



**Asia-Pacific  
Economic Cooperation**

# Workshop to Support the Development of National Lighting Design Centers in APEC Region (EWG 14/2012A)

**5-6 September 2013**

**Chatrium Riverside Hotel**

**Bangkok, Thailand**



# Meeting of Minds: Translating Lighting Design Research into Practice

A two-day roundtable conference hosted at King Mongkut's University of Technology Thonburi for the APEC Expert Group on Energy Efficiency and Conservation

# Driving force

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- Electricity use in buildings contributes to 40% of GHG emissions; lighting consumes around 20%-30% of buildings electricity use
- Lighting best practices and advanced technologies have proved to save some 50% of electricity use, but have not yet been widely adopted
- It mainly dues to the lack of understanding and experiences of designers and professionals



# Objectives

1. to understand the potentials of lighting design research for sustainable development

2. to learn from collaborative models and operational strategies from successful lighting centers

3. to generate strategies and recommendations for developing new centers and operating them effectively





12 APEC Economies 

45 Attendents



Keynote speakers and lighting experts from research centers, government agencies and industry **shared and discussed** policies, current studies and implementations

# Day 1



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Contribution from lighting industry as well as **workshop and group discussions** to identify shared vision, goals, and recommendations for next steps

# Day 2



California has avoided building 30 new power plants due to efficiency programs

- From lab to marketplace and building codes (Title 20 and Title 24)

Credit: Prof. Michael Siminovitch

Lessons from California

CLTC and SMUD

# R&D and Product development



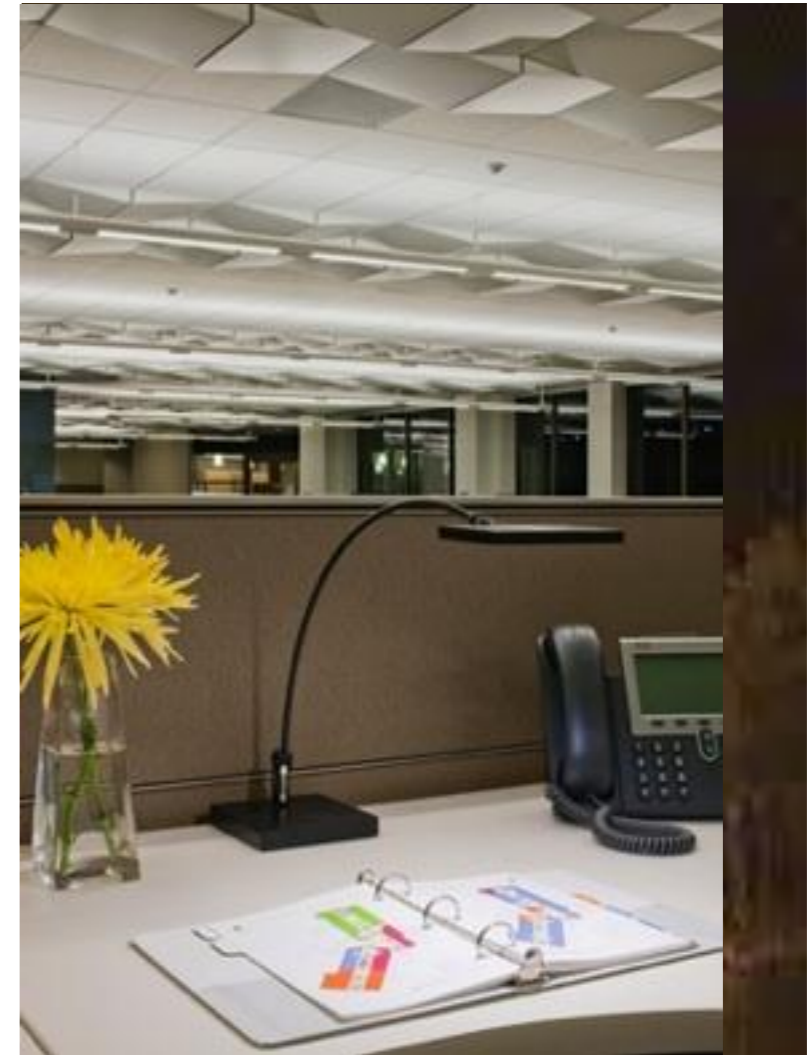
Credit: Prof. Michael Siminovitch

# Demonstration and training



retailers at lighting demonstrations, UC Davis

# Potentials for lighting design research



Credit: Prof. Michael Siminovitch

## Energy and Environment

- reduce lighting electricity use, while improving lighting quality
- decrease GHG emissions
- minimise light pollution for outdoor lighting

# Potentials for lighting design research

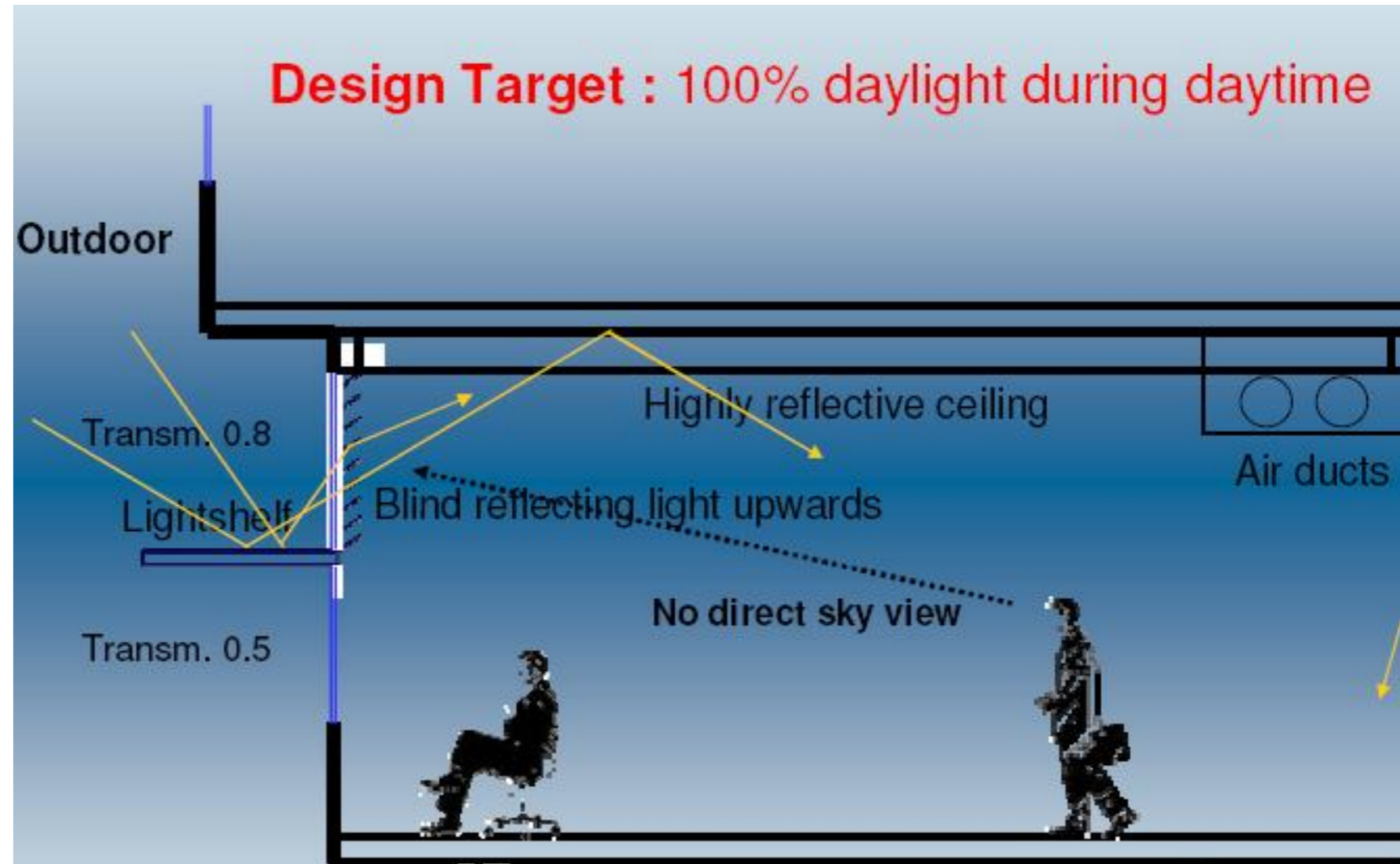


Credit: Prof. Luoxi Hao

## Social and Economics Development

- improve safety and security for urban environment
- boost local economy and tourism at night-time
- increase lighting industry competitiveness - product and standards development

# Shared research interests: Daylighting



Credit: Prof. Mohd Zin Kandar

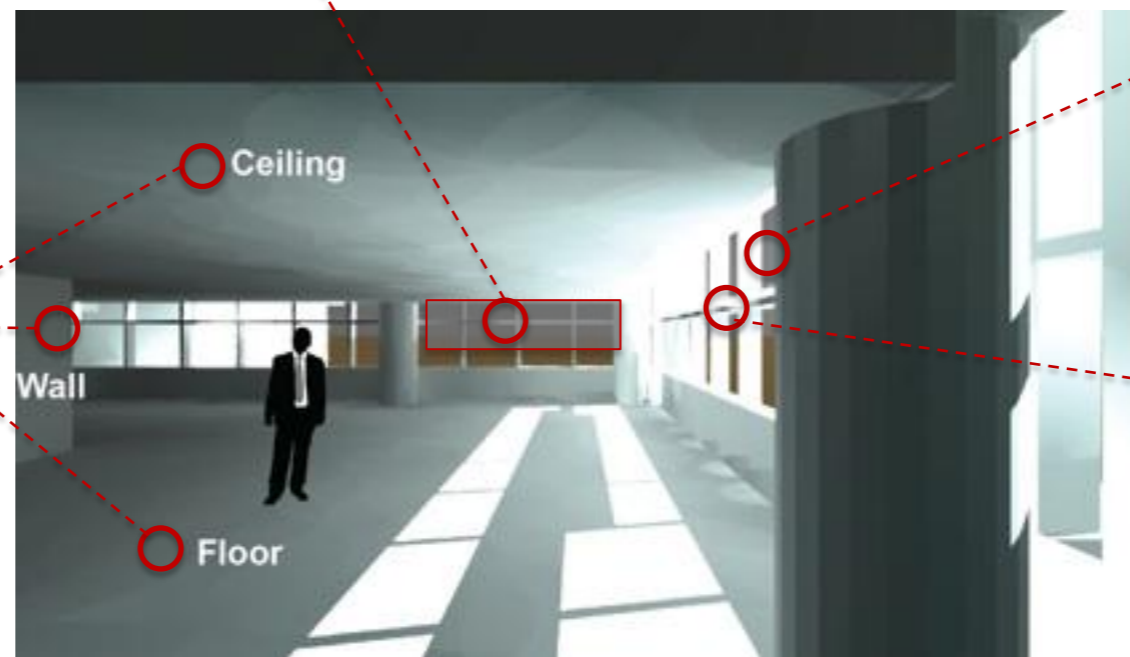
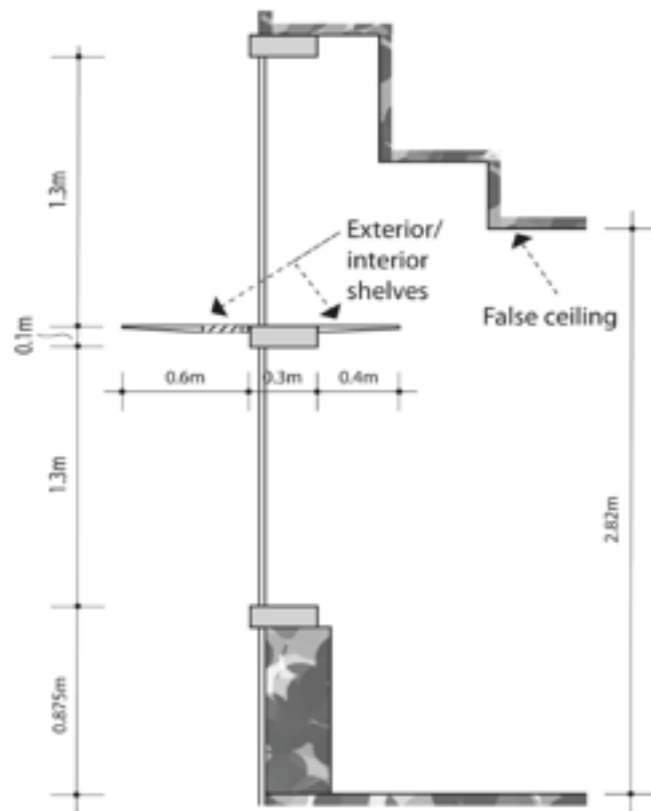
Daylighting in the tropics  
Daylight harvesting in commercial buildings

# Shared research interests: Daylighting

4. Shading control behaviors

2. Glazing visual transmittance

3. Light shelves



Credit: Prof. Tseng King Jet and Dr. Chien Szu-cheng

- Daylighting in the tropics
- Daylight harvesting in commercial buildings



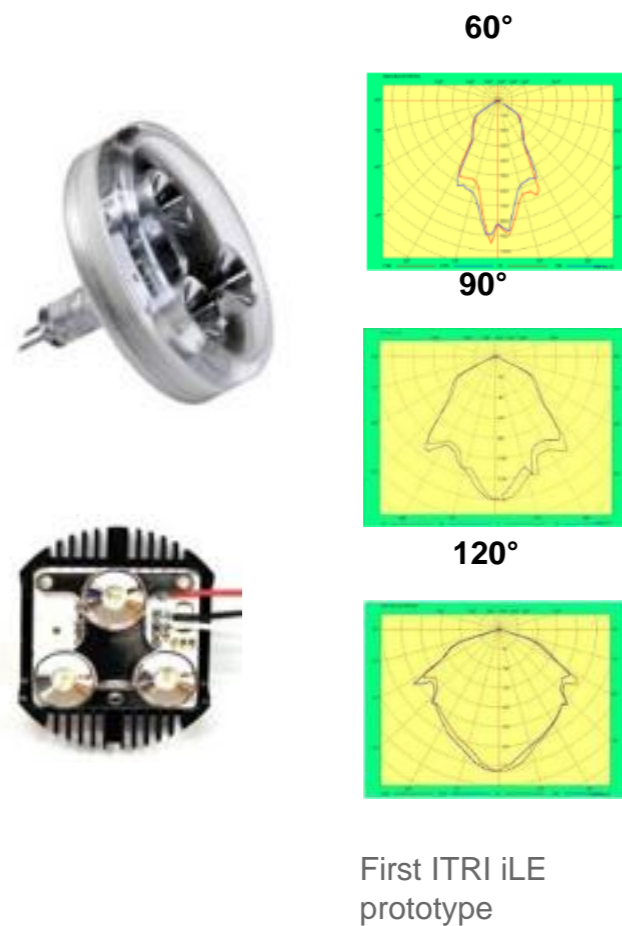
# Shared research interests: Smart lighting



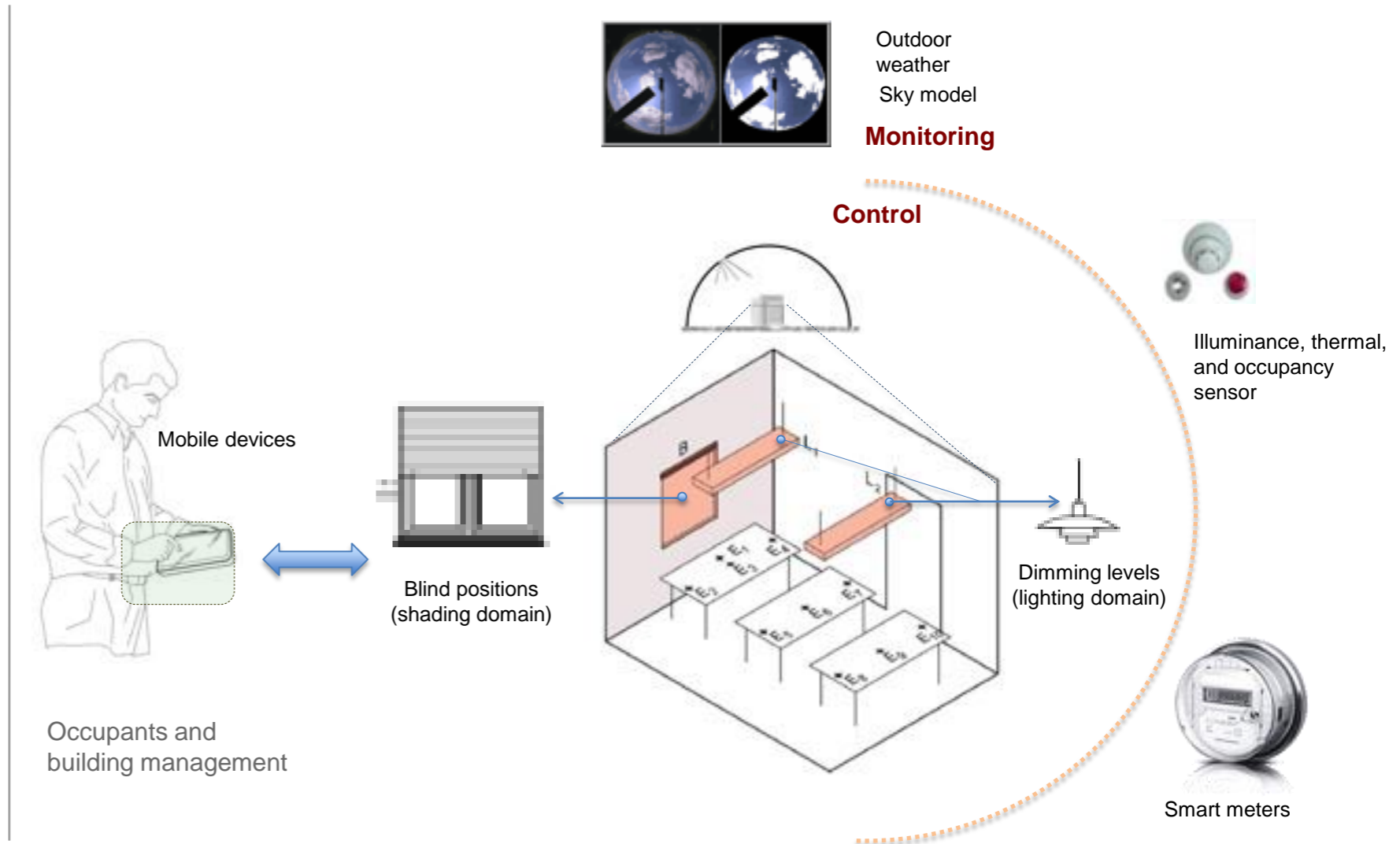
Credit: Prof. Michael Siminovitch

Smart or adaptive lighting for outdoor and indoor lighting  
More efficient, cost-effective and intelligent lighting products, e.g. iLE by ITRI

# Shared research interests: Smart lighting



Credit: Dr Ming-Shan Jeng



Credit: Prof. Tseng King Jet and Dr. Chien Szu-cheng

Smart control integrated with building management systems  
More efficient, cost-effective and intelligent lighting products, e.g. iLE by ITRI

# Shared research interests: **Urban lighting**



Credit: Prof. Luoxi Hao

adaptive or smart lighting in urban environment  
lighting master plans for towns and cities, particularly the ones with cultural heritage

# Shared research interests: Human factors in lighting



Credit: Prof. Luoxi Hao

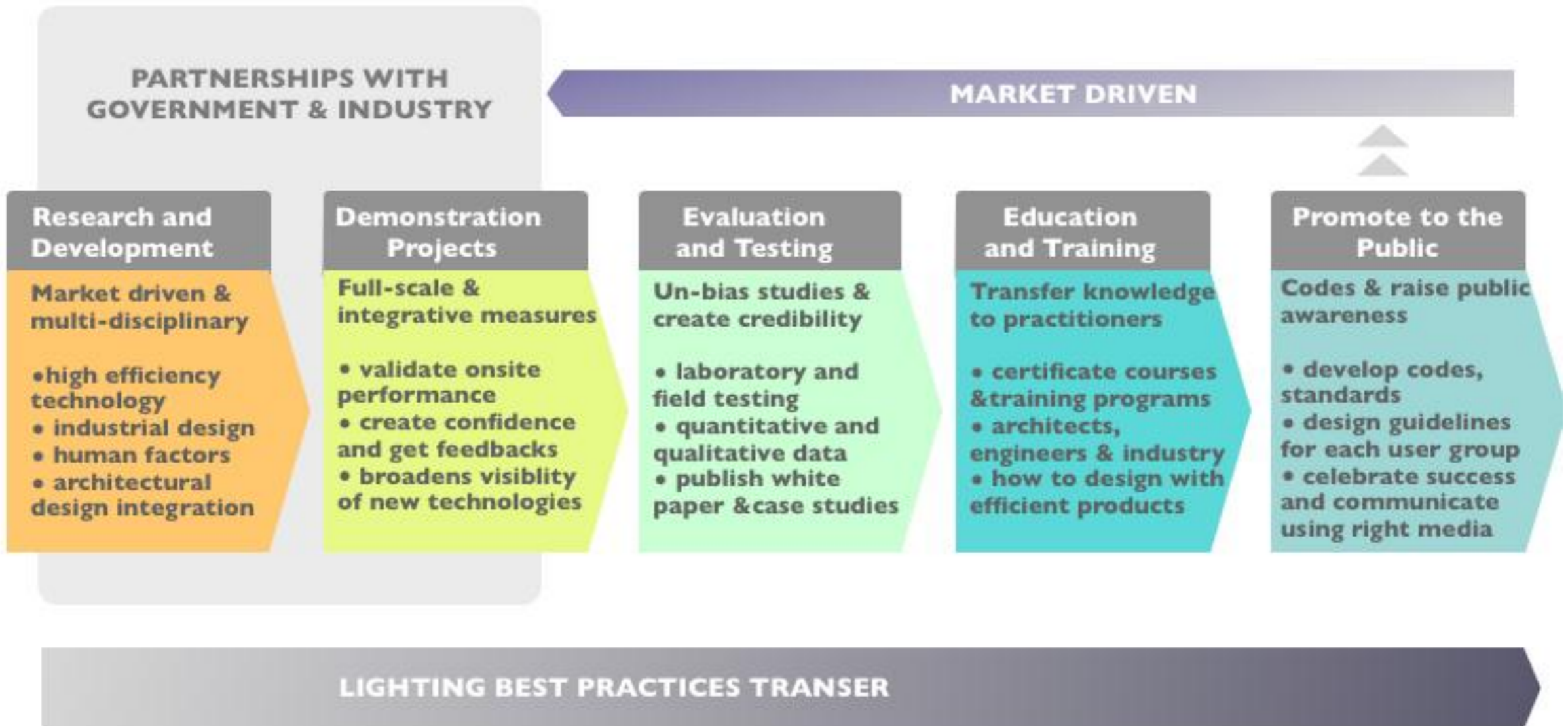
Light and health: non-visual effects of light on sleep quality, mood, and depression  
Visual perception and psychological responses to new lighting applications



“ Towards high quality and efficient lighting  
for people and environment ”

**‘Light for Life’**

Shared Vision



Recommended key activities and strategies



For experts from APEC economies to support the development of regional lighting centers

Set up an advisory committee and a knowledge-sharing platform

Explore mechanism for equipment sharing and fundings for collaborative research

Organise a regular forum to share research outcomes that translated into real projects

ESTABLISH CLEAR MISSION

ESTABLISH PARTNERSHIPS

ESTABLISH A UNIVERSITY CENTER

DEVELOP KEY PROJECTS W/INDUSTRY

5-YEAR PLAN & ADVISORY BOARD

For an individual economy to develop a lighting design research center

**A framework for next steps**

# Volunteer advisory committee

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- 11 lighting experts have volunteered as an advisory committee to contribute to the knowledge sharing platform:

Dr. Cary Bloyd, US

Dr. Chanyaporn Chuntamara, Thailand

Prof. Tseng King Jet, Singapore

Dr. Szu-Cheng Chien, Singapore

Dr. Ming-Shan Jeng, Chinese-Taipei

Prof. Yan Yonghong, China

Prof. Ian Cowling, Australia

Mr. Christopher Cuttle, New Zealand

Mr. Alessandro Abbate, The Philippines

Mr. Totok Sulistiyanto and Mr. Herman Endro, Indonesia



## A few first steps



KMUTT's [Lighting Research and Innovation Centre \(LRIC\)](#) has just been created and will be officially launched in 2015. [Smart Lighting](#) has been defined as a key research and demonstration project that will be explored further with industry partners.

Singapore Green Building Council has signed a MOU with CLTC in late 2013 and announced that it will launch [Singapore Lighting Technology Center](#), based at Nanyang Technological University, also in 2015.



Thank you