

Enabling Smart Buildings

Workshop May 18th, Munich

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Infineon Technologies AG



Innovative semiconductor solutions
for energy efficiency, mobility
and security

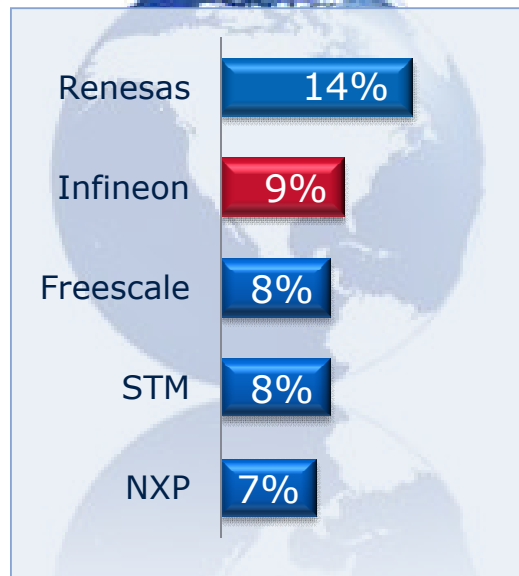


Infineon Holds Top Positions in All Target Markets



Automotive

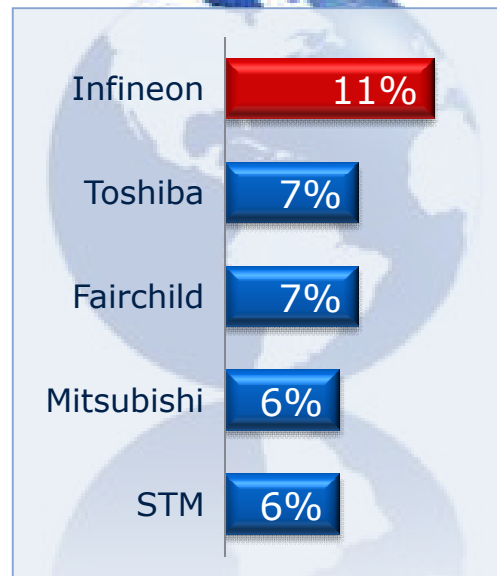
#2



Calendar Year 2010.
Source: Strategy Analytics, April 2011.

Power

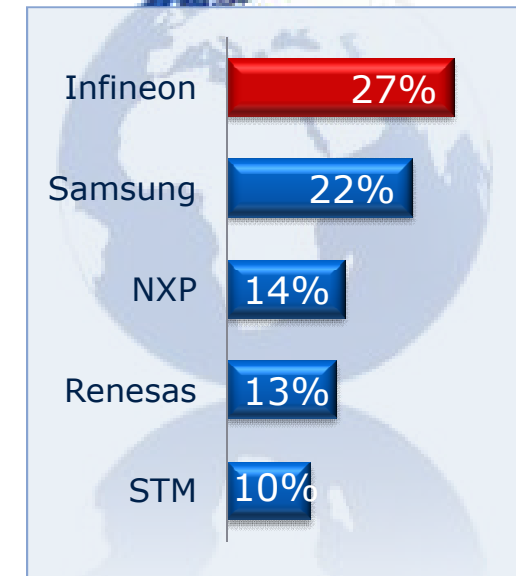
#1



Calendar Year 2009.
Source: IMS Research, July 2010.

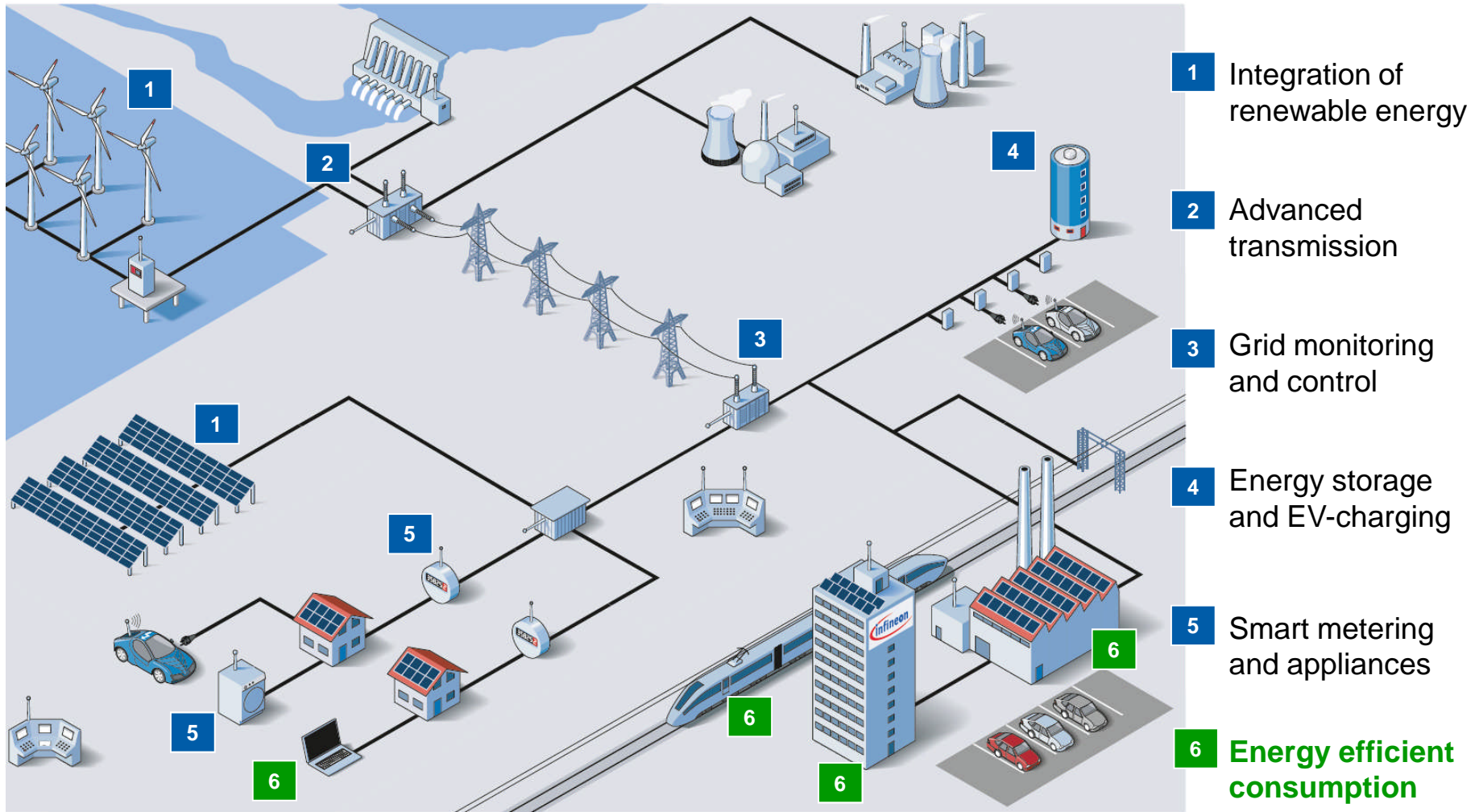
Chip Card

#1



Calendar Year 2009.
Source: Frost & Sullivan, October 2010.

...in INDUSTRIAL Infineon's Energy Efficiency activities are clustered around the Smart Grid



Semiconductors for Smart Buildings: In House and Grid Connected Devices



New Applications

■ Lighting

- Trends: Intelligent Light Management, Color schemes, Constant Lumen Output

■ Efficient Appliances Management

- Home, Remote, Connected Home

■ Metering

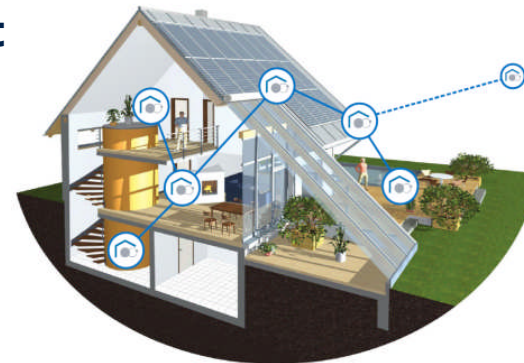
- Current

■ Security

- Secure data communication, secure control, secure measurement, privacy

■ Renewable Energies

- Inverters for AC/DC, DC/AC, DC/DC
- Charging/Storage/Distribution Management



SECURITY COMMUNICATION CONTROL

- Integrity
- Trust
- € relevant
- Fun
- Attacks

- Lifetime
- Upgrades
- Modularity

→ Research „*keeping the connected system in mind*“ for new solutions & small form factors, low energy consumption, secure data, highest efficiency
mass market requirements considered (cost, life time & reliability)

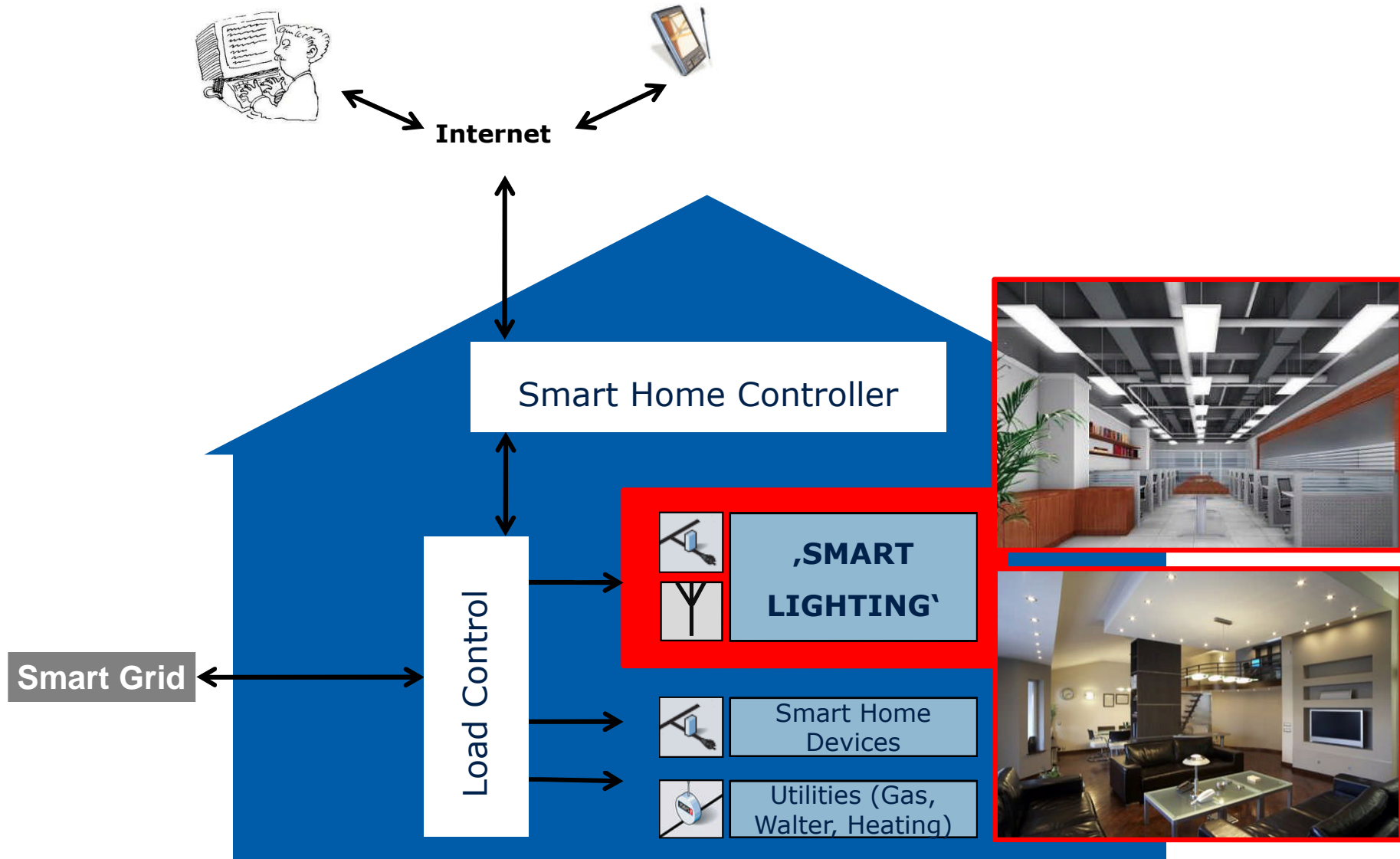


ENERGY EFFICIENCY MOBILITY SECURITY

Innovative semiconductor solutions for energy efficiency, mobility and security.



Future Lighting is starting with the connection to the Smart Grid

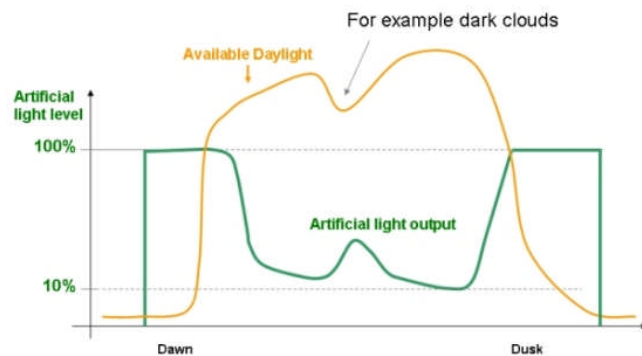


Application trend: Intelligent Light Management

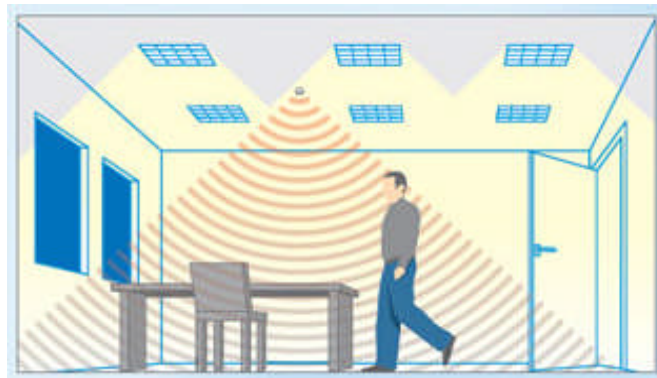
Benefit: Energy saving

System requirement:

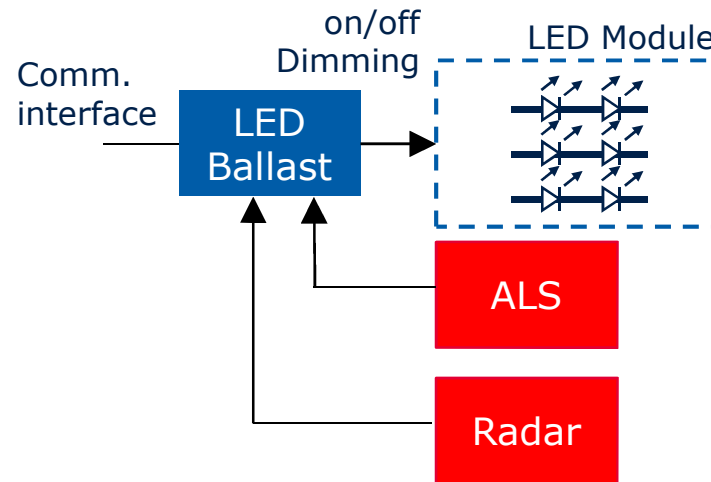
- Daylight harvesting



- Presense detection



Realization concept:



Relevance:

- Office L
- Street L (Presence Detection only)



Semicond. requirements:

- Sensors
- Intelligent drivers or MCUs
- Optional: Multi-channel driver ICs
- Comm. Interfaces (DALI, ...)

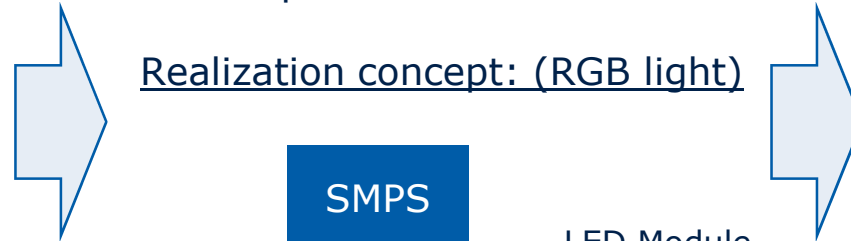
Application trend: Color schemes (RGB light, CCT)

Relevance:
 -Residential L
 -Architect. L.
 -Office L.
 (only CCT)

Benefit: Ambient light acc. to consumer preference

System requirement:

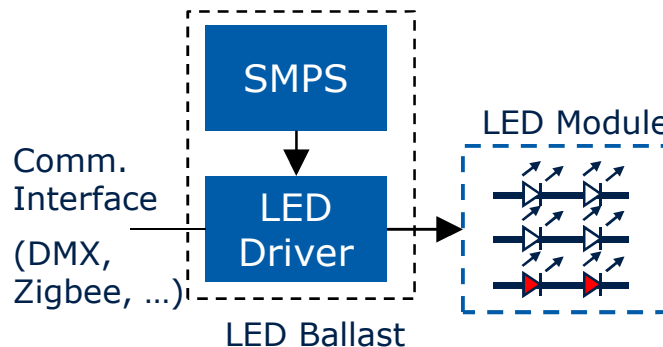
- RGB light
- Predefined color schemes / mood light
- Color Temp. Changes
- Dimming



Semicond. requirements:
 RGB light

- Intelligent multi-ch. LED driver (4-ch.), typ. DC/DC) with comm. Interfaces (DMX→ Arch. L.) Residential→ Leditron, Zigbee...)
- Power Mgmt ICs for std. SMPS

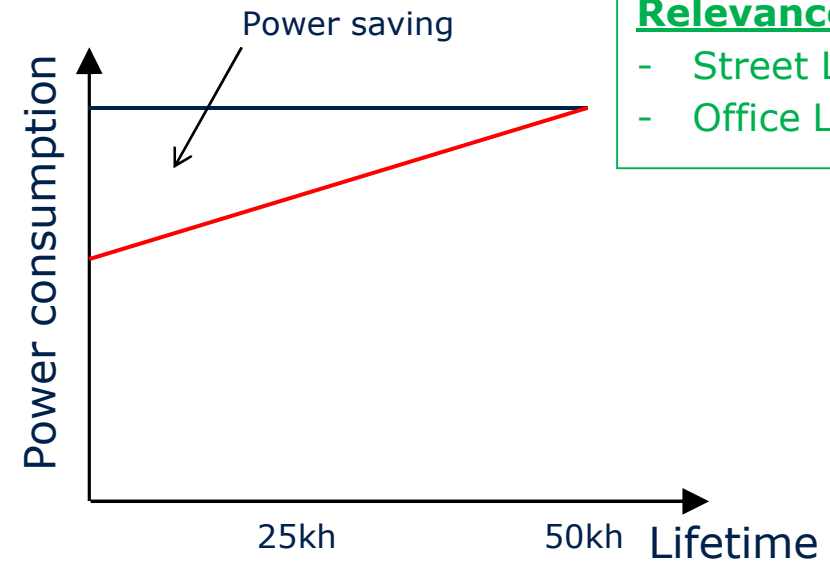
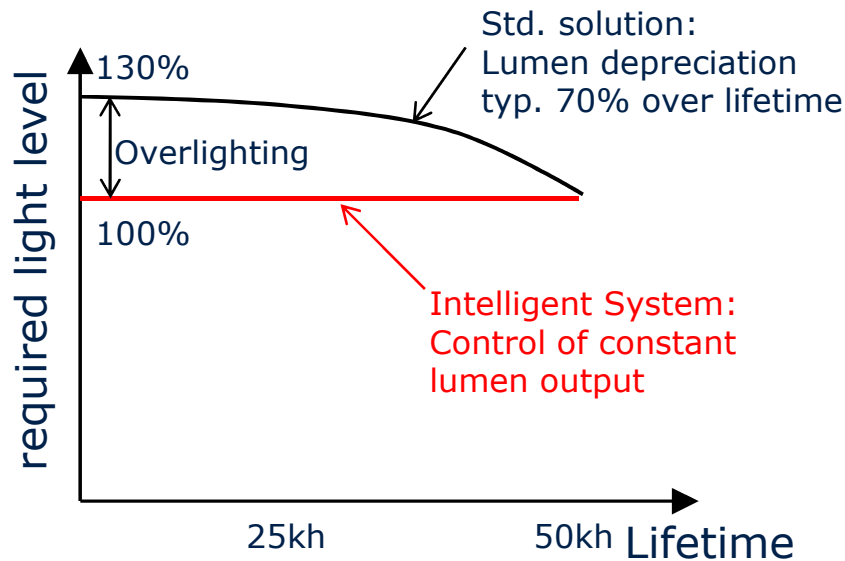
Realization concept:
 e.g. Office L. CCT change)



CCT change

- Intelligent multi-ch. driver ICs
 - 1-ch for red-light
 - ≥ 1-ch for white light
- Dali or other comm. interfaces

Application trend: Constant Lumen Output



Relevance:

- Street L.
- Office L.

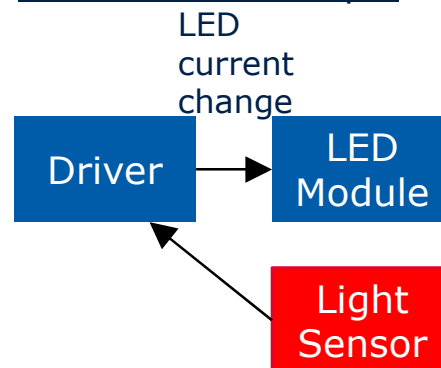
Benefit: Reduced TCO (system cost, energy cost)

System requirement:

- Illuminance over lifetime (lm/m^2)
- Defined by specific application norms



Realization concept:



Semicond. requirements:

- Intelligent system
 - Light sensor
 - Intelligent driver Ics
- For remote systems
 - Comm. Interfaces: (Wireless, DALI, etc.)