

Siemens and Smart Cities

Munich, June 21st, 2017

Urbanisation is a key trend of our century



Population

- Until 2030, 4.7bn of 9bn people on this planet will be living in cities
- Cities in are growing by 1.5mn inhabitants each week

Economy

- The world's 50 largest cities have a GDP of \$9.6tn
- By 2025, 40% of global GDP growth will be generated by middleweight cities in emerging markets

Environment

Cities stand for

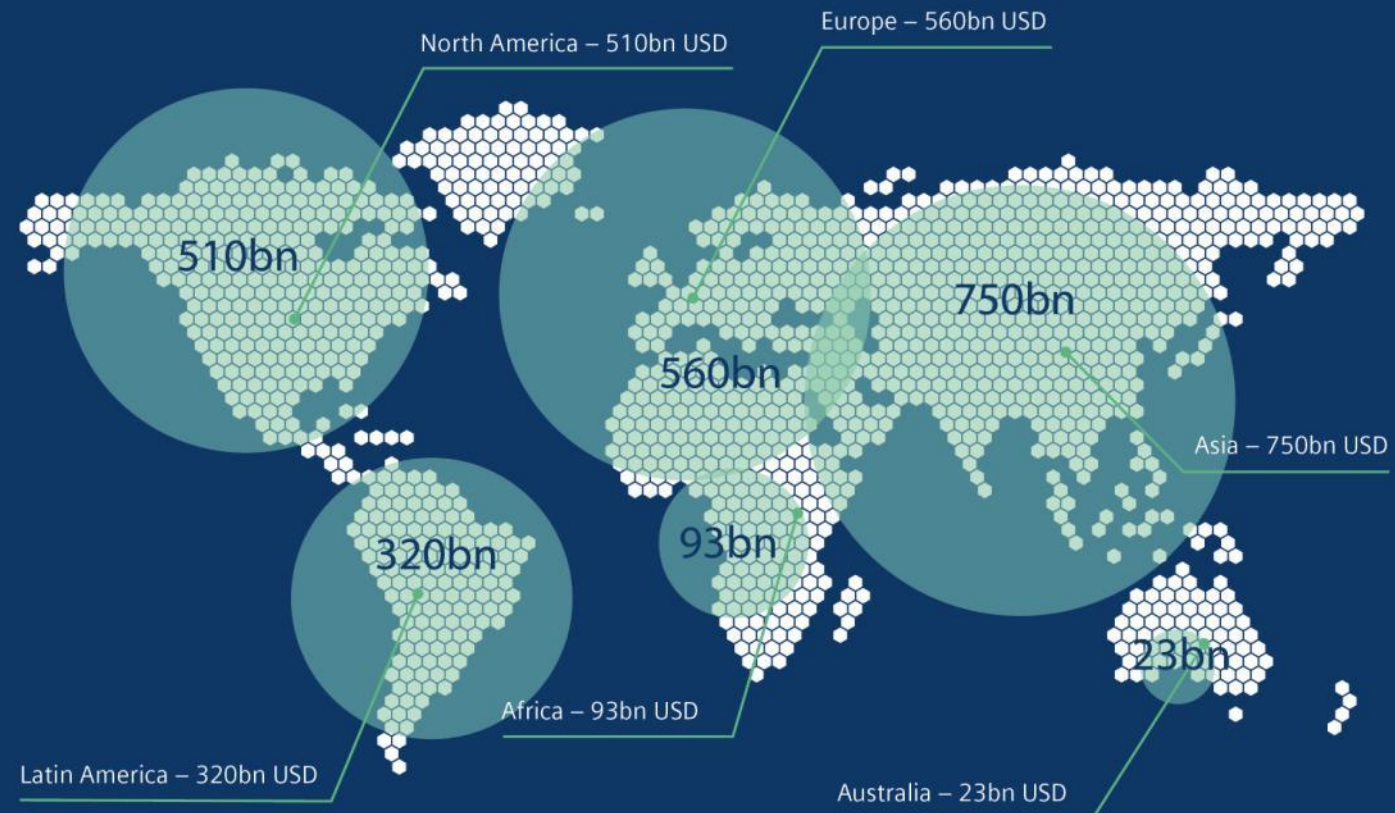
- ~80% of the world's energy
- ~60% of its drinking water
- >70% of its CO₂ emissions

The scale of the infrastructure challenge

\$57 trillion

The investment needed
in city infrastructure
between now and 2030

Estimates of infrastructure investment required by continent





2005



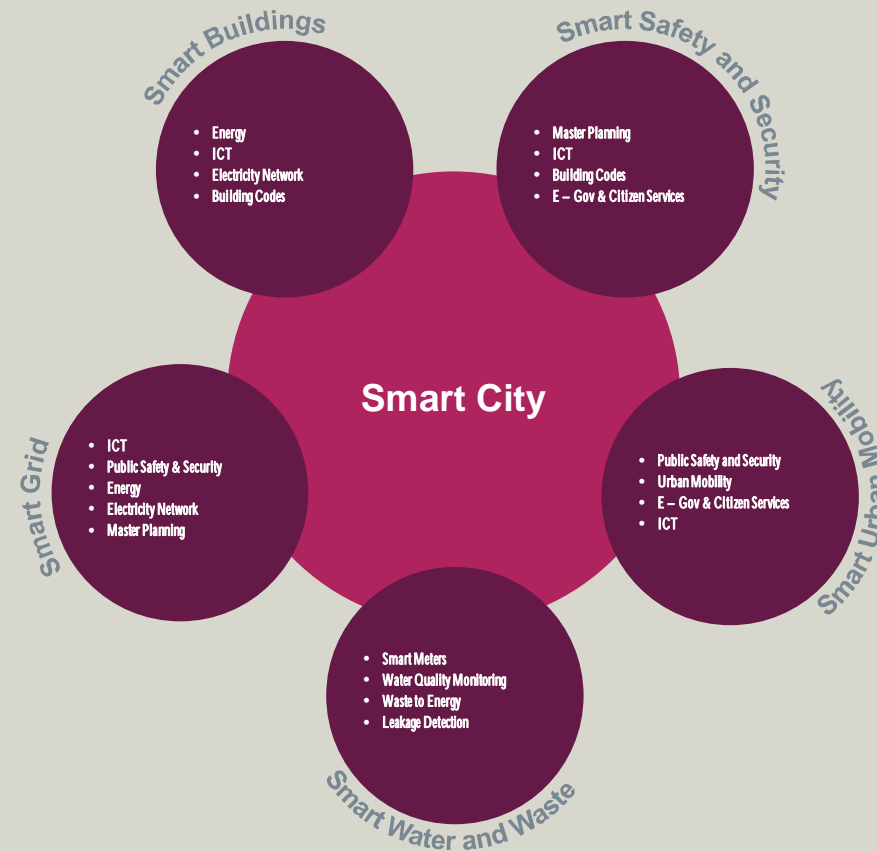
2013

Creating value through integration

Value is created through integration



Communication and integration is the Smart City evolution



Intelligent Infrastructure for smart cities



Benefits of Intelligent Infrastructure

Rolling stock



Road and rail



Power and utility grids



Buildings



Impact of intelligence

20-30% capacity increase with driverless trains

Save up to 30% lifecycle cost

Approx. 20% increase in city traffic speed

30% energy savings

Integration of renewables: 25-40% lower investment¹

20-30% less energy consumption

3-5 years payback

Additional benefits

Higher resilience, quicker outage/failure detection

Automatic and highly reliable safety and security features

No additional land use and shorter permission and construction process

¹ Compared to traditional grid expansion

Intelligent Infrastructure – Examples

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Rolling stock



Paris

Driverless Metro Lines 1 and 14 increased capacity by up to 50% because trains can run at shorter headways

Road and rail



London

20% less traffic, 17% reduction in commuter times, 150,000t less CO₂ annually through congestion charging

Power and utility grids



India

Improved availability of distribution grid and loss¹ reduction from 30% to 15%

Buildings



Taipei

Building automation Taipei 101 leads to 18% energy efficiency

¹ Technical and commercial losses

The Crystal

A Sustainable Cities Initiative

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Why the Crystal?

- § A **sustainable cities initiative by Siemens**. Supporting long term cooperation with cities for infrastructure solutions
- § A **platform for global collaboration** amongst key players in urban sustainability
- § A **centre to discuss and learn** about the challenges cities are facing and possible solutions to reduce their environmental impact.
- § **Home for thought leadership** on urban sustainability providing experts to exchange ideas.



The Crystal

One of the most sustainable buildings in the world

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Certification

The only building awarded with
LEED Platinum
BREEAM Outstanding



43%

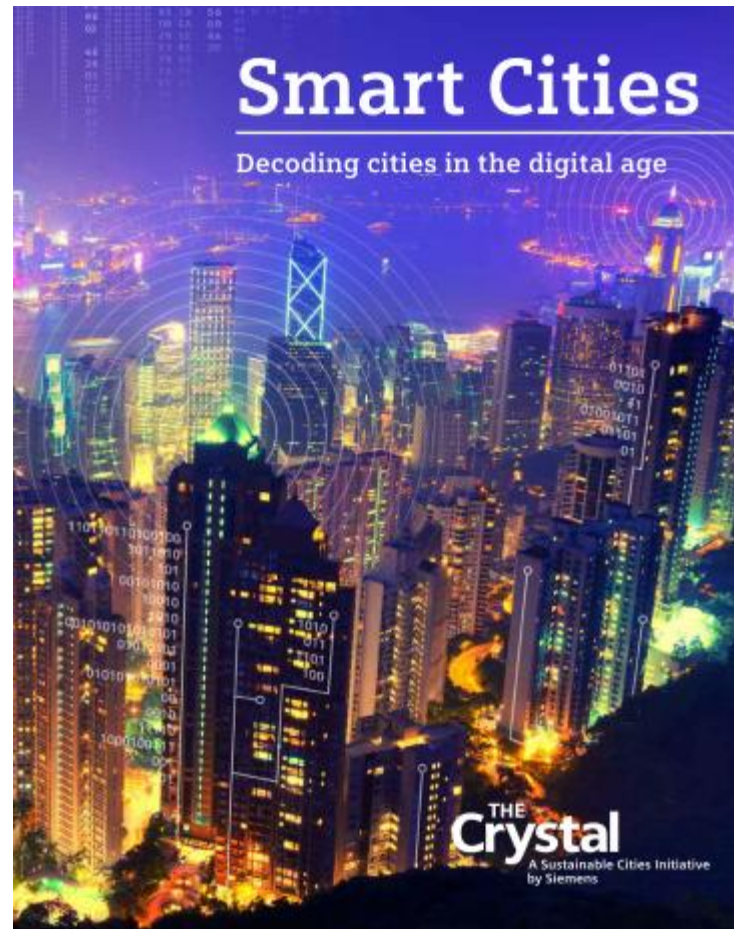
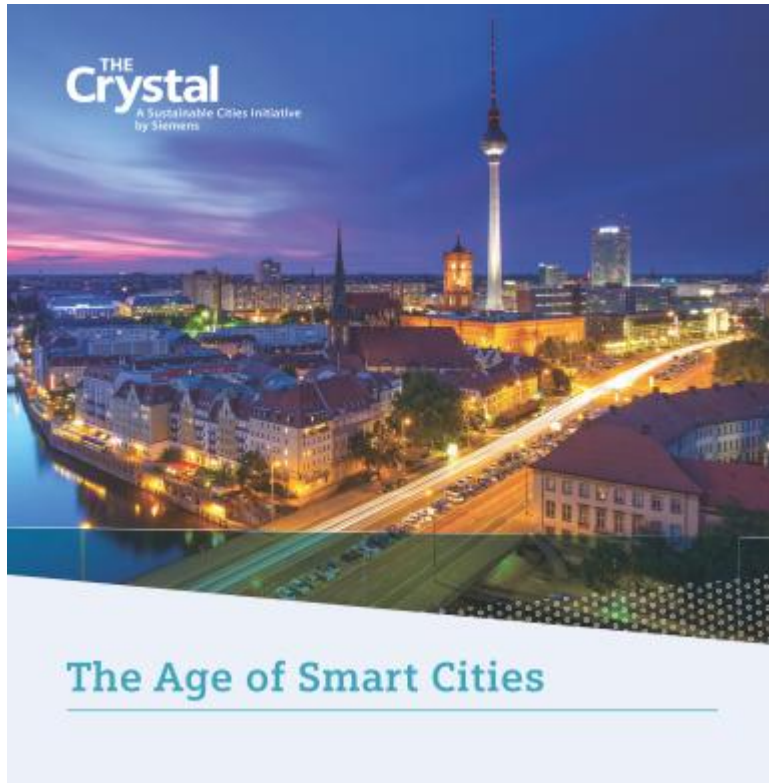
improved
energy
efficiency

71%

lower green-
house gas
emissions

CoC Cities – Urban Development Smart Cities: Thought Leadership

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Julie Alexander Urban Development CoC



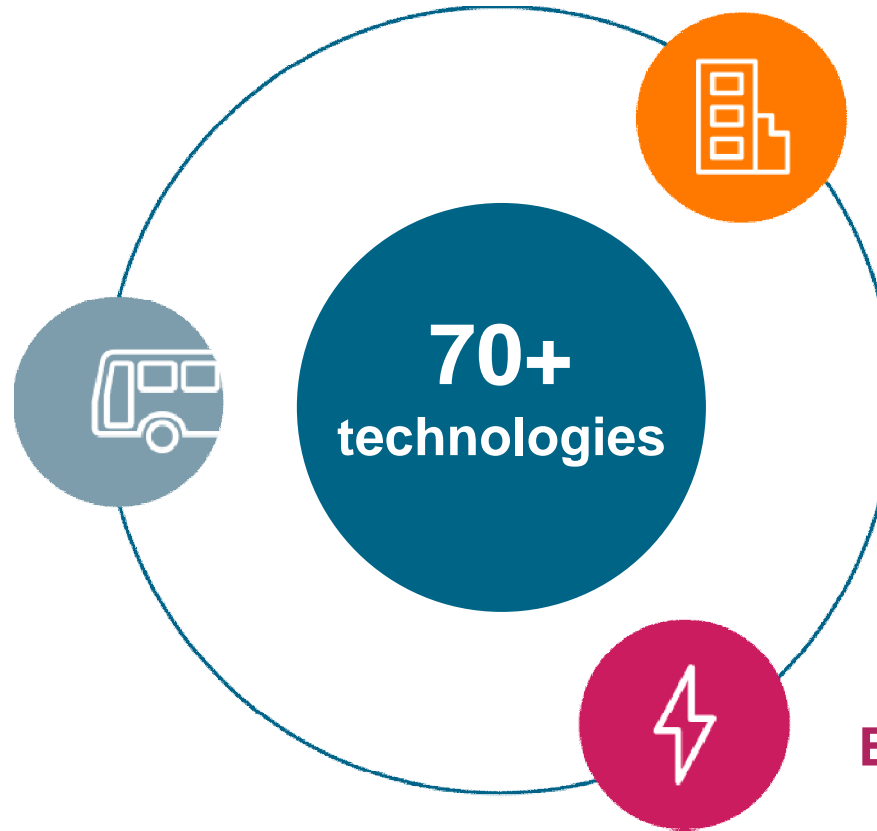
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What is the CyPT?

- Public transport
- Private transport
- Traffic management
- Freight

Transport



Buildings

- Building envelope
- Building automation
- Monitoring and optimisation

Energy

- Renewable generation
- Combined Heat and Power
- Grid management

The outcomes (KPIs)



GHG



Air quality



Economy



CO₂



PM10



NO_x



Jobs

Who we already supported

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San Francisco



Minneapolis



Vienna



Munich



Nanjing



New Bedford



Riverside



Copenhagen



Helsinki



Wuhan



Mexico City



London



Berlin



Shenzhen



Ningbo

Thank you...

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...for your attention!