

# PHILIPS

sense **and** simplicity

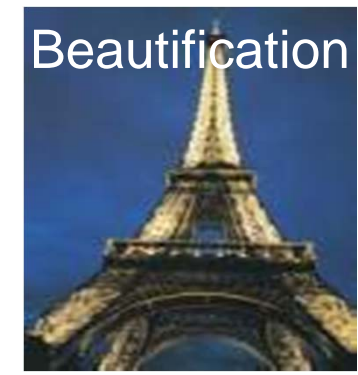
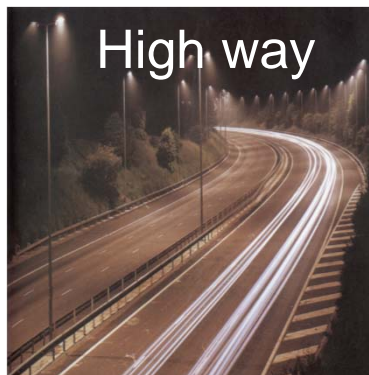
## Advanced Lighting for Outdoor Applications

Satyen Mukherjee, Chief Scientist, Philips Research North America

AEC 2010, New York, Nov 8, 2010

# Contents

- Outdoor lighting requirements
- Advanced light sources
- Controls technologies
- Environmental aspects
- Wrap up



# The only constant is change



## Cities want to establish identity

€5.5 billion was invested in outdoor lighting in 2009 alone.



## Artificial light is disturbing a delicate balance

19% of all the energy consumed worldwide comes from lighting.



## Public demand for darkness

Night skies in densely populated cities can be as much as 500 times brighter than is natural.



## Governments are tightening restrictions

188 countries have already shown their commitment or support for the UN's Kyoto Protocol.

# Road Lighting

## Improving Safety and Efficiency

### Innovative SSL Road Lighting Solutions

- A complete SSL industry chain
- Cutting edge innovation and high reliability
  - Most efficient SSL light source with outstanding lifetime
  - Best total system efficacy and lighting distribution performance
- Philips is actively supporting the China government's "10 Cities 10k Lamps" road lighting program with products and service model







# White light in the spotlight

A meaningful solution: Energy efficiency

There's no denying the safety

CosmoPolis™ Outdoor Lighting System	MasterColor® CDM Elite MW System	QL Induction Lighting System	Energy Advantage CDM with AllStart™ Technology	MasterColor® ED23.5	MasterColor® HPS- RetroWhite™
					



Redbridge, London, UK

market. Working with cities as diverse as London, Madrid and Seoul, we're increasing visibility and reducing energy costs by up to 50%.

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# Putting light to work, when and where it makes sense

A meaningful solution: Energy efficiency



LED is now bringing its innovative character and energy-saving potential to a wide variety of Outdoor applications. Legislative pressure and governmental stimulus programs are also playing a part.

## The serviceable LEDGINE

is an upgradable light engine combined with the Philips LED Green service program. The perfect balance between initial investment and energy savings over the lifespan of your installation.



# Luminaries with LEDs , LED

Smart Things Last Longer and Consume Less Energy





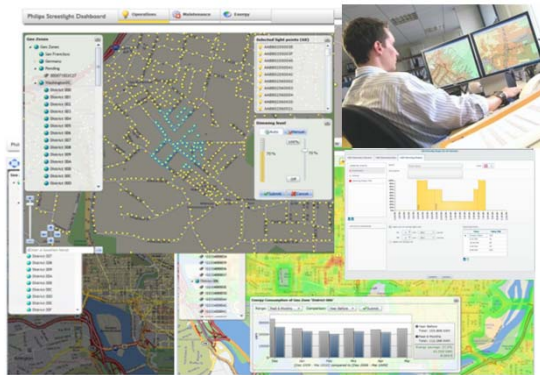
# Lighting Control Technologies

## High performance sources LED & HID



## Video

## Remote monitoring & control metering, status, energy reports

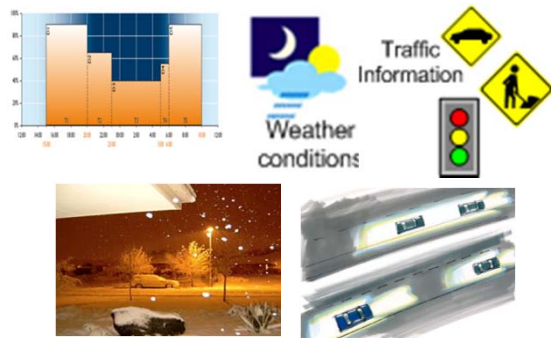


## Wireless connectivity

mesh network, scalability, security

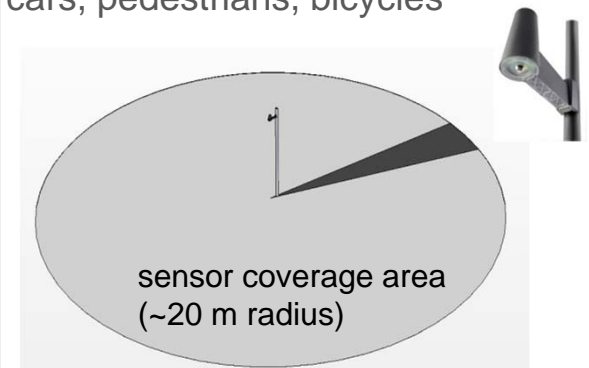


## Dynamic lighting control schedules, presence, weather, traffic



## Sensor (object differentiation)

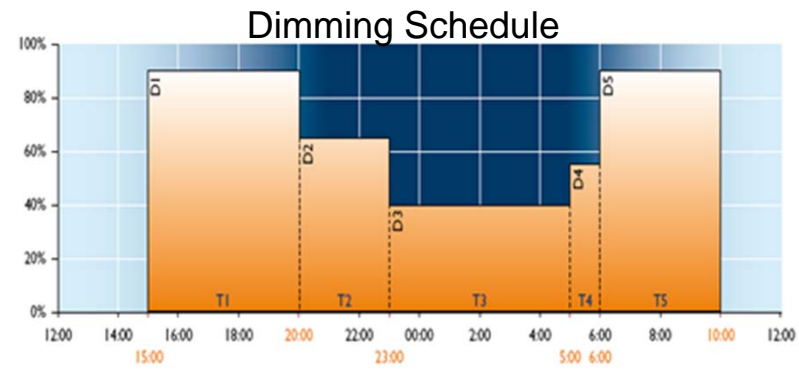
cars, pedestrians, bicycles



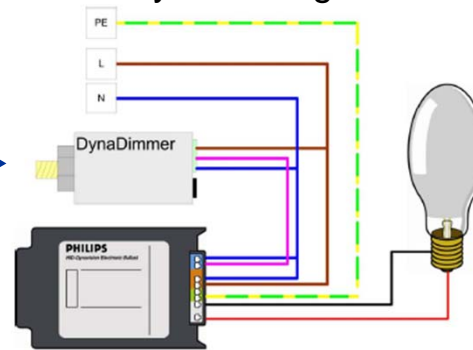


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# Dynadimmer

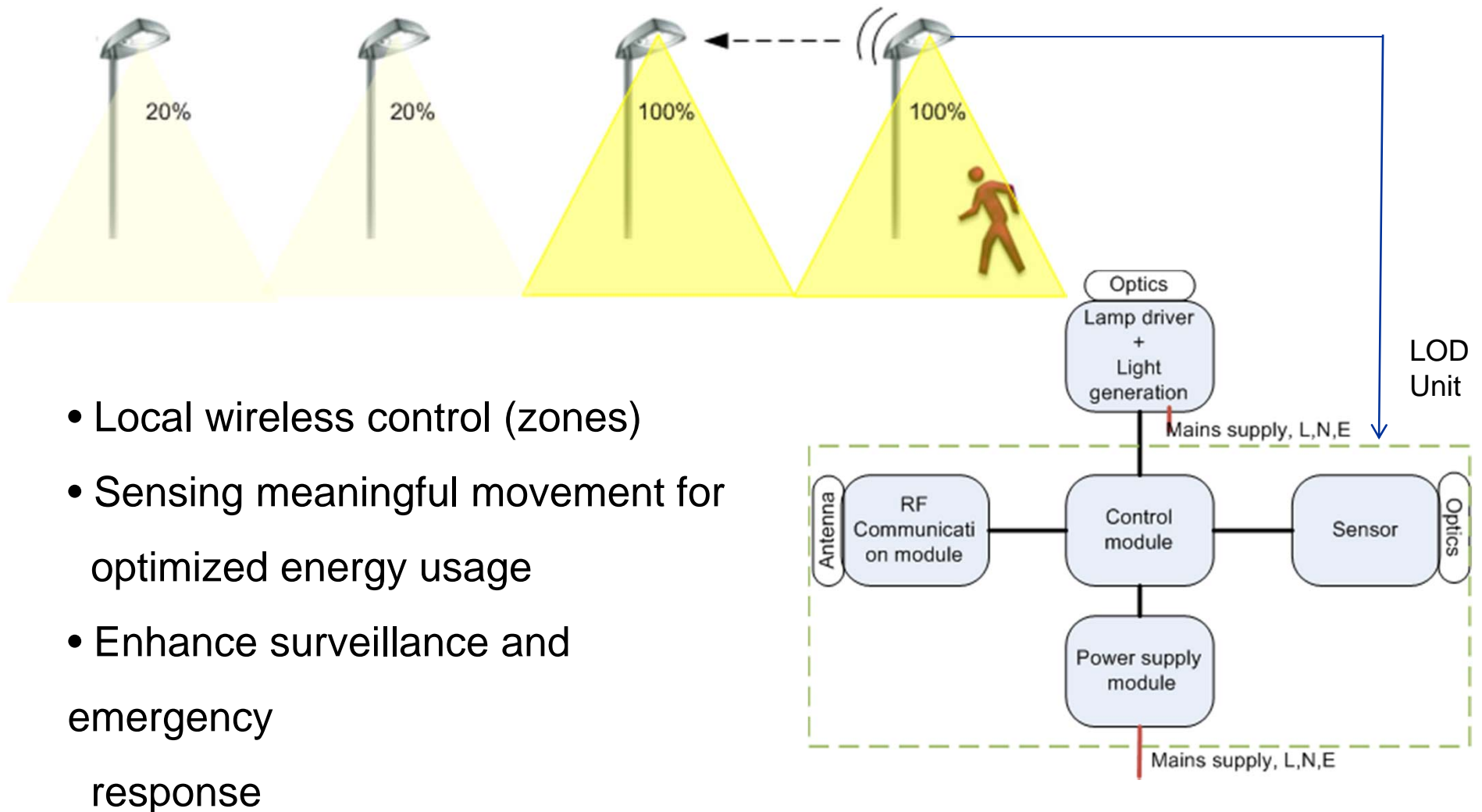


System diagram



- Modular and stand alone
- Schedule-based dimming
- Simple retrofit, no extra wiring and no commissioning
- Sensor override

# Light on Demand (LOD)



# Providing darkness whenever possible

A meaningful solution: Respecting the planet



Firenze, Italy



Magdeburg, Germany

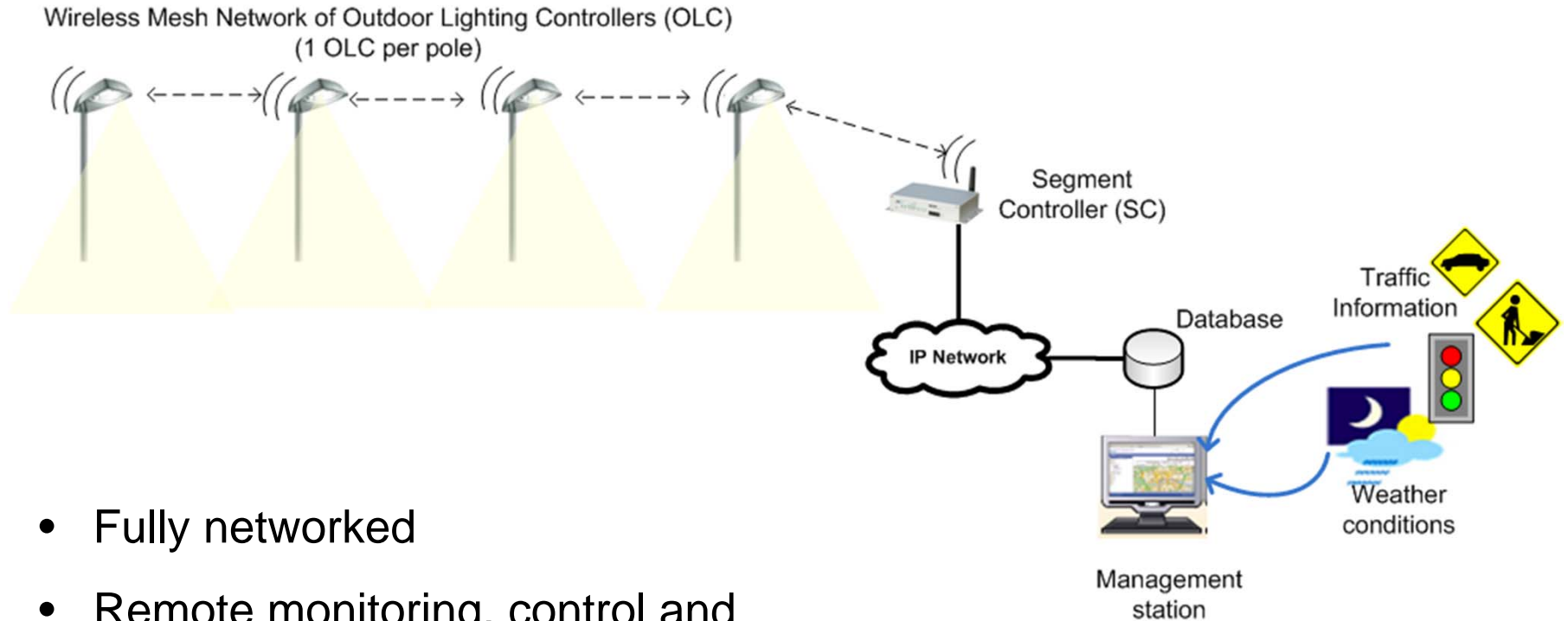
**Light on Demand** is based on the insight that both citizens and municipalities do not want to waste energy.

They also don't want to keep the lights glowing during the night at full power. Without compromising on public safety.

Communication- and sensor-enabled LED luminaires fully light up the surroundings as pedestrians approach and dim as they walk away.

The result: preservation of night-time darkness with reduced energy consumption and no compromise on safety.

# Starsense



- Fully networked
- Remote monitoring, control and metering
- Sensor input
- Enable preventive and prompt maintenance



# Putting light to work, when and where it makes sense

A meaningful solution: Energy efficiency



With 'eco' concerns and tight budgets at the forefront of debate, cities are seeking new ways to manage energy while enabling safety.

**Controls and dimming** products like Starsense 2 provide consumption-tracking software, dimming and brightening tools for conditions-based remote control.

On the Dutch A2 motorway, Starsense is saving an impressive 300,000 kWh of energy each year.

# Public demand for darkness



Citizens and public pressure groups are demanding that 'dark skies' be reclaimed, for the sake of beauty, natural rhythms and conservation.

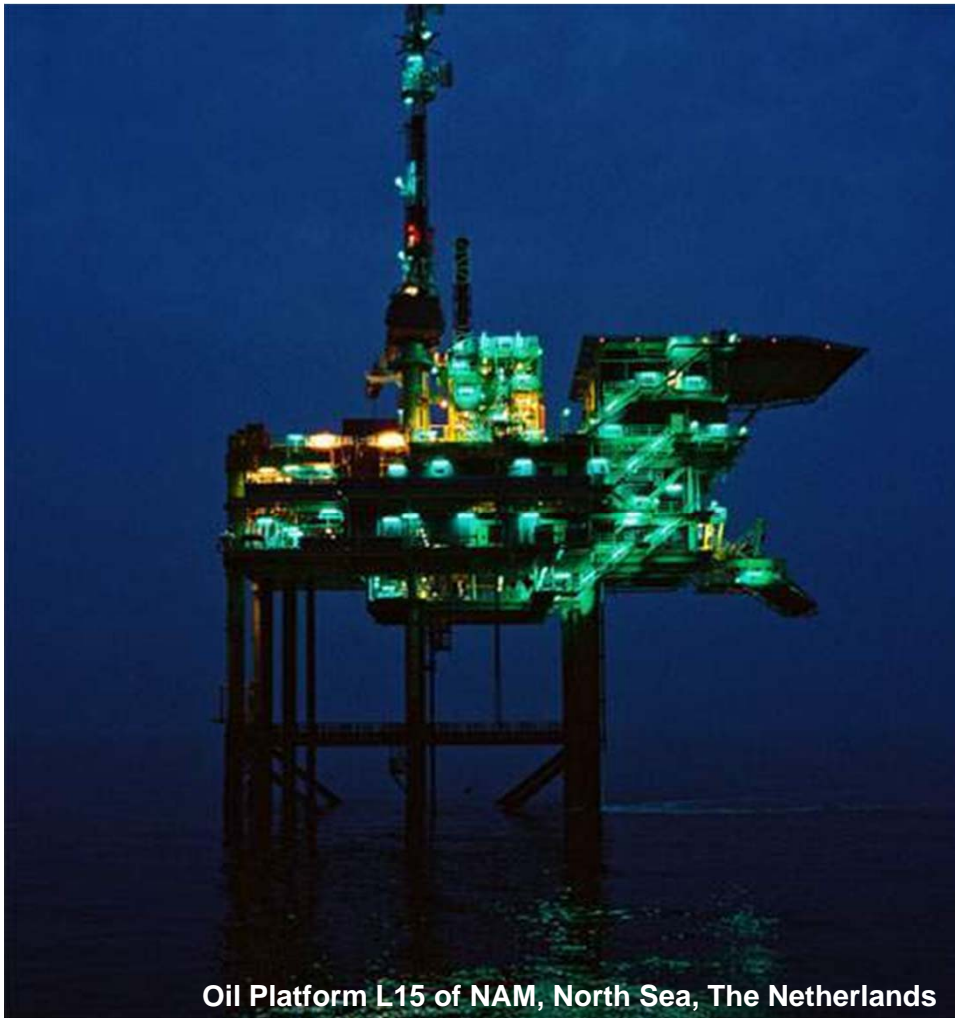
It helps us live better to limit light to when and where we need it. Besides that, it's responsible too.

## Flexible systems that balance light with darkness

- Flexible on-off switches
- Dimming solutions
- Traffic detection sensors
- Tele-management

# Helping wildlife on its way

A meaningful solution: Respecting the planet



Oil Platform L15 of NAM, North Sea, The Netherlands

Philips and Dutch oil and gas operator NAM discovered that flight patterns of migrating birds are disrupted by the lights on offshore oil platforms.

Our **habitat solutions** provide safe offshore lighting with low red-spectrum emissions. Tests show that the light is effective and reduces the impact on migrating birds by 50-90%.

We're now gathering evidence for dedicated light spectra to protect endangered species like turtles and bats in onshore habitats.



## Wrap up

Outdoor Lighting transform environments, create experiences and shape identities by:

Advanced light sources including HID, induction and LEDs

Lighting controls enabling energy savings, lower maintenance cost and increased safety

