How lighting will shape de cities of the future

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innovation ✦ you

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THE FUTURE IS NOW
#BTTF2015

Connected lighting and smart city dashboards **Buenos Aires, Argentina**

Philips CityTouch
and SAP HANA®

6 All city assets in one dashboard

5 Geospatial information

1 Street lighting

3 Traffic lights

2 Waste

4 Citizen complaints

Open to exploring
the power of city data

Connected lighting and city monitoring
Los Angeles, USA

Together with Philips Lighting, Los Angeles is shaping the future by exploring new smart city applications that build on the connected lighting infrastructure to realize additional value beyond illumination.

Grid health monitoring uses the connectivity offered by CityTouch to continuously assess the quality of the lighting network's power supply.

Environmental noise monitoring uses an acoustic noise sensor (microphone) that builds upon the CityTouch ecosystem including the connector nodes already deployed. Sound levels on the street can be monitored to understand activity levels, check compliance with regulations and support the well-being of citizens.

Acoustic monitoring

1 Environmental noise variability

Creates data-driven city planning 4

2 Acoustic incident detector

3 Urban soundscapes
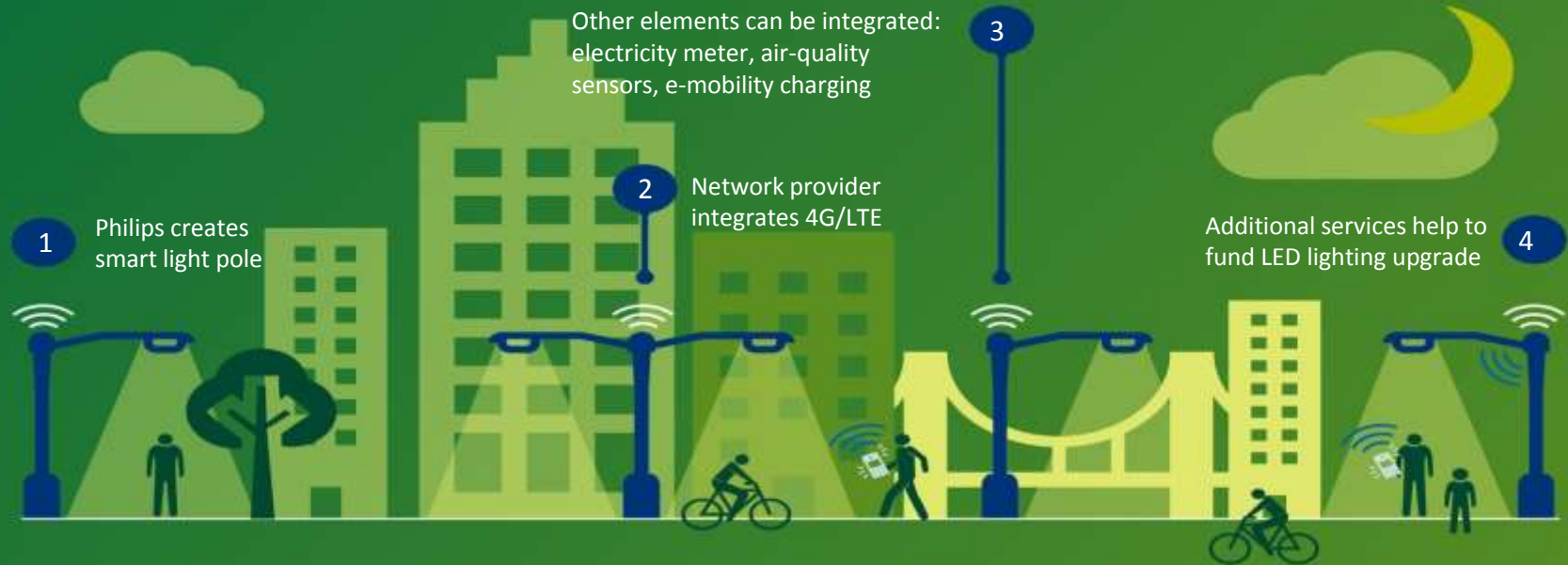
Philips smart poles
San Jose, California, USA

Rapidly increasing demand for mobile and broadband connectivity is forcing cities to think about how to seamlessly and discreetly integrate the needed infrastructure.

Open to collaborate with connectivity providers

Philips and Ericsson, together with the city of San Jose, have collaborated on a project to pilot 50 Philips smart poles. These poles combine LED lighting with integrated 4G equipment. Electrical meters can be integrated into the smart pole, eliminating the need for additional on-street cabinets. The poles are open to integrate other devices in the future.

With this kind of openness, smart poles can act as aesthetically pleasing hubs for a range of city services.

Philips smart poles

Other elements can be integrated: electricity meter, air-quality sensors, e-mobility charging

3

Network provider integrates 4G/LTE

2

1 Philips creates smart light pole

Additional services help to fund LED lighting upgrade

4

My experience...

Access to funding is key

European Structural and Investment Funds	European Funding Programmes	Project Development Assistance	Alternative Financing Schemes
ERDF	LIFE	ELENA EIB	On Bill Financing
Cohesion Fund	CLLD	ELENA CEB	TPI - EPC
ESF	URBACT III	ELENA EBRD	Soft Loans, guarantees
EAFRD	CIVITAS Activity Fund	ELENA KfW	Revolving loan funds
EMFF	Territorial Cooperation	Horizon 2020 Call EE20	Crowd-funding
	Horizon 2020		Green Municipal Bonds

Legend:
- SEAP development
- Capacity building / hiring of experts / preparation of bankable projects and investments
- SEAP implementation (hard measures)
- SEAP implementation (soft measures, e.g. awareness raising, stakeholders' involvement)

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MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

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1ª Convocatoria Ciudades Inteligentes
Alcalá La Real, Costa del Sol, Granada, Huelva, Lepe, Martos, Sevilla, Toledo, Valdepeñas, Almendralejo-Bajadoz, Villanueva de la Serena

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63 MILLONES DE EUROS

Convocatoria Islas Inteligentes
El Hierro, Fuerteventura, Mallorca

30 MILLONES DE EUROS

UNIÓN EUROPEA
Fondo Europeo de Desarrollo Regional
"Una manera de hacer Europa"

UNIÓN EUROPEA
Fondo Social Europeo
"El FSE invierte en tu futuro"

Are smart cities the way to go?
We partnered with EIU to ask citizens

This study by The Economist Intelligence Unit (EIU), supported by Philips Lighting, investigates how citizens and businesses in 12 diverse cities around the world envision the benefits of smart cities.

The choices of the respondents to the survey reflect the diverse nature of the challenges and opportunities facing different cities, from older cities, where technology is at work with infrastructure that may be centuries old, to new cities in emerging markets.
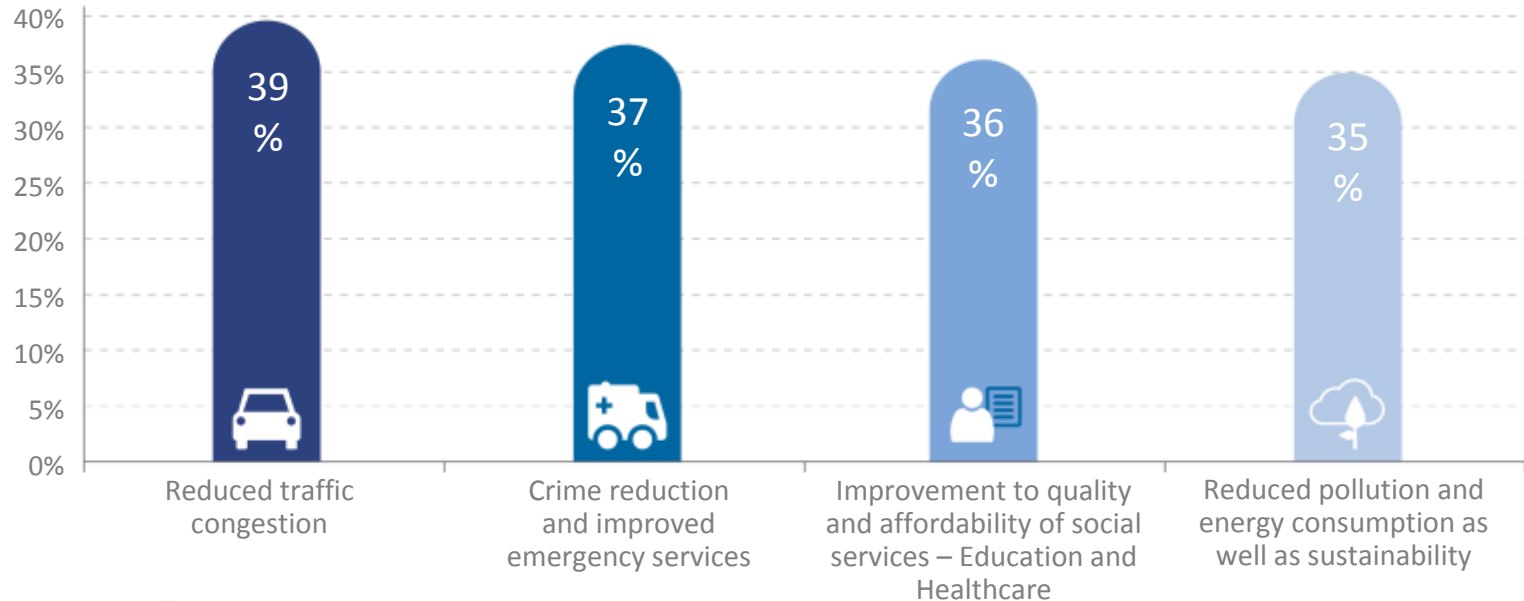
Full report available online >

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Result #1: the connected city

Near real-time feedback on urban services is possible

Citizens are willing to share personal data for improved city services,
e.g. **35%** for less energy consumption.

39%	37%	36%	35%
Reduced traffic congestion	Crime reduction and improved emergency services	Improvement to quality and affordability of social services – Education and Healthcare	Reduced pollution and energy consumption as well as sustainability

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Result #2: the crowd sourced city

Growing interest of citizens in shaping their cities and more pressure on city governments to fulfill these needs

Citizens like to feedback

32% of citizens are currently providing feedback to their local authorities but **over one-half** say they would like to do so

Citizens like digital tools

51% want wider access to digital platforms to enable them to communicate with government

Cities have been quite slow to step into dialogue processes with citizens [on smart cities]"

Jarmo Eskelinen, Chief Innovation and Technology Officer, Future Cities Catapult

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Result #3: the collaborative city

The private sector is partner for advancing smart cities

Smart cities attract new talent

53% of businesses believe smart cities can help to attract top talent, which they believe can impact the bottom line

Businesses benefit from community engagement

A majority of executives (73%) are enthusiastic about the idea of facilitating citizen engagement in urban planning and design by sponsoring **hackathons**, appathons, online **crowdsourcing challenges** or **similar digital innovation events**

"Buying existing technology from the shelf isn't that interesting. But putting a challenge on the table and inviting the private sector to help us solve it – that makes it interesting"

Ingrid van Engelshoven, Deputy Mayor, Knowledge Economy, International Affairs, Youth and Education, The Hague

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Delivering the right light with excellent optics, flexible controls, and tunable luminaires

Ambient light **creates the atmosphere and empowers places**

Bridge, Little Rock, Arkansas
Photo credit: Paul Barrow and Rick Friedman

Lighting dimmed in **industrial area**

100% light output for footpaths through the **city park**

Dynamic scheduling **provides the right light**

Siegburg, Germany

White light everyday, color-changing effects for special occasions

Dynamic light contributes to the **identity of cities**

London Eye, London, UK

Lighting is the most widespread high density asset **in every city worldwide**

Connect to leverage the benefits
of LED energy savings

The Climate Group's lightsavers trial investigated pilots with LED and smart lighting in 12 major cities. In 15 trials, with over 500 lights and 27 products, significant energy savings were identified.
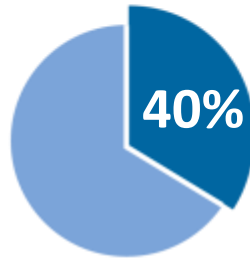
50-70%
energy savings with LED

Up to 80%
energy savings when coupled with smart controls

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Public lighting is everywhere
but connectivity is not

~300
million street lights worldwide[1]

40% Lighting can account for up to 40% of a city's total energy consumption[2]

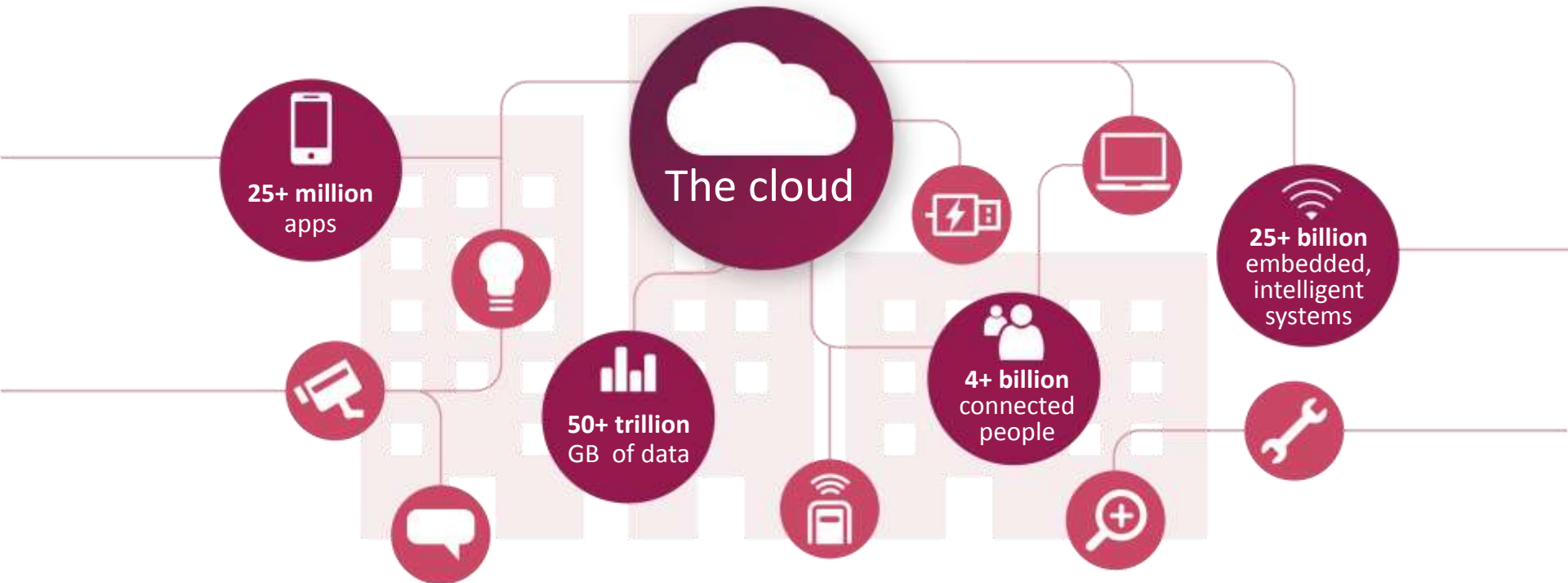On average, public lighting is more than 20 years old[3]

2% of installed systems are connected, expected to reach 35% by 2025[3]

[1] Northeast Group, *Global LED and Smart Street Lighting Forecast* 2015-2025
[2] European PPP Expertise Centre (EPEC), European Commission, *Energy Efficient Street Lighting*, 2013
[3] Philips market analysis

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New lighting systems need to be
connected, scalable, open and secure

The cloud

25+ million apps

50+ trillion GB of data

4+ billion connected people

25+ billion embedded, intelligent systems
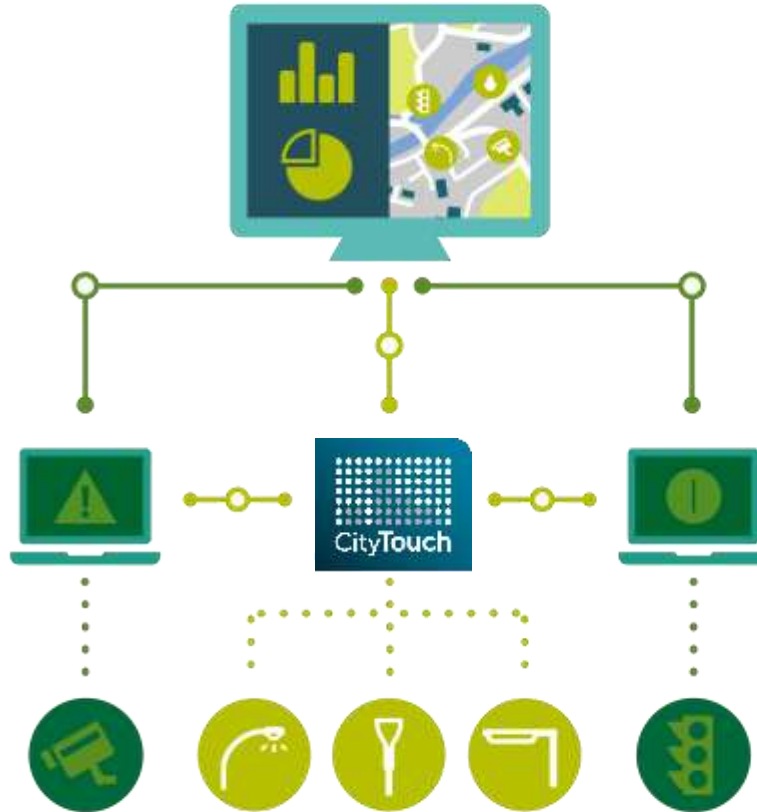
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Deal with the challenges of the cities as Partners

Smart city ecosystem

Philips CityTouch
The open lighting management system for evolving smart cities.

Other City Services: Waste, Parking, Environment (via Partners)

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Digistreet, first luminaire System Ready
You can connect it now or later (Plug&Play)

Partnerships with local Start-ups

SOUL: TECHNOLOGIC SOLUTION

CHEMICAL COMPOSITION

satellite **imagery** | ESA partnership

Copernicus
Europe's eyes on Earth

Atmosphere Monitoring
Service

EUMETSAT

Air quality sensors
on Public Lighting in real time

Business Model

- Pharmaceutical (respiratory diseases)
- Insurance risk assessment
- Runners and sport events
- Traffic Congestion

AIR QUALITY SENSORS
ON MOVING VEHICLES & SATELLITE IMAGERY

space layer
technologies

London Evening Standard

AS POLLUTION BLACKSPOTS IN THE
SQUARE MILE ARE NAMED CHIEFS WARN

AIR TOO
TOXIC
TO JOG
IN CITY

"Smart lighting is emerging rapidly. In addition to energy savings, it has the potential to act as enabling infrastructure for IoT. "

Gartner.