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sense and simplicity

Towards a better tomorrow

A showcase thru **Lighting**

Ashish Bahal
Architect

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Skeleton

- Urbanization
- Vision – a decade ahead
- Learn from Best Practices
- Adapt and Apply - Indigenize
- Put to practice – Masterplan approach
- Case Study - Lighting

Issues facing Indian cities

Rapid urbanization and rapid urban transformation [linked with pace of globalization]

- Urbanization of poverty [incl. widespread informal economy]
- Climate change
- Demographic pressure

Sustainable Development…?

To meet the basic needs of people today without ruining the chances of future generations to do the same

Between 1950 and 2010 the following has taken place globally:

ITEM	INCREASE
World population	2.5 x more
Energy use is now	4.5 x more
Number of automobiles	12 x more
Paper use	8 x more
Wood use	4 x more
Water use	4 x more
Fish catch up	6 x more
Disaster relief budgets	13 x more (due to global climate changes)

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We are living in a time where **Energy and Climate Challenges** are increasingly capturing the world's attention.

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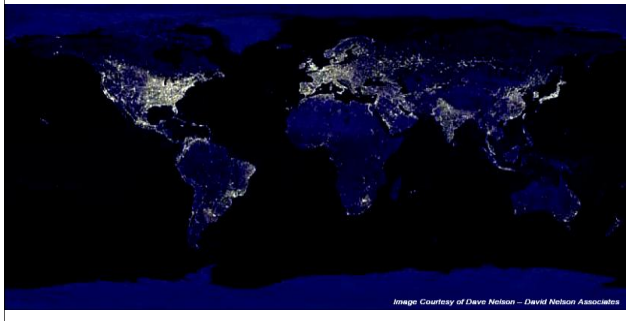
Currently 50% of the world's population live in cities.
By 2050, this figure will reach 75%.



Role of cities

- Cities have a central role to play in tackling climate change, particularly as cities bear a disproportional responsibility for causing it.
- In fact, cities consume 75 per cent of the world's energy and produce 80 per cent of its greenhouse gas emissions.
- That is why it is so important for cities to work together, set the agenda on this issue and show leadership on this issue.

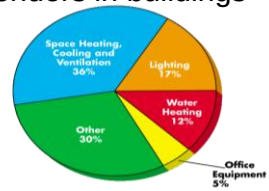
Source C40 cities

Impact of buildings

- In the United States alone, buildings account for:
  - 72% of electricity consumption,
  - 39% of energy use,
  - 38% of all carbon dioxide (CO2) emissions,
  - 40% of raw materials use,
  - 30% of waste output (136 million tons annually)
  - 14% of potable water consumption.

Source USGBC

Energy offenders in buildings



Lighting falls into the second largest energy offender category

Source: Department of Energy

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Urbanization has advantages

Centers of:

- Economic development
- Innovation
- Education
- Technological advances
- Employment

Urbanization has disadvantages

Huge ecological footprints

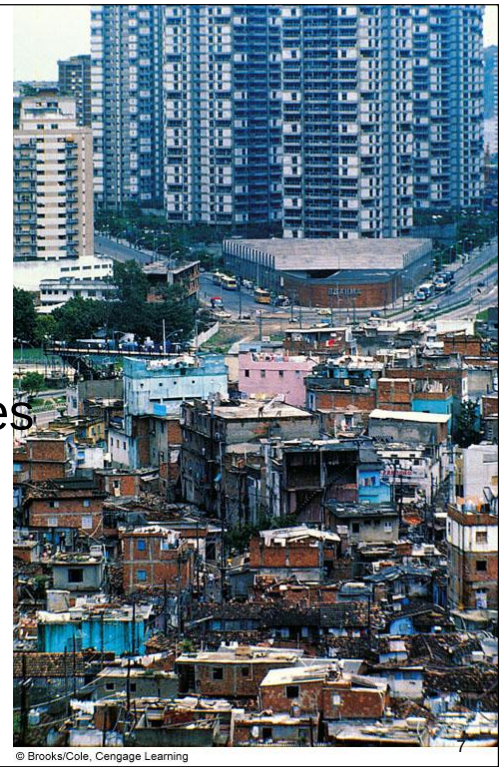
Lack of vegetation

Water problems

Concentrate pollution and health problems

Excessive noise

Different climate and experience light pollution



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Human beings are a plague

- Sir David Attenborough

- *Both climate change and "sheer space" are looming problems for humanity.*
- *Either we limit our population growth or the natural world will do it for us, and the natural world is doing it for us right now.*

More probably, he was thinking of a plague of locusts, who multiply relentlessly, consuming every resource, destroying everything they touch, and then perishes.

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Urbanization

Metropolis

Fort William (Kolkata) 1900

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Urbanization

Megapolis

New Delhi, 2012

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Urbanization

Megapolis

Gurgaon, 2011

DLF Cyber City, Gurgaon
Source: Author

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Urbanization

Megapolis

Chennai, 2012

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Urbanization

Megapolis

Mumbai, 2012

13

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Urbanization

Indian Megapolis, 2020 ??

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Vision

What does the future hold for us?

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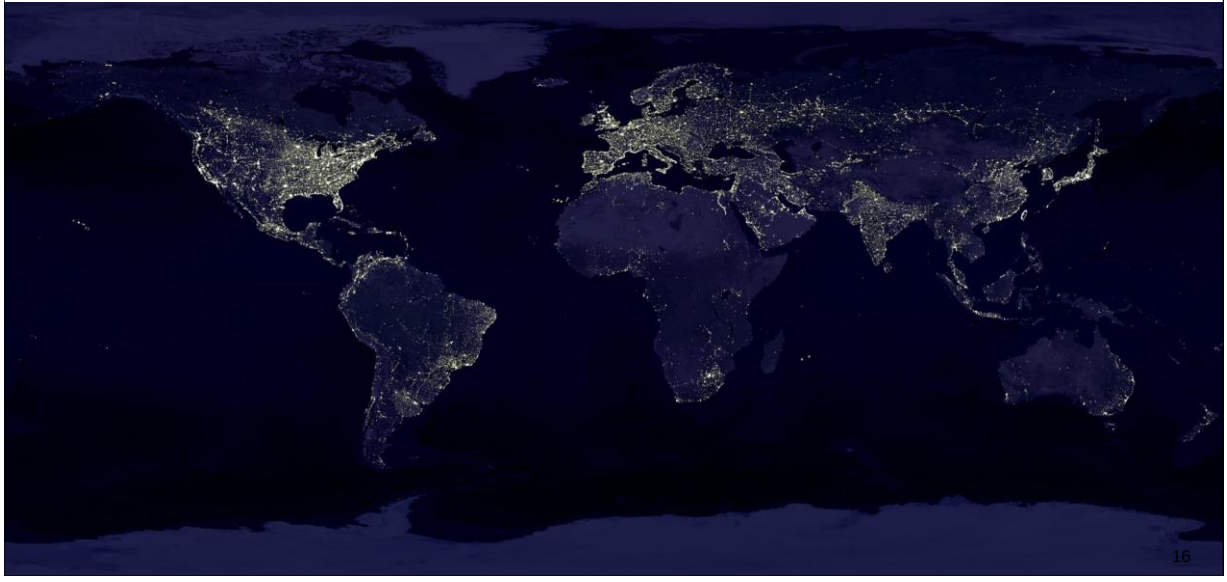
Vision

What will a sustainable city of 2020 look like?



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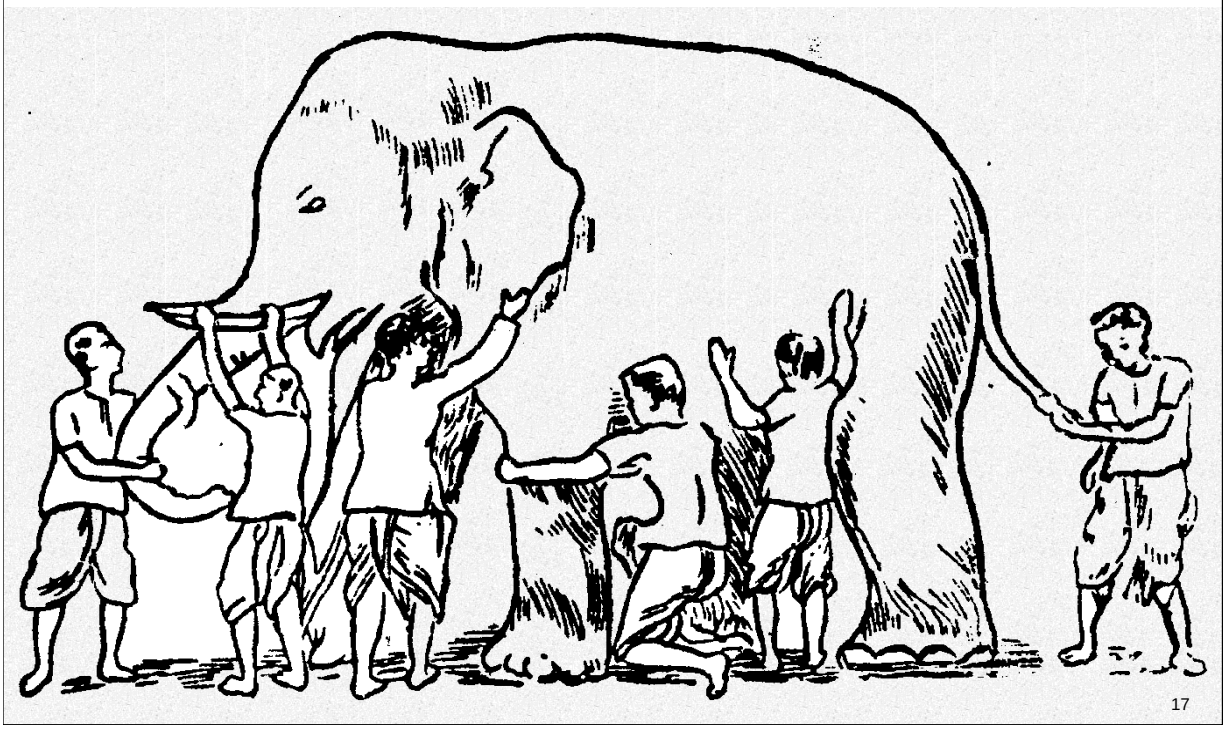

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Lets review…

- **Accessibility/ Mobility** - Major rebalancing of transport system in favour of public modes and/or pedestrians and bicycles
- **Green spaces and biodiversity** - Enhanced residential values. Well-being. Greater climate change resilience – copes with run-off, rising temperatures
- **Educated population**
- **Healthy population**
- **Attracts and retains investment**
- **Local 'ownership'** - Greater resilience and more manageable exposure to external economic drivers
- **Resources Conservation**- Less use of resources, including energy and water.
- **Safe and secure** - Sense of community. Ability to manage everyday risks. Raise a family with confidence.

The city must be socially, economically and environmentally sustainable; this will require new approaches to... living, travelling and working.

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Best Practice

Cities to Watch…

and learn from too…

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Best Practice

Curitiba, Brazil

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Best Practice

Bogotá, Colombia

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Best Practice

Tokyo, Japan

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Best Practice

London, United Kingdom

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Best Practice

Rotterdam, The Netherlands

What to DO?

Should not ape the West,
BUT
CAN Adapt and Apply

The races of mankind will never be able to go back to their citadels of high-walled exclusiveness.

- Rabindra Nath Tagore

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Time for indigenous solutions

- Think globally, act local
- Recycle and Reuse
- Innovation AND *Jugaad*

जुगाड़
Jugaad Urbanism
Resourceful strategies for Indian cities

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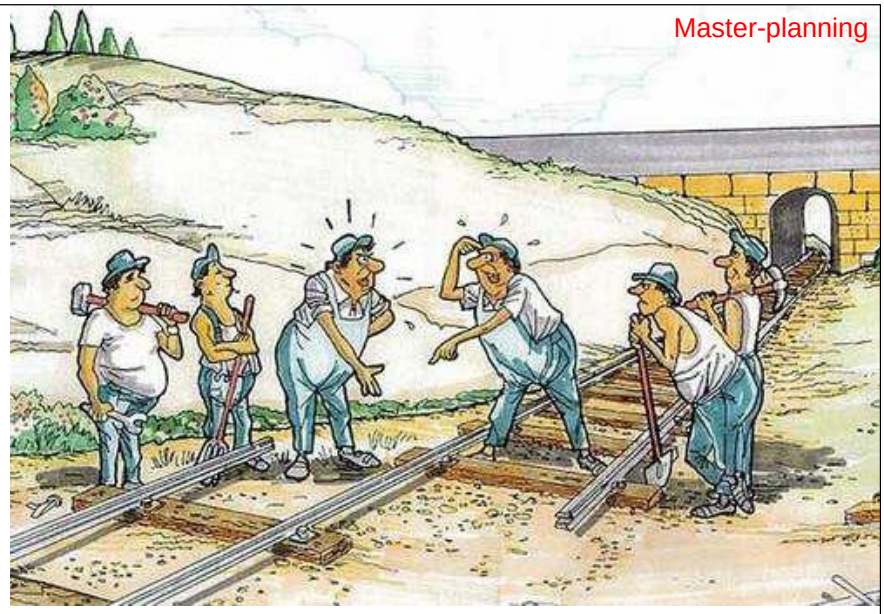
Master-plan

The missing virtue…



Planning, as a discipline is well placed to facilitate a harmonious balance between the economical, environmental, social, cultural and spatial dimensions of development.

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Plan that involves all…

- The Big(ger) Picture: Integrated Master Planning Works
- Involvement is required from
  - Government – Policy makers
  - Authorities – Enforcement agency
  - Specialists – Professionals
  - Academics – Contrarians
  - Financiers – Investors, PPP
  - Community – Beneficiaries

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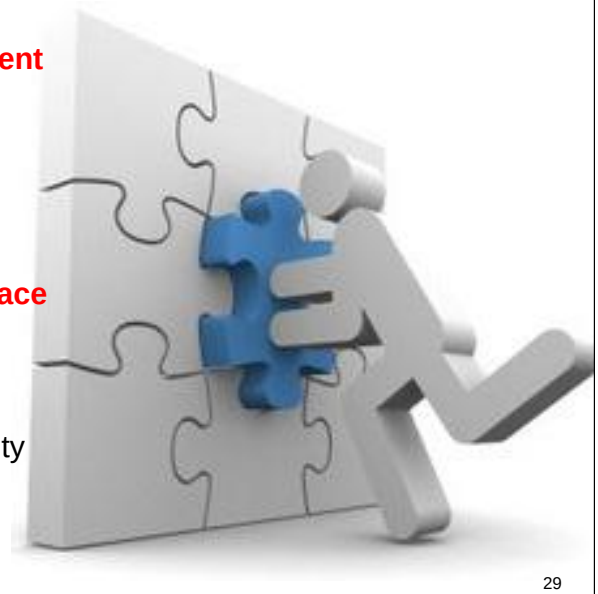
Planning is not enough! Implementation is needed

- Planning should go along with **management**
- **Integration** of strategic plan and plan of action
- The planning process should follow the **pace of urbanization**
- Need of **quick solutions** to keep credibility



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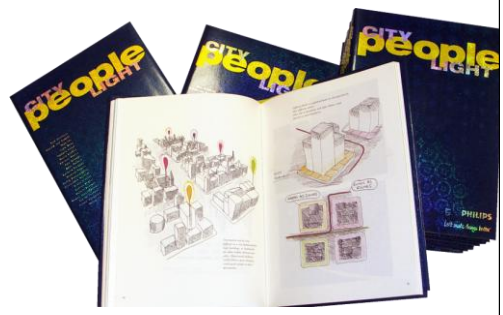
City.People.Light

- The **city.people.light** awards are run by **LUCI** (the Lighting Urban Community International Association) and supported by Philips. This award represents a significant step towards promoting the use of light as an essential component in urban development.
- LUCI is a unique international network bringing together 95 cities and lighting professionals engaged in using light as a major tool for urban development, with a concern for sustainability and environmental issues.



LUCI ASSOCIATION

LIGHTING URBAN COMMUNITY INTERNATIONAL

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Lighting

Sustainability as a desired trend

- The need for energy management
- Contrasting challenges in advanced and emerging economies
- Digitalization
- New approaches to design in sustainable cities
- Visions of wireless, personalized lighting solutions

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Lighting

The need for energy management

Inspirational Shanghai

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Lighting

The need for energy management

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Lighting

Contrasting challenges in advanced and emerging economies

Confidential

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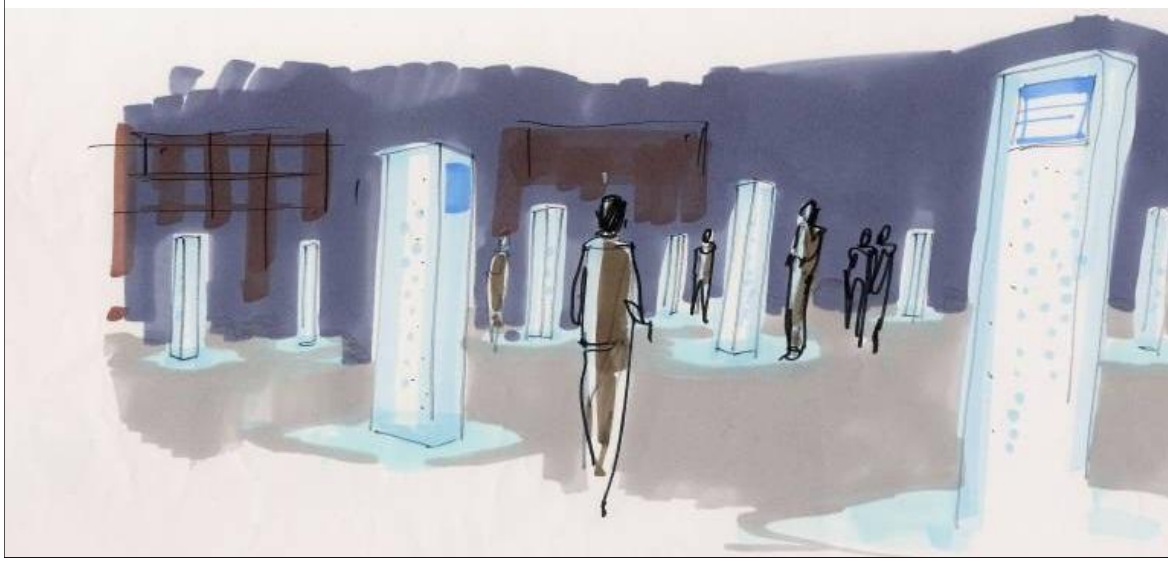
Lighting

Digitalization



Inspirational Hamburg

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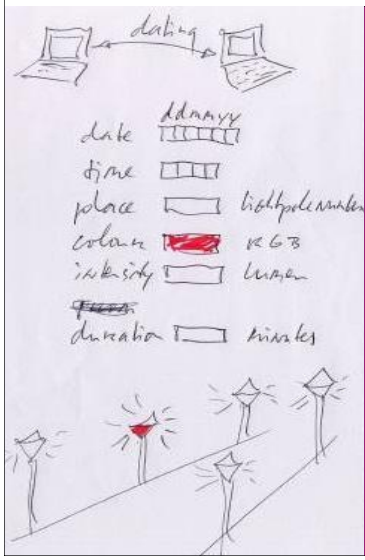
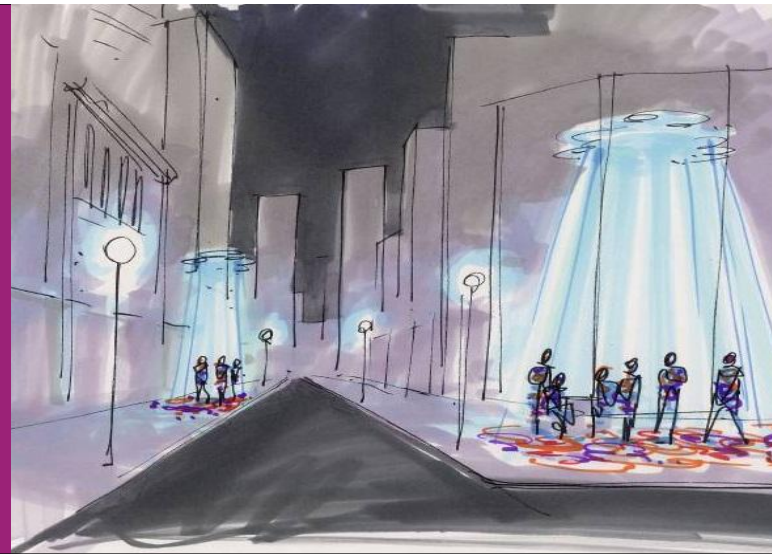
Lighting

Digitalization



Inspirational Lyon



Inspirational Philadelphia

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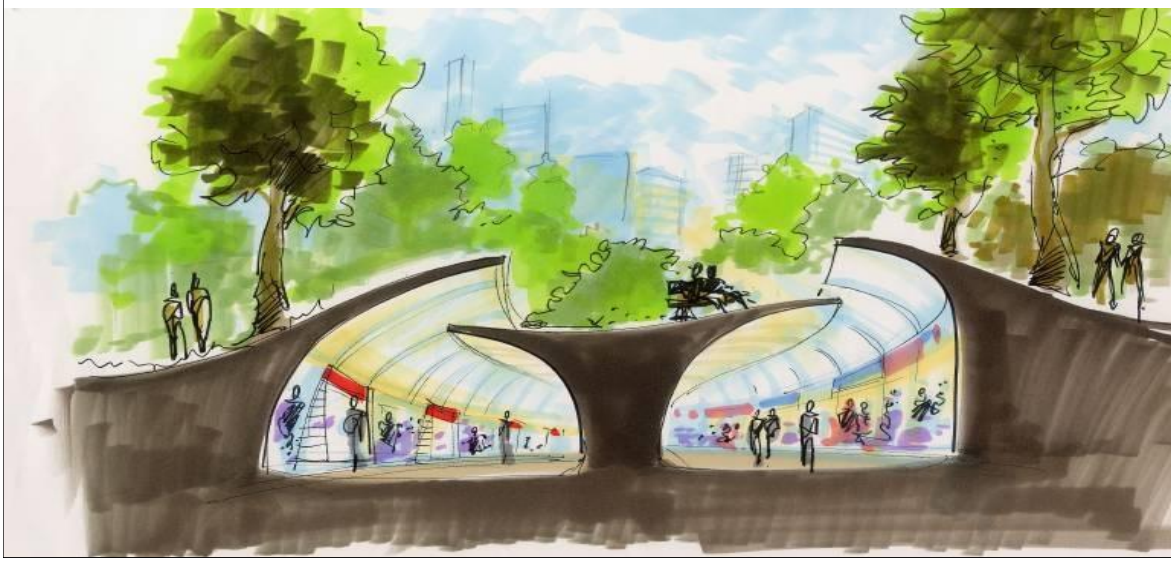
Lighting

New approaches to design in sustainable cities



Inspirational Shanghai

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Visions of wireless, personalized lighting solutions

Inspirational Lyon

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Lighting

Visions of wireless, personalized lighting solutions

Inspirational Lyon

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Lighting

Case Study - Beijing

Project info

Client - Beijing Capital Highway Development Company (BCHDC) – China

Objective -
Improving streetlight quality and reducing energy consumption

Results -
Energy savings; easier maintenance, full streetlight status visibility

Challenge

The BCHDC is in charge of the construction and operation of the capital's expressways. Acutely aware of the necessity for energy savings, it's working hard to meet the **carbon emission reduction targets.**

As part of this effort, BCHDC sought to **reduce streetlight energy consumption** and improve its **central monitoring and control facilities**.

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Lighting

Solution

- BCHDC chose AmpLight to manage, monitor and control its streetlights. This includes the need for energy saving facilities in order to meet BCHDC's tough targets.

Advantages

- Centralized streetlight control
- Low-cost, intelligent agents
- Energy Savings Mode
- Flexible control

The Smart Grid

AmpLight is an intelligent streetlight management and control system that can reduce energy used for streetlights 35%, reducing the total carbon footprint of major cities as much as 10%.

Results

AmpLight has delivered energy savings of 28% due to

- Precise, optimized & centralized streetlight control
- Energy Savings Mode during off-peak traffic hours
- Reduced maintenance costs

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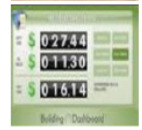
Lighting

Are we ready for the connected age?

Traditional lighting operations		*Intelligent lighting operations*	
	**Physical failure inspection** • A scouting team drive during night to visually spot failures	**Remote monitoring** • The lighting failures are automatically reported by the system, saving time and costs	
	**Paper based mapping & archiving** • Use of paper maps and files to manage the maintenance of the lighting stock	**Smart asset management** • The digital system smartly plans and routes the maintenance works to minimize street blockages	
	**Undifferentiated lighting levels** • Lights burn uniformly throughout the night	**Smart dimming & scene setting** • Lights are dimmed during low traffic hours to save energy or enhanced in problematic neighborhoods to improve safety	
	**Estimation based metering** • As multiple entities are connected to the grid, the energy consumption is roughly estimated by the utility	**Intelligent energy metering & billing** • A smart meter accurately calculates the energy consumption taking into account the varying rates and automatically bills all entities	

Source: Philips and Cisco, 2012

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Key Take-aways…

- Vision to be ahead of future problems – Planning for **at least two level** above the problem
- Tools for tomorrow would be **different** from tools of yesterday
- Chosen strategy should be **scalable**.
- **Measurement**, **validation** and Service level **Transparency**

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Simply enhancing life with light

The Philips Lighting difference

People focused

+

Partners in innovation

=

Meaningful solutions

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