



Intelligent City.
Bright Future.

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Genova Smart Week
Stefano Chiavegati,
CMO Europe & Middle East

Our Business Transformation

Creating a start-up with our own walls.

Current brings innovation in one place by combining GE's capabilities in LED, Solar, Energy Storage, Onsite Generation, and Electric Vehicle Infrastructure into a sustainable energy ecosystem that benefits our customers and partners.

ASSESS & ANALYZE

We'll figure out your energy strategy by assessing and analyzing your energy usage and its effects on your operations. Our evaluation is meant to future-proof risk and identify solutions that will help convert your energy consumption into increased productivity.

RECOMMEND HARDWARE & SOFTWARE

Whether you are a hospital, a university, retail store or a city, Current will provide hardware, software and financing solutions to make you more reliable, efficient and profitable. This means unlocking new revenue streams through the use of sensors and networked systems.

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Predix is the backbone of the Industrial Internet, taking data from machines and generating insights for customers. Customers can use Predix to analyze energy consumption and create efficiencies.

Cities Face Some Tough Challenges

Street lighting equals up to

40% of a city's electricity bill



Managing
Energy
Spends

Resource
Conservation

By 2050, the world's population is projected to be

**9.6
Billion**



By 2030,

60%

of the world's population will live in urban areas

Citizen
Safety

Air Pollution accounted for

430,000

Premature deaths in Europe in 2012



Cities
consume

66%

of the world's energy, generating a large share of greenhouse gases

Annual cost of traffic congestion in France, Germany and the UK

€98 Billion each

Balancing the
Budget

Intelligence turns Challenges into Opportunities

Street lighting offers an unbeatable existing infrastructure backbone for cost effective deployment of networking technologies, sensors, cameras and other smart hardware.



The Realization of Value

An intelligent lighting system can help Cities optimize operations and assets, save carbon & energy in an efficient, intelligent city. Data, software and analytics make it possible.



Advanced
Lighting
Control



App Economy



Parking
Optimization



Asset
Management



Traffic
Optimization



New
Revenue



Environmental
Monitoring
& Analysis

Create the Intelligent City You Want with GE

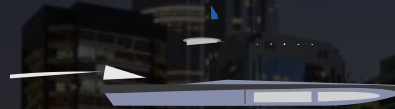
LEDs



50-70% Energy Savings

Experience the shift from analogue to digital lighting. GE LEDs are your smart city gateway technology.

Controls



20 to 40% additional energy savings

Remotely control lighting, dim in low traffic areas, optimize maintenance, extend asset life and much more.

Intelligent LEDs



Intelligence: Real Time, City-Wide

Enabled with sensors and cameras, your street lights are transformed into a data based services platform that no smart city should be without.

Together, Let's Build Your Intelligent City of the Future

An Intelligent City uses innovative technologies to enhance citizen well-being and visitor satisfaction while creating jobs, reducing costs and even generating revenue.



Some Use
Case

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Parking
Optimization

According to the
International Parking
Institute, **30% of
the cars circling
a city** are the result
of drivers searching for
a parking spot



Optimize parking and increase productivity and economic value

Benefits and Revenue Sources

- Cities daily can save 2 min searching time per parking space
- Reduced time, fuel and vehicle emissions to find parking
- Revenue from optimized parking enforcement
- Valuable data (city owned) on parking patterns and trends
- Cost savings through better parking assets management

Beneficiaries

- Drivers, citizens & the environment
- City
- App developers, urban planners
- City & Citizens



Traffic
Optimization

Improve Traffic Management

Rising populations, steady sales of personal vehicles, increases in deliveries from online services – the pressure on roads is rising!



Save up to 15% time used in traffic by optimizing traffic lights and traffic flows at peak times, events, etc.



Precise origin/destination information translates into 10-20 % saved time due to better in-route guidance via navigation systems, apps or dynamic road signs.



Save up to 10% better traffic optimization due to improved data for road and traffic planning tools.



Economic impact of road accidents in EU equals up to 1.3% of annual GDP*



Public Safety

Eyes on the Road to Enable Faster Response Times

Achieve large scale camera deployment for less by leveraging the lighting infrastructure – see what's happening, prevent or respond more quickly to incidents. Increase situational awareness.



Imagine being able to capture a photo or video clip of an incident to help city officials respond more effectively and document as needed.



Analyze meta-data around pedestrians and vehicles along with their associated patterns to understand citizens needs.



Provide first responders with situational data that helps them plan and respond up to 10% faster.





Environmental
Monitoring
& Analysis

Weather and Environmental Analytics

When it rains it pours. Stay ahead of the weather with real time information at street level.



Highly localized and actionable precipitation data for flashflood alerts, emergency response, etc.



Information translates into cost savings through better roads planning and incident prevention.



Identify sources of air pollution and plan courses to help mitigate it.



New
Revenue

Street lights are ideal for integrating digital signage!

Earn revenue by renting display opportunities for advertisers. Expand coverage of signage to provide real time, relevant info for drivers and citizens.





Get Ready for the Electric Revolution in Transportation

**At least 34.000
EV/Hybrid cars in
UAE by 2020,
according to
DSCE**



Benefits and Revenue Sources


- Dramatically lower cost of EV infrastructure deployment
- Rent charging stations to vehicle operators and user
- Valuable data (city owned) on charging patterns and trends
- Integrate with lighting system maintenance to cut costs

Beneficiaries

- Drivers, citizens
- City
- App developers, urban planners
- City, operations & maintenance teams

Case Studies

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San Diego Installs LightGrid™ Technology

San Diego was the first city to implement the LightGrid™ Outdoor Wireless Control System, which was embedded into more than 3,000 Evolve™ LED street light fixtures.

How It Works:

LightGrid™ is a groundbreaking outdoor wireless control system for street and roadway LED lights. The unique technology inside this system allows for remote operation and monitoring of all fixtures through a Web-enabled central management system.

Savings:

- LED reduces energy use by an average of 50–60% per fixture
- \$250,000 (2,537,000 kWh) energy savings annually with LED fixtures
- \$254,000 annual maintenance savings
- CO₂ emissions reduction: 5,074,000 lbs. saved
- Additional 30% energy savings expected with dimming capability added from LightGrid

Added Benefits:

- Monitors all street lights in the city on any smart device
- Dims individual fixtures and multiple zones in real time
- Alerts city officials to power failures and fallen poles via GPS coordinates
- Monitors real-time power consumption with exceptional accuracy, exceeding local utility adaptive control meter system requirements
- Generates usage reports

"Fixtures from Current produce superior light performance and more light output when dimmed than the competition in testing."

—Lorie Costo-Azcar, Project Officer 1,
City of San Diego Environmental Services



San Diego Intelligent Cities Pilot

We implemented Intelligent Decorative Post Tops with built-in sensors in San Diego's Gaslamp Quarter. The Intelligent Cities pilot program from Current, powered by GE, is transforming LED street lights into intelligent, connected devices. These lights do more than illuminate, they help San Diego run more efficiently.

Check
with
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on slide
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How It Works:

Intelligent street lights have sensors, controls, wireless transmitters and microprocessors built within the LED systems.

The cloud platform collects and analyzes data to help deliver optimized tools to help cities respond to a variety of challenges.

Enhanced Intelligence:

- Pilot used software-enabled LED lighting plus GE's cloud platform, the only cloud built for industrial applications
- A citywide deployment expected to begin in 2016
- Parking enforcement—increased efficiency in monitoring violations

Future Opportunities:

- Exclusively through Current fixtures, emergency response ShotSpotter™ software detects gun shots in real time
- System enhances traffic flow based on construction, weather and more
- Environmental monitoring helps to cut greenhouse gas emissions
- Built-in sensors and wireless transceivers direct drivers to available parking spaces

Privacy FAQs:

Should I worry that "Big Brother" will be watching me through my street lights?

The data collected is not intended as a means of monitoring individual activity but rather analyzing larger data trends to help a city and its residents.

Who owns the data collected through the Intelligent Environments for Cities solution?

During full implementation, we expect each city to own all data generated and built by the solution. Current, under the direction of the city, will have license to manage and access the data on the city's behalf to help deliver meaningful outcomes for the city and its residents. In a pilot, Current owns the equipment and the data in case the pilot does not move forward. Data will not be shared outside of the Current development team, and the city will have full awareness of how the data is being analyzed and reviewed.

Does the system have cameras? Are the pictures stored?

The Intelligent Cities solution has the capability of providing both pictures and video for purposes like emergency response and traffic optimization. However, cities dictate whether to activate this feature and direct us in the storage, processing and transfer of the Intelligent Cities data.

Is the footage recorded and logged or only an active stream that doesn't record?

As pictures or videos enter the Intelligent Cities system, they are translated into binary data, and software then analyzes the data for trends. There are some instances where a city would want video and pictures. As an example, video and pictures could be used by city management and safety personnel, such as first responders, in the future to help them understand situations before they arrive at a scene.

Budapest Intelligent Lighting Pilot

- ✓ 235 installed fixtures
- ✓ 70 'smart boxes' deployed
- ✓ 13 measured parameters
- ✓ 10 sensor types/pole



Thank You

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