*



4. Use systems thinking in all aspects of planning and management

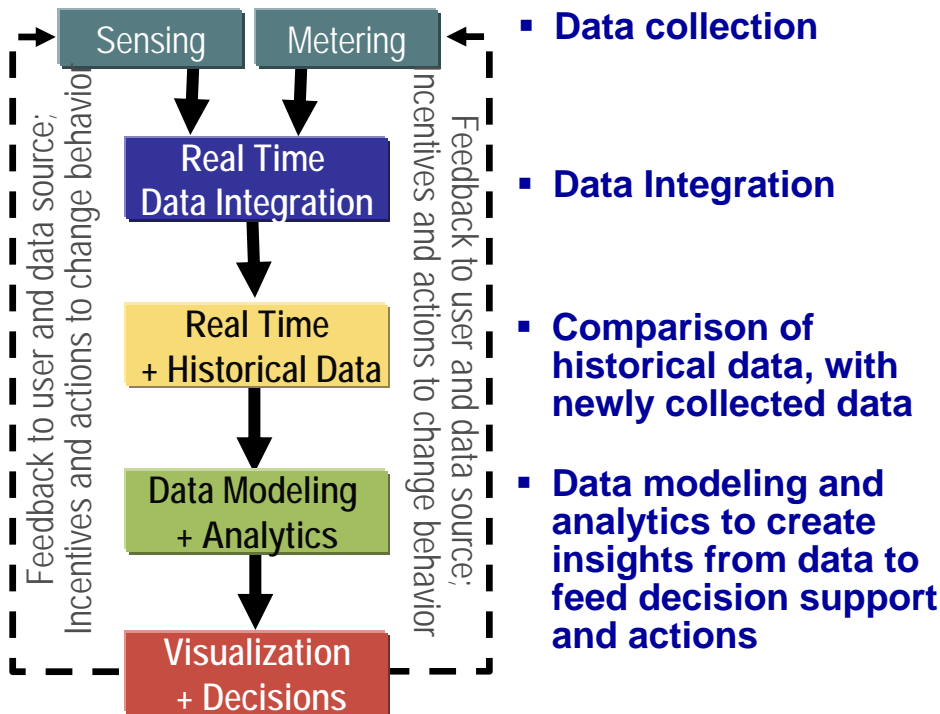


Source: Boselli, 2010


- Consider problems, solutions and the value that improvements will create in the context of related and interconnected city systems
- Identify, map and appeal to constituencies essential to the success of city improvements, *especially those that may lie outside traditional city systems bounds*
- Focus on system behaviors instead of singular events, and examine multiple approaches to changing system behaviors
- Fully leverage the value of data across systems by making information widely accessible to citizens

5. Develop and apply enabling information technologies to core city systems

Measuring, Monitoring, Modeling and Managing



- Data collection
- Data Integration
- Comparison of historical data, with newly collected data
- Data modeling and analytics to create insights from data to feed decision support and actions
- Instrument to manage - collect and manage the right kind of data
- Integrate to innovate: link data for analysis
- Optimize to transform - based on advanced analysis, optimize the system to achieve desired system behaviors

A city street scene with a large domed cathedral on the left and a tall tower on the right. The cathedral has a large green dome and classical architectural details. The tower is a modern structure with a red and white striped top. The street is busy with cars and pedestrians. The text is overlaid on the image in white, bold font.

Economic growth will increasingly rely on the merger of creativity, technology and innovation. Cities will compete to attract this mix.

Cities must provide an environment and services that meet the needs and expectations of an increasingly highly skilled and diverse population.

Investing in cities to improve social and economic returns will drive up short term efficiencies and long term competitiveness

Questions?

Thank You