

Inteligentna urbana rasvjeta u internet okruženju

Mr. sc. Stjepan Tvrтко Čavar, d.i.e.



Urbani trendovi

Izazovi:

- porast urbane populacije
- ekološki izazovi
- ekonomski izazovi
- marketinški identitet grada

Urbani trendovi

Odgovori:

- digitalna povezivost
- nove tehnologije LED
- inteligentno upravljanje i nadzor
- fleksibilno dinamičko upravljanje

1 x Žarulja

100 kWh / godina
=42 kg CO₂ / godina



= 1,5 zdravo stablo



Moguća ušteda u Europi samo na efikasnoj rasvjeti!



28 000 000 000 kg CO₂
12 snažnih elektrana
> 50 000 000 bar. nafte



Suradnja gradova i struke

IntelligentCity – dinamičko inteligentno i integrabilno rješenje dugoročnog upravljanja rasvjetnom infrastrukturom

Smjena tehnologija: cijevi HID > poluvodiči LED



Inicijalne uštede
40-60%





UNESCO godina svjetlosti 2015.





Climate Neutral Group ©

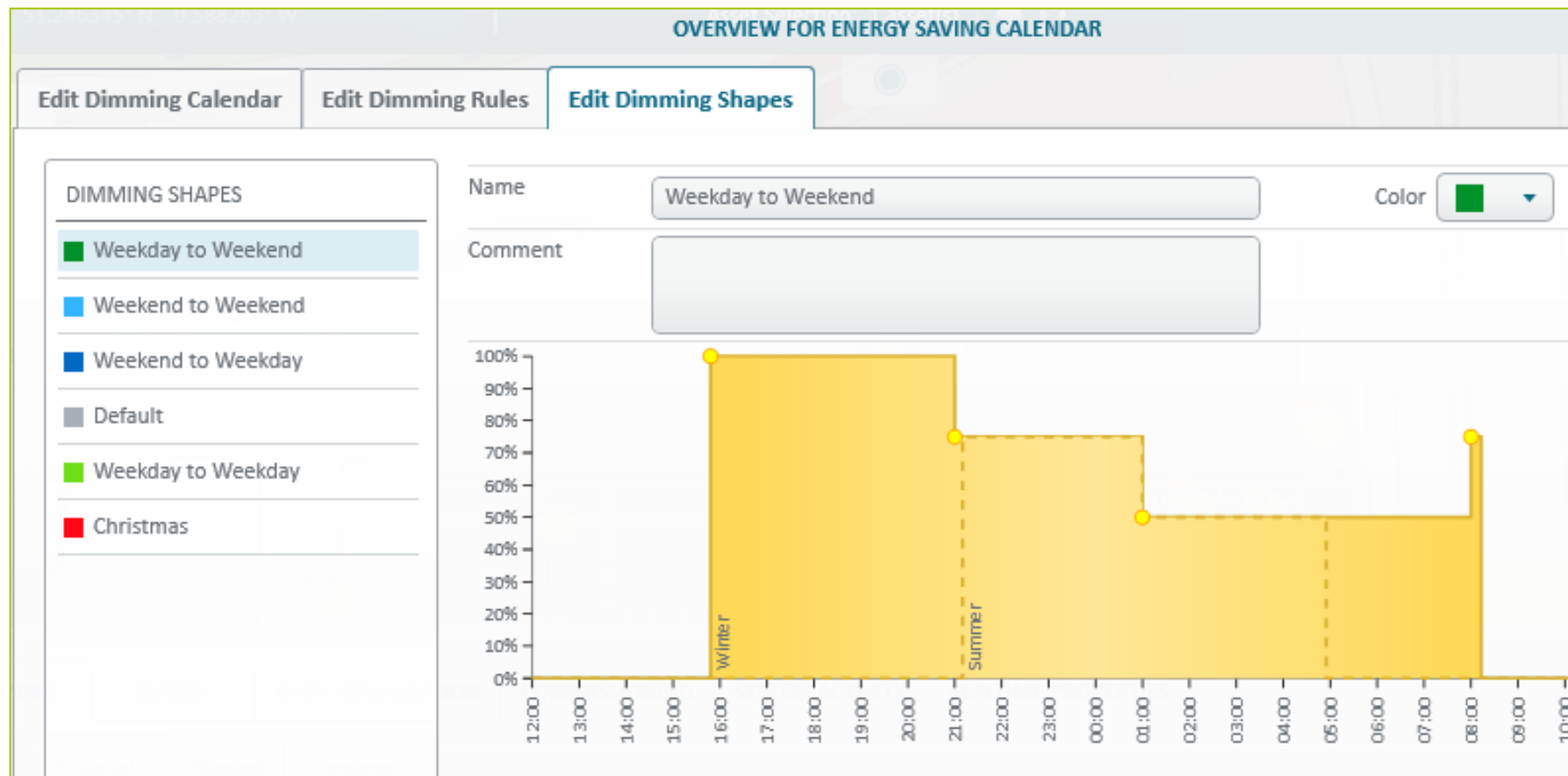
Carbon offset projects:





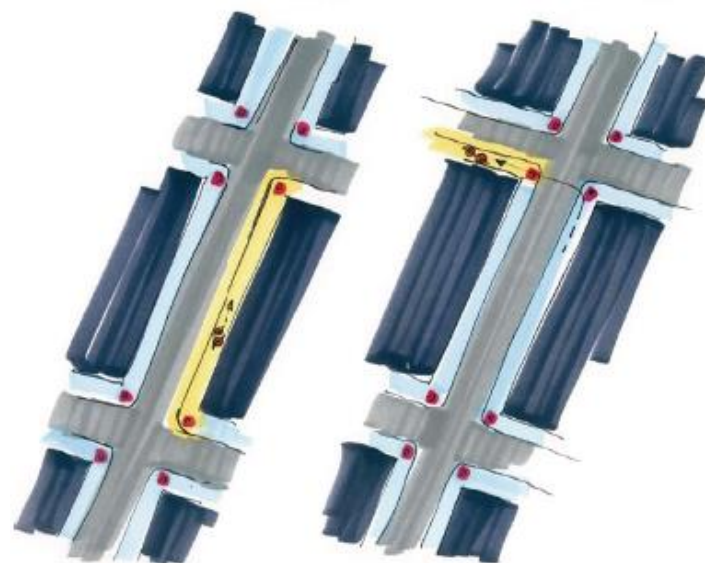
Carbon Neutral

Inteligentno vremensko upravljanje





Inteligentno prostorno upravljanje



LightWave

Rasvjetni sustav na ethernetu preko
mobilne telekomunikacijske infrastrukture





Cloud usluga nadzora i upravljanja

Ekonomičnost, ekološka održivost, pouzdanost, sigurnost

Energy savings

+70%

Energy savings



Reliable software architecture

99,9%

System availability



Sense of security

+10%

Sense of security



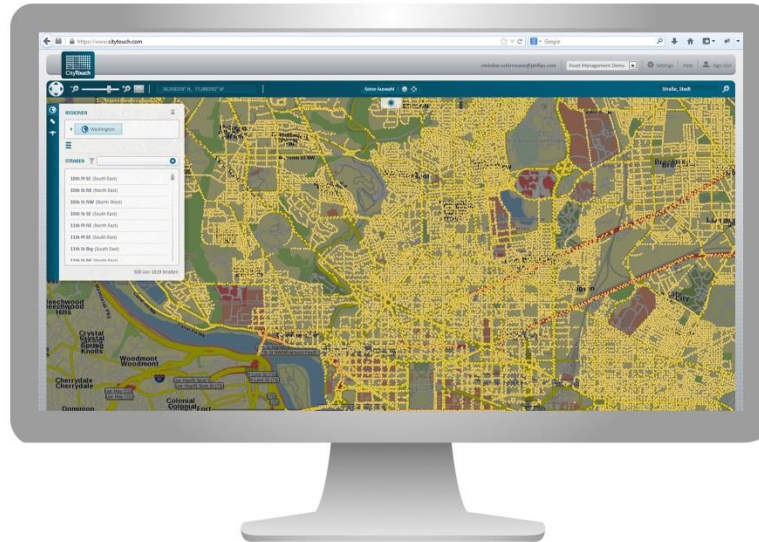
Source: Salobre, Spain

Source: Availability report 2011-2013

Source: Los Angeles, USA



CityTouch lighting management platforma



CityTouch LightPoint

Asset management aplikacija

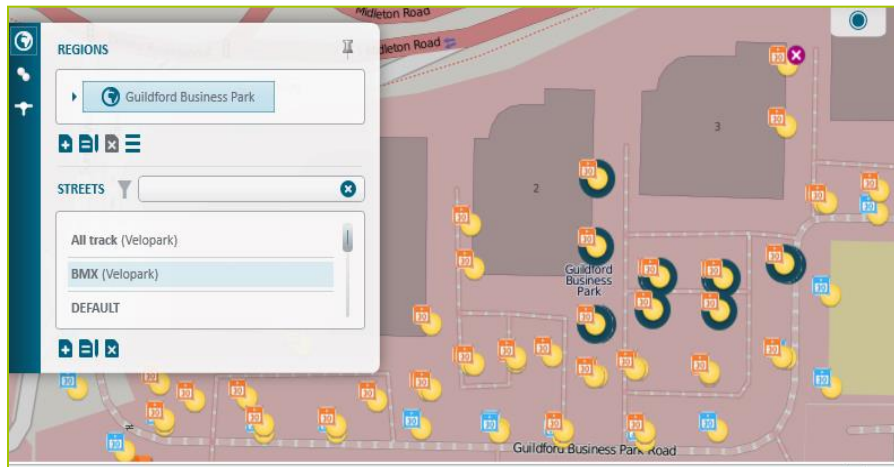


CityTouch LightWave

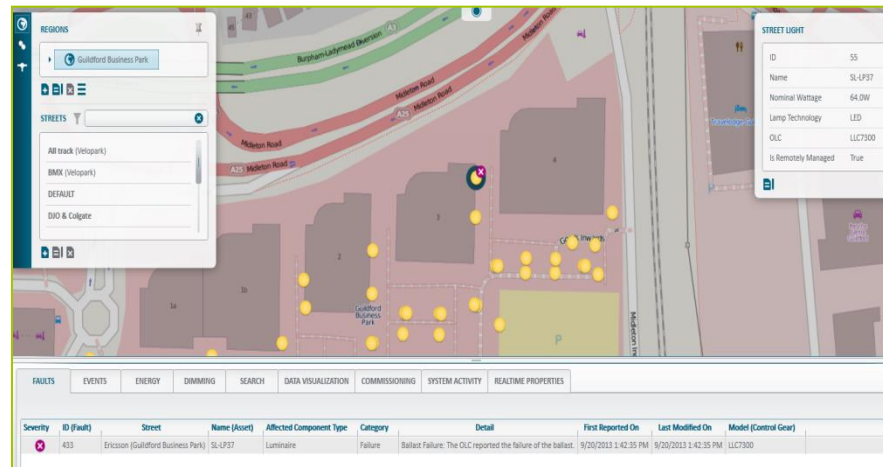
Remote management aplikacija

CityTouch LightWave – osnovne funkcije

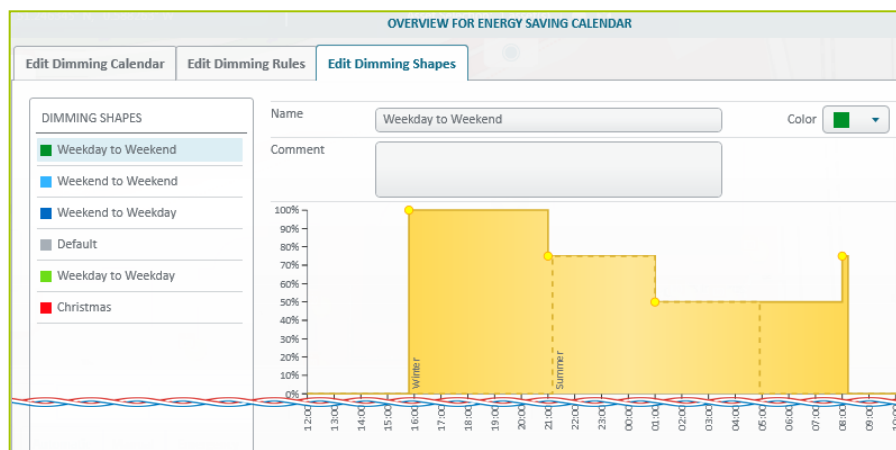
Grafički nadzor



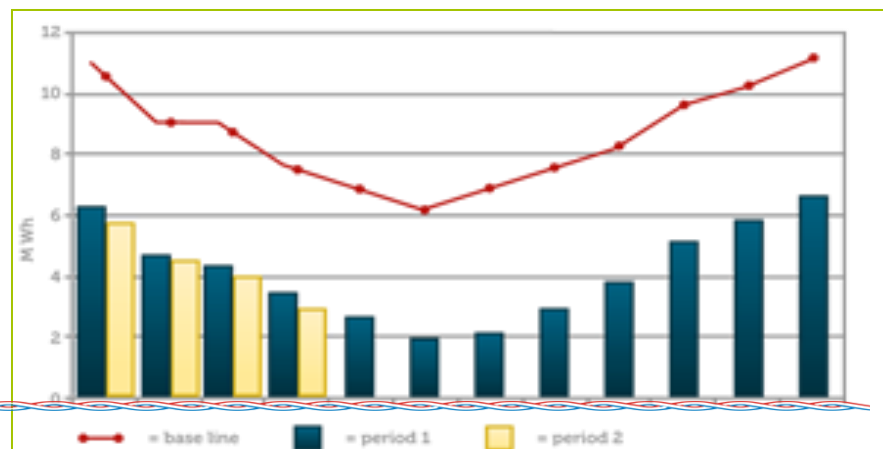
Dojava kvarova i alarma



Programiranje rasvjetnih nivoa



Mjerenje potrošnje





Prednosti za **Gradane**

Rasvjeta

- ... transformira gradske ambijente
- ... oživljava gradske prostore
- ... socijalizira stanovništvo
- ... utječe na prirodno nebo

IntelligentCity doprinosi povratku ravnoteže

Increase
traffic and
social safety

Well-being

City
beautification

Reduce fear of
crime





Prednosti za Operatere

Nove pouzdanije tehnologije

- ... on line nadzor rasvjete
- ... integracija
- ... optimizacija korištenja resursa
- ... novi business modeli



Effective and
simple lighting
management

Operational
efficiency

Energy
management

New business
models





Prednosti za **Gradove**

Future proof sustavi

- ... LED tehnologija
- ... integracija nadzora i upravljanja
- ... sigurnost
- ... ekološka održivost
- ... udobnost
- ... Identitet grada



Green and
sustainable

Safe and
attractive
for citizens

More
optimally
city branded

Innovative
and future
proof



THE FIRST 15 STREETS

LOS ANGELES, CALIFOR



CD1: North Figueroa St between Avenue 50 & Avenue 60

North Figueroa is an eclectic mix of new and old, offering ethnic experiences, neighborhood retail, and a bustling nightlife. NELAart Gallery Night opens over 50 nearby art galleries to Angelenos. Great Streets seeks to maintain North Figueroa's strong ethnic values while supporting new local investment that showcases the corridor's uniqueness. Improving pedestrian amenities and strengthening connections with the Highland Park Gold Line station will be a key part of the Great Streets plan for North Figueroa.



CD2: Lankershim Blvd between Chandler & Victory

This one-mile portion of Lankershim Blvd seeks to expand on the success of the NoHo Arts District. NoHo is on the rise, but strong regional transit connections mean Lankershim's existing vibrant commercial corridor has the potential to be even greater. Great Streets will take advantage of partnerships with the NoHo Business Improvement District and NoHo Arts District to develop investments along the corridor.



CD3: Sherman Way between Wilbur & Lindley

With its pleasant landscaped median and community-serving small businesses, Sherman Way is a classic San Fernando Valley neighborhood boulevard. At the crossroads of Sherman Way and Reseda Blvd you can find everything you need, from boots to barbershops to vegetarian Vietnamese food. Great Streets seeks to make this corridor more pedestrian-friendly and accessible to local communities.



CD4: Western Ave between Melrose & 3rd St



CD5: Westwood Blvd between Le Conte & Wilshire



CD6: Van Nuys Blvd between Victory & Oxnard

Madrid will convert 100% of its street lights to connected LED lighting to support 'smart city' goals

Published on: January 2, 2015

Philips lighting technology will enable energy savings of 44%

   3  11  62  76

The replacement will enable a safer, more sustainable and energy-efficient city

Madrid, Spain – Royal Philips (NYSE: PHG AEX: PHIA), the global leader in lighting, is providing the government of the city of Madrid with 225,000 new energy-efficient lights to support its ambition of becoming a Smart City. The renewal of the entire street lighting system with Philips' connected LEDs and other energy efficient lighting, makes this the world's largest street lighting upgrade to date.



Rotterdam (Nizozemska)

Reducing
operational
costs

Improved
safety

Realize
sustainability
targets
2030

1st
IntelligentCity
project



Palencia (Španjolska)

2,000,000

Financial
Savings / EUR

Improved
safety

Crime
reduced
/ Enhanced
livability

3,189

Large installation
/ light points



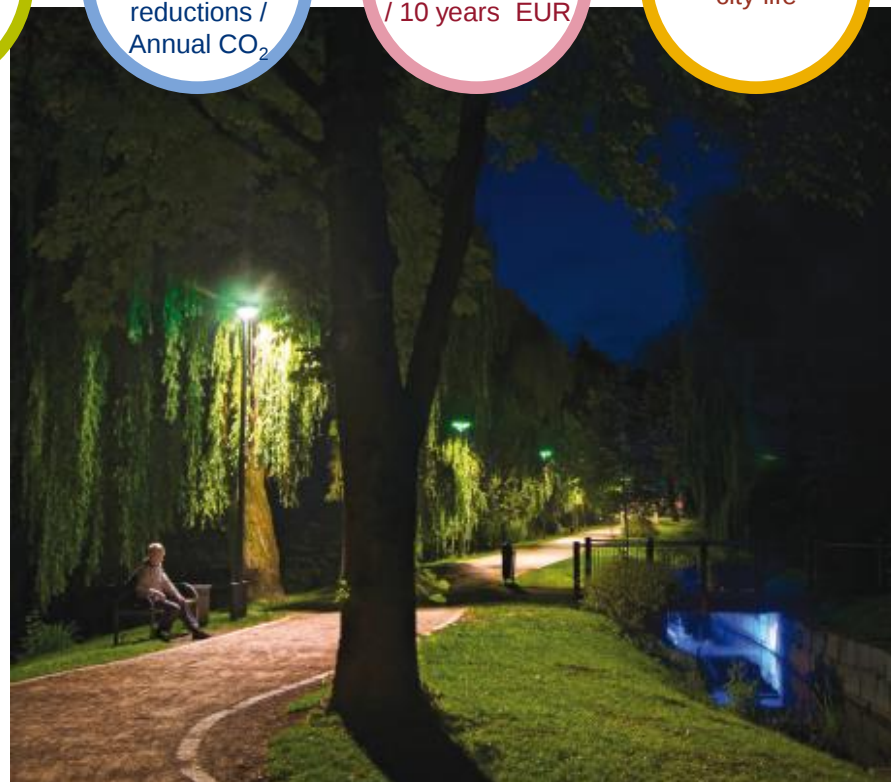
Rietberg (Njemačka)

50%
Energy savings

29.3^{ton}
Emission
reductions /
Annual CO₂

117,476
Financial savings
/ 10 years EUR

Improving
city life



SCZECZIN, Polska



all luminaire data into a public lighting management system. The software platform offers a friendly user interface that is easy to handle and work with, e.g. map-based navigation.

Additionally, the city builds knowledge about the exact status information of each luminaire as well as information about faults as they might occur.

Maintenance crews can be instructed immediately, therefore improving maintenance efficiency as well as lighting standards.

Additional to the savings with the Luma intelligent luminaires, CityTouch helps to realize extra savings through accurate energy metering of individual light points.



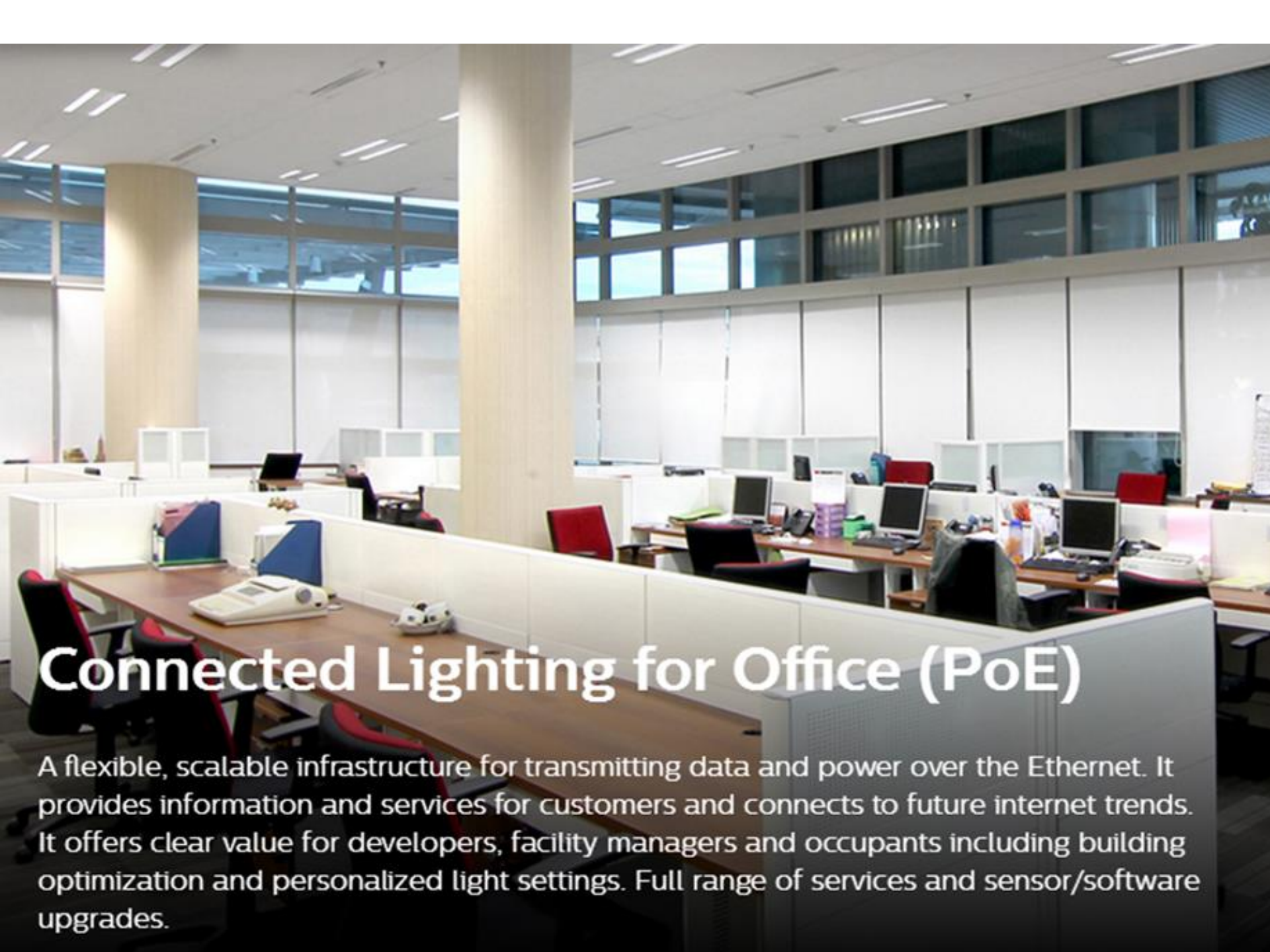






Connected office 'The Edge', Deloitte and AKD, the Netherlands





Connected Lighting for Office (PoE)

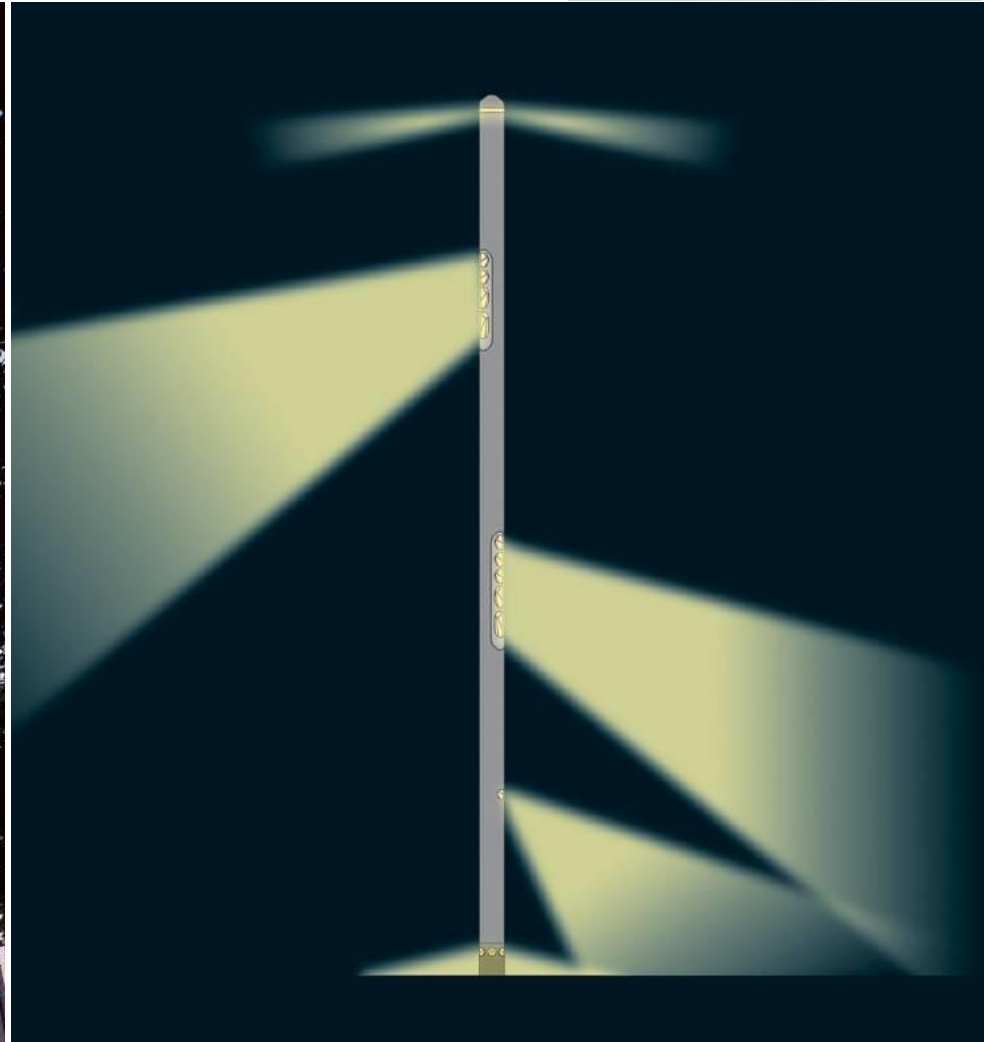
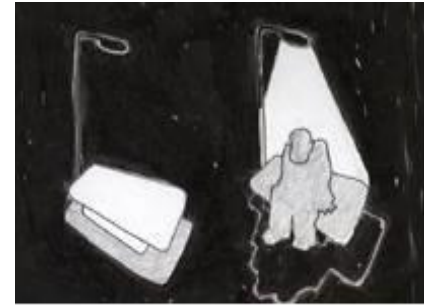
A flexible, scalable infrastructure for transmitting data and power over the Ethernet. It provides information and services for customers and connects to future internet trends. It offers clear value for developers, facility managers and occupants including building optimization and personalized light settings. Full range of services and sensor/software upgrades.

Overview – Control – Monitor – Manage - Maintain

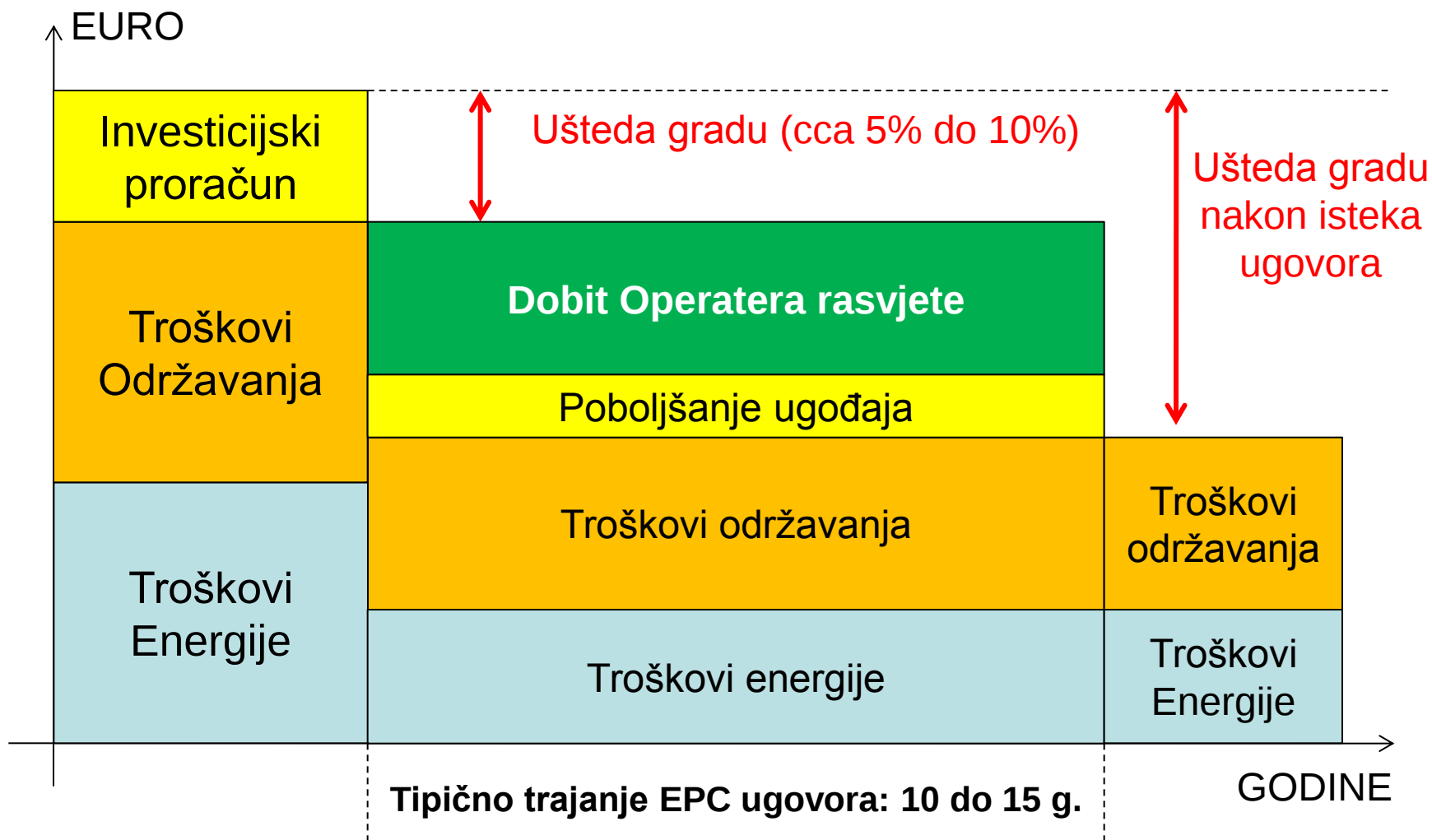




Living tomorrow, Amsterdam Multifunkcionalna rasvjeta.



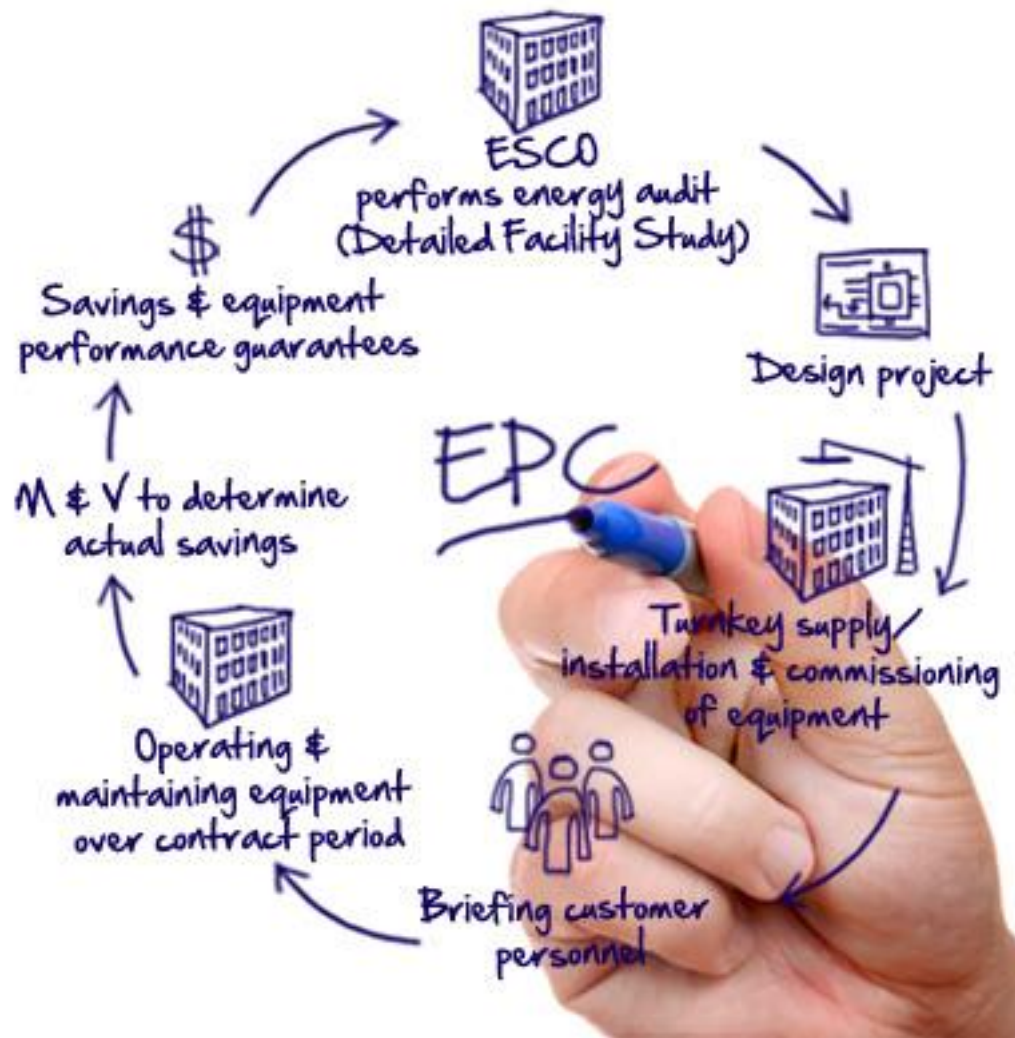
Tipični EPC / ESCO model financiranja



3 modela/rješenja za novi potencijal

1. Vlastito financiranje uz subvencije FZOEU
 2. Javno privatno partnerstvo JPP
 3. Ugovaranje energetske usluge EPC
- + Hibridni modeli

Novi business modeli



Zakoračite u budućnost u svom gradu!

HVALA!

