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sense and simplicity

EnPROVE – Workflow and Tooling for Professional Lighting Retrofits

IEA-SHC Task 50 - 1st Industry Workshop
March 20, 2013; Lund, Sweden

Peter Fuhrmann - Philips Research

SHC
SOLAR HEATING & COOLING PROGRAMME
INTERNATIONAL ENERGY AGENCY

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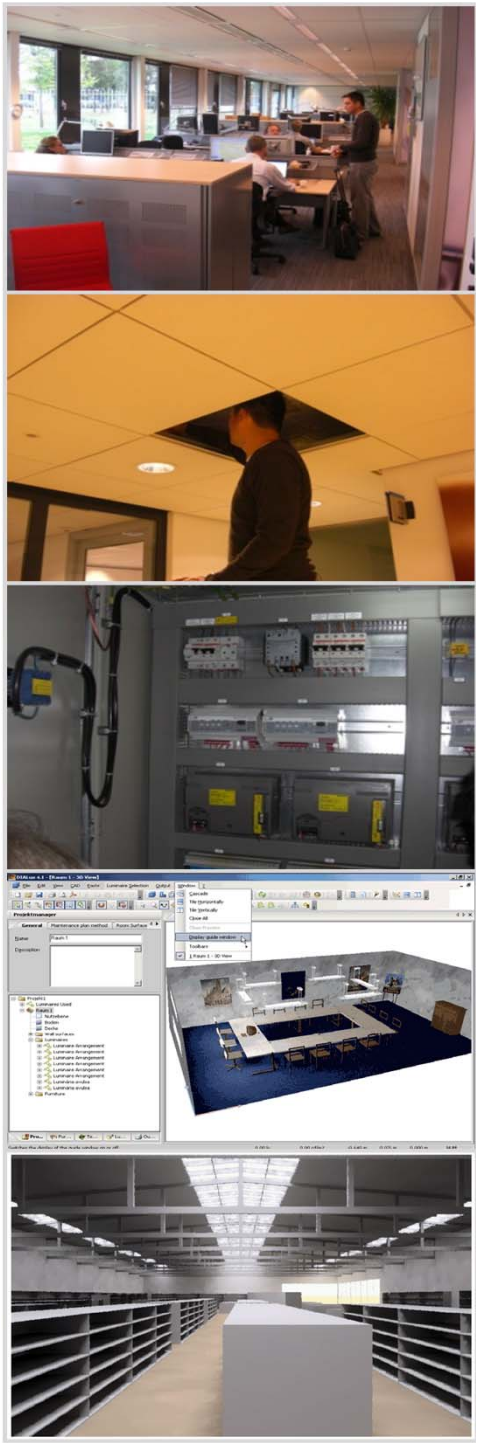
Outline

- Challenges in lighting retrofits
- Advanced lighting retrofit delivery
- Classification of advanced lighting retrofits
- Case Studies: Workflow and tooling needs
  - Philips retrofit (office/industry)
  - FP7 EnPROVE
  - Philips advanced renovation (retail)



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Challenges in Lighting Retrofits

Mission of IEA-SHC Task 50

Lack of awareness of retrofit potentials	2 3
Confusing variety of retrofit solutions for lighting systems	2 3
Missing proven evidence on the saving potential of sound design solutions using new emerging technologies	2 3
Partly lacking technical and constructive solutions	1 2 3
Missing of integrated rating methods on lighting energy and operational costs	2 3
Lack of incentives	3

Lighting retrofits can advance in

- the technical retrofit solution 1
- the retrofit workflow & service 2
- the lighting retrofit tooling 3

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Challenges in Lighting Retrofits

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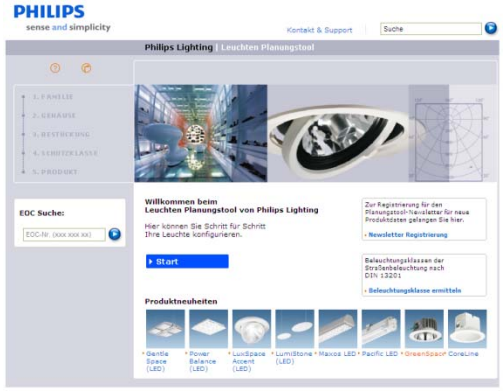
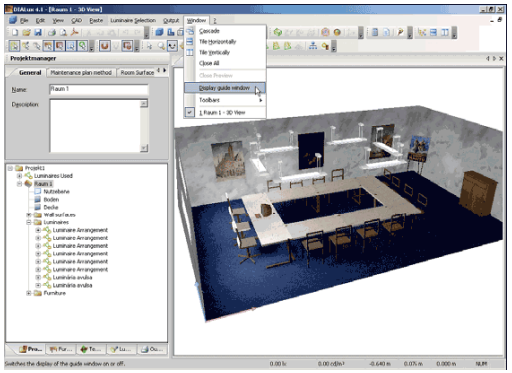
‚Standard Specifier/Design' Way-of Working

‚*When you know what you want/need*'

	Program	Plug-in
Indoor & outdoor lighting	DIALux / Relux	Philips Product Selector
Road lighting	DIALux / Relux	Philips Product Selector
High end visualization	Autodesk 3ds MAX design	Philips Product Selector
Area lighting	Calculux Area	Philips Product Selector





DIALux

RELUX light simulation tools

Autodesk

Crucial tooling components

- Product selection support and vendor libraries
- Lighting design and simulation
- Lighting visualization

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Advanced Lighting (Service) Way-of Working

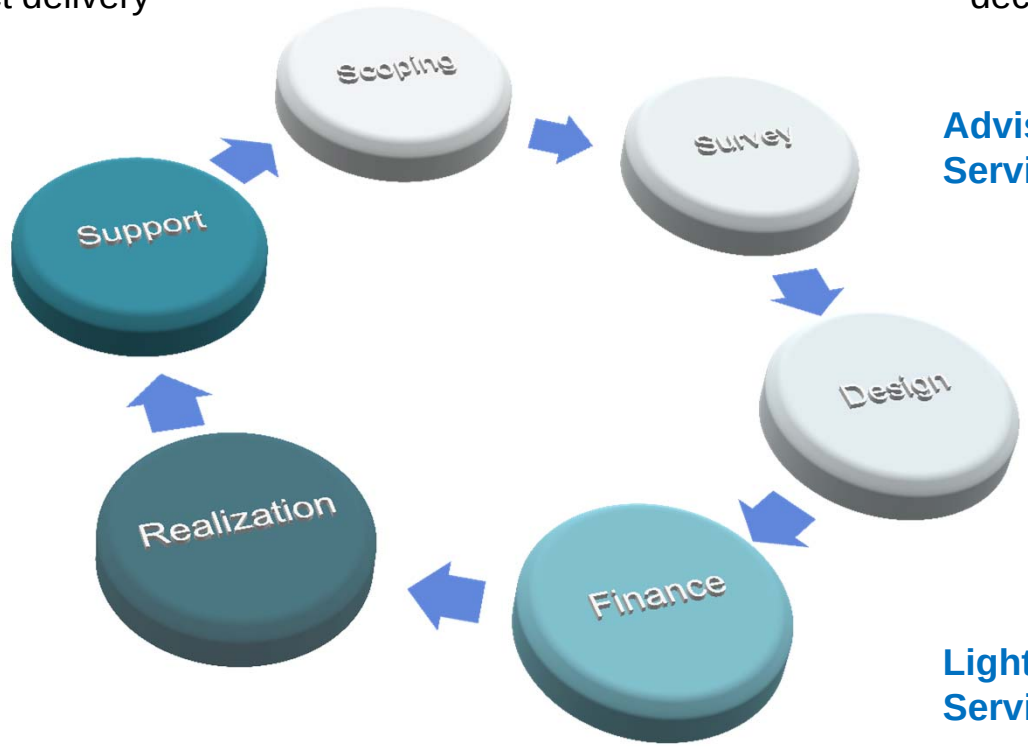
‚When awareness creation, potential assessment, consultancy... is needed‘

Offer a ‚service experience‘ around retrofitted lighting and turn-key project delivery

Scoping & Quick Scan

Engage and accompany customer throughout all steps of the decision process

Lifecycle Services



Advisory Services

Project Services

Lighting Capital Services

Tailor lighting solution and business case to the customer‘s needs

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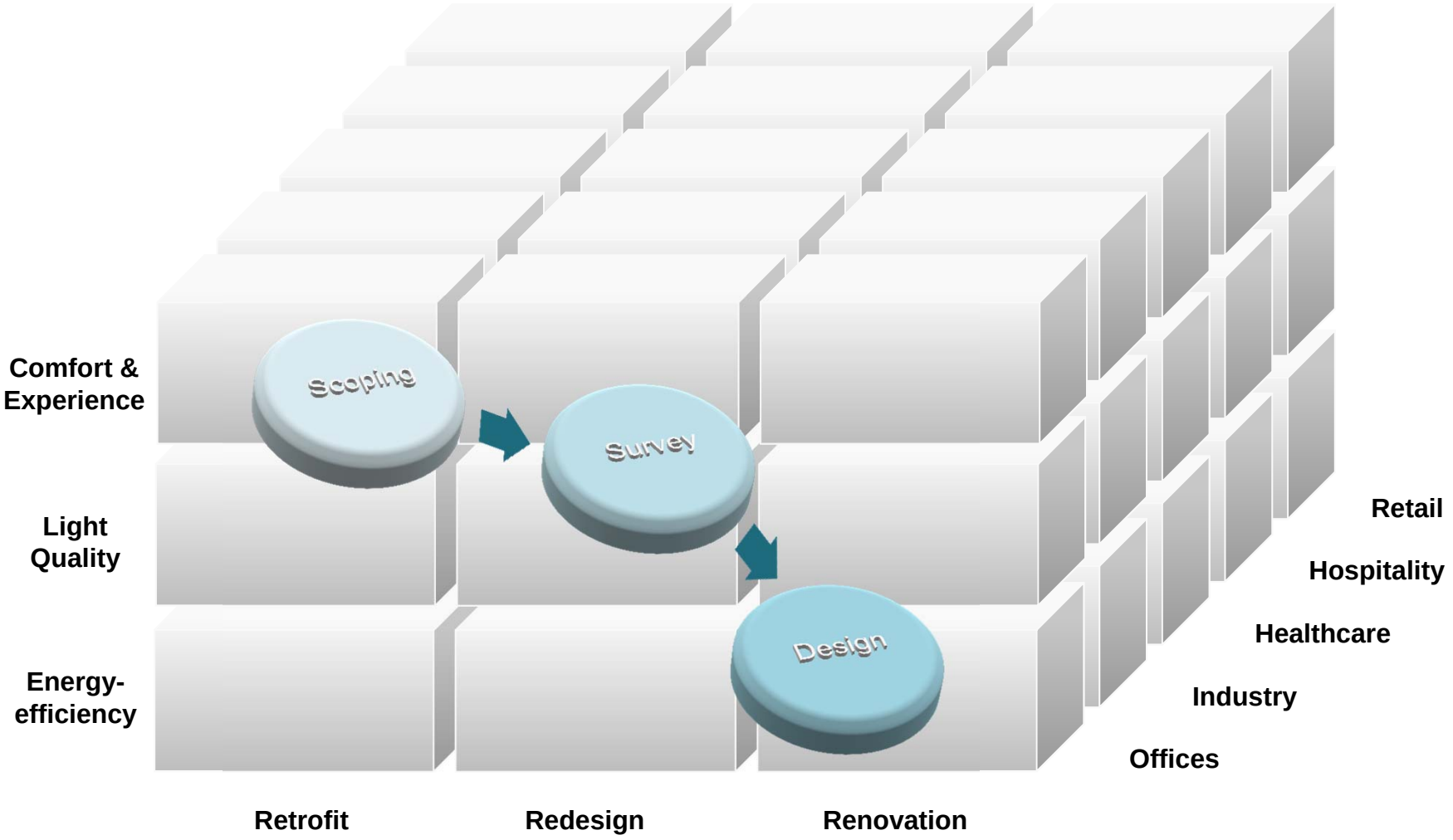
Classification of Advanced Lighting Retrofits

IEA Task 50 Discussion



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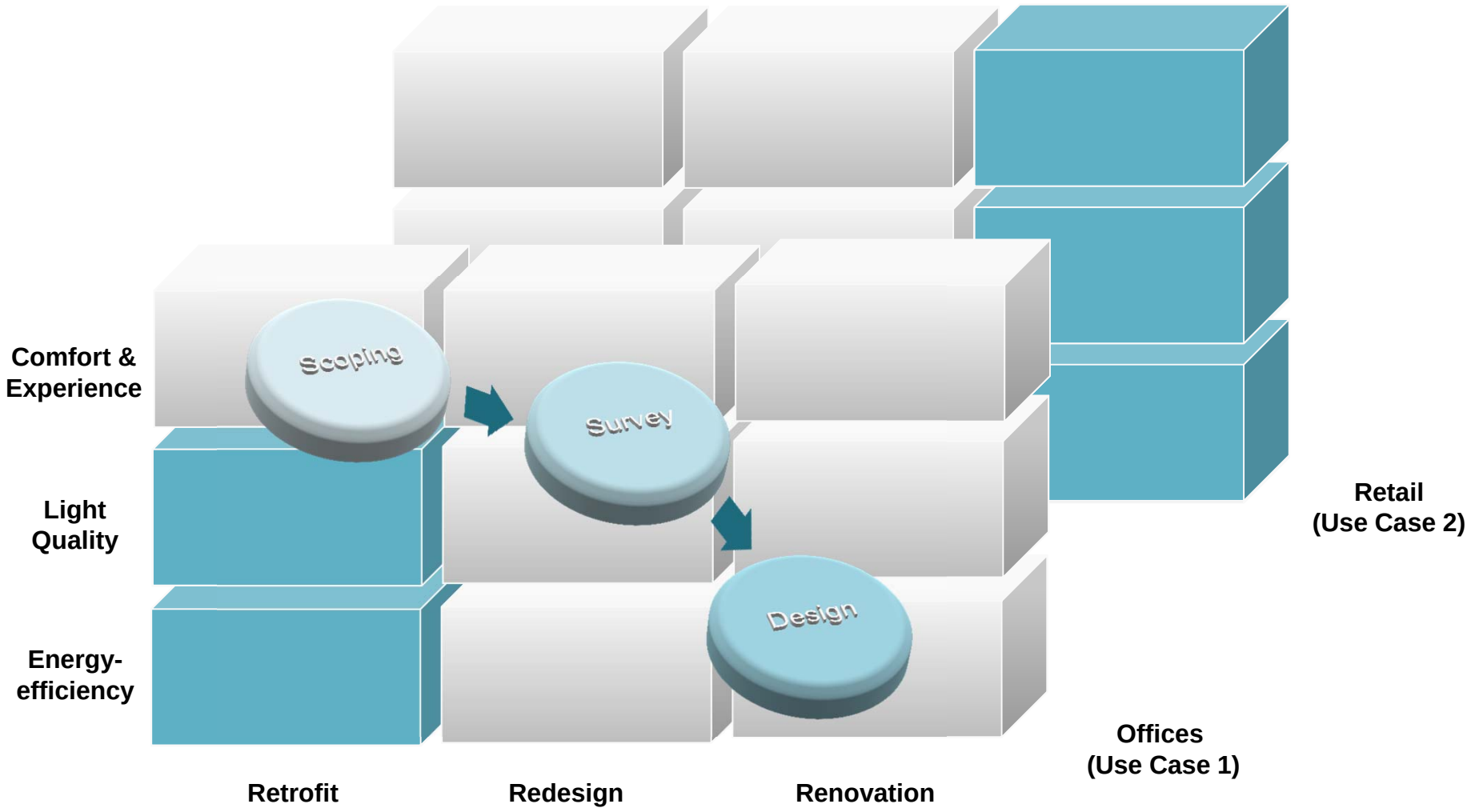
Use Case-driven Tooling Review

(1) Office Retrofitting and (2) Retail Renovation



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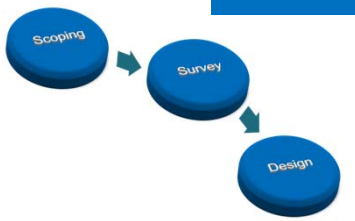
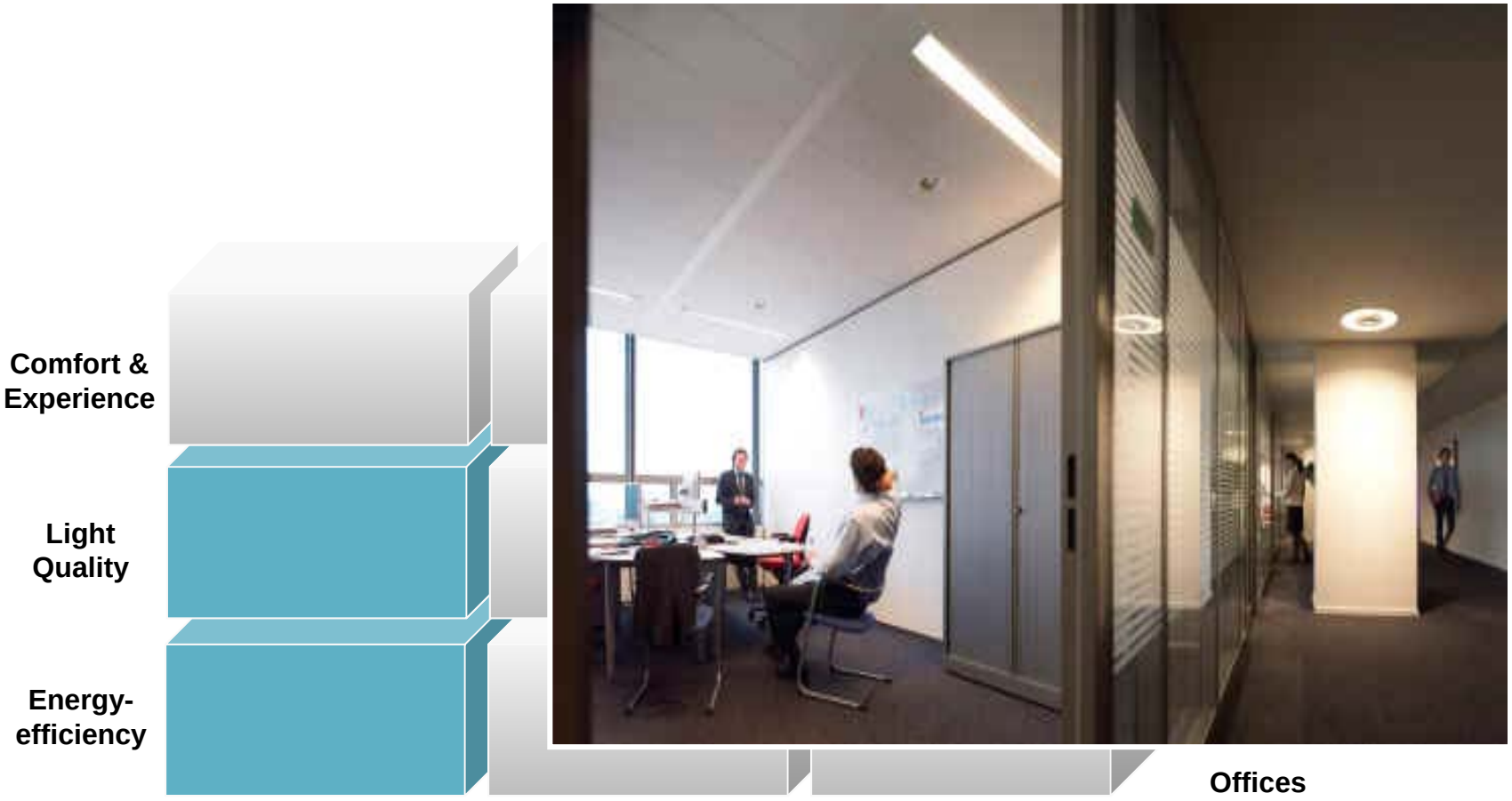
Use Case 1



Use Case 1: Office Retrofitting

‚Fit-for-Purpose Lighting with best Payback‘



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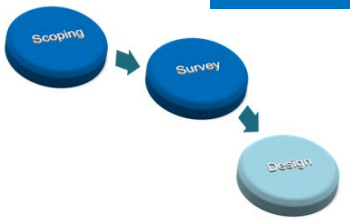
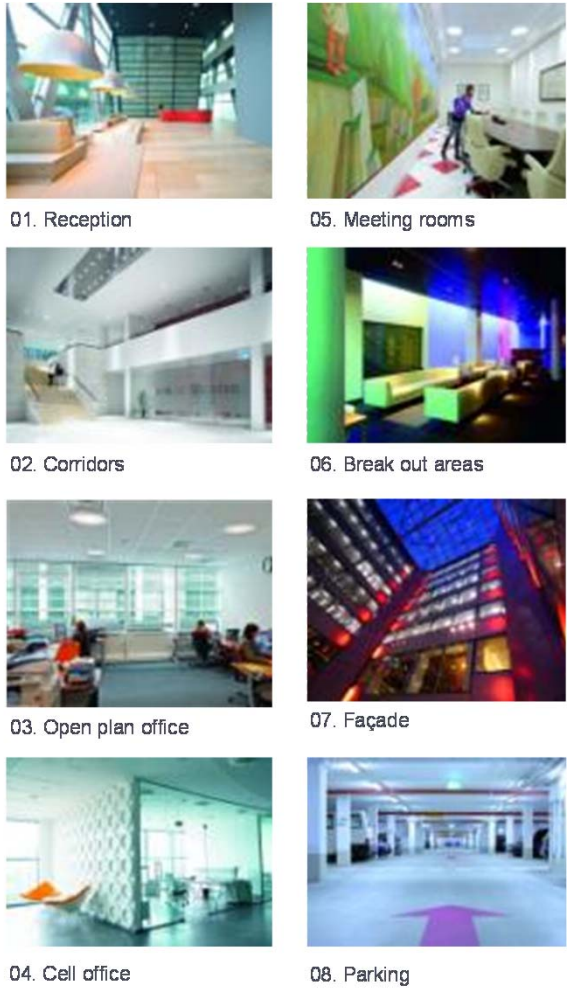


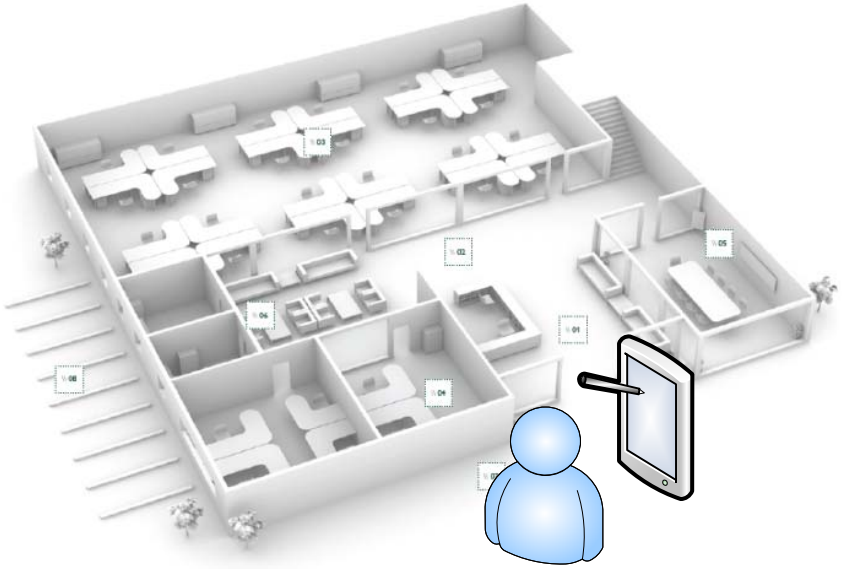
Survey and Auditing Tooling

Need for (cost-)efficient data acquisition and presentation



Mobile application facilitating the time/effort-efficient data acquisition for

- all current lighting equipment (asset inventory)
- electrical lighting installation situation
- all usage and operational parameters
- all spatial and environmental information (enabling lighting design and simulations)



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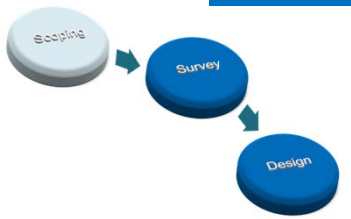
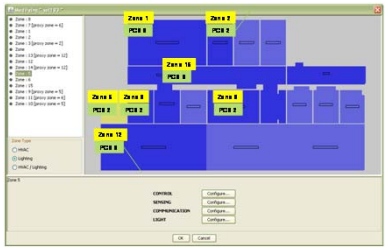
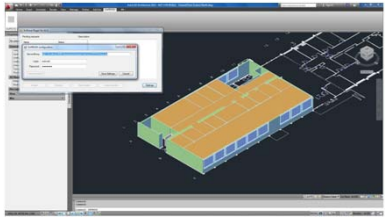


EnPROVE Retrofit Advisor Solution

FP7 www.enprove.eu

1. Re-use and utilization of available building and installation data
2. Sensor-based precise usage and performance data analytics
3. Product modeling for automatic lighting controls design





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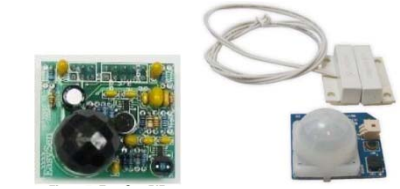

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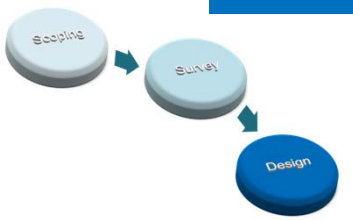
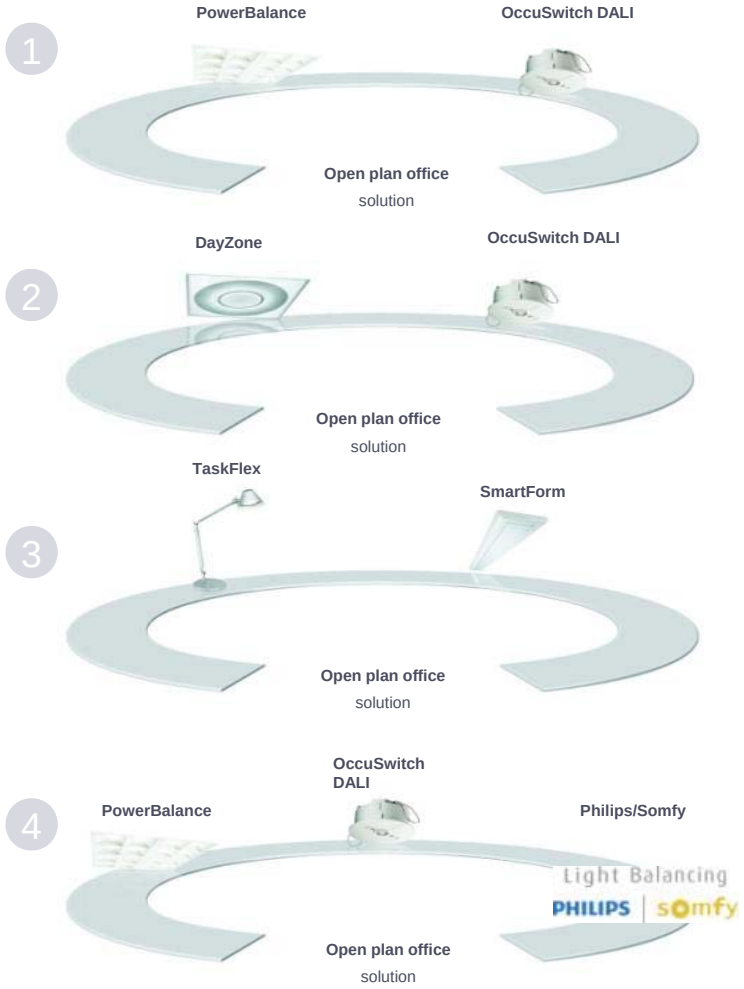
Use Case 1



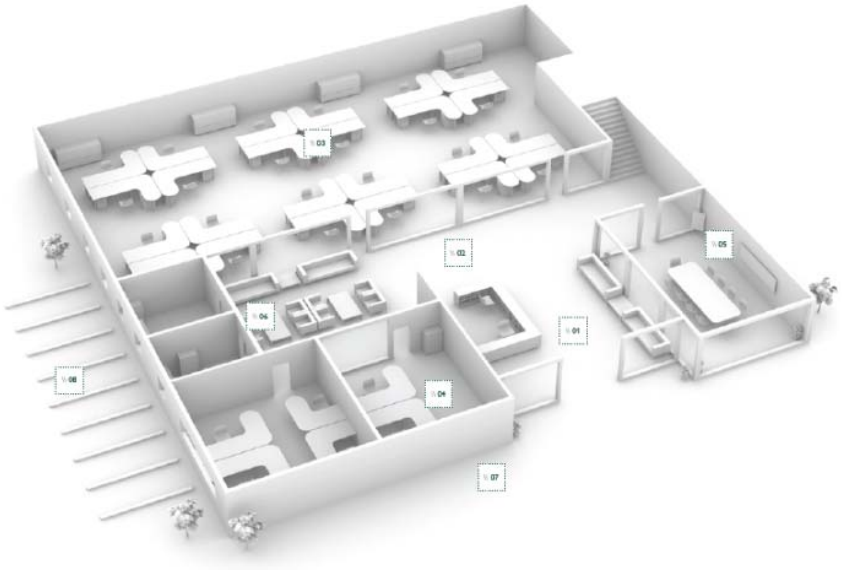
Solution Design Tooling

Need for Scenario-Solution Mapping



Solution design and decision tooling – determining the appropriate solution for each area

- **Solution 1** Energy-efficient lighting design
- **Solution 2** Inspiring and comfortable lighting
- **Solution 3** Bringing light to the desk
- **Solution 4** Linking lights & blinds



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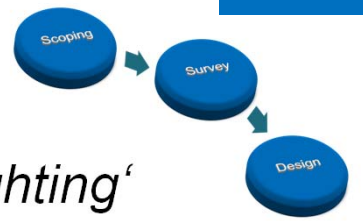
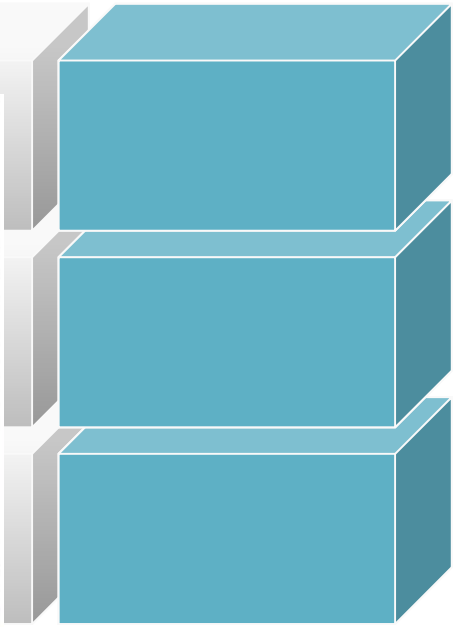
Use Case 2



Use Case 2: Total Green Store*

‚Delivering always ideal Combination of Daylight and LED Lighting‘

Retail



Comfort & Experience

Light Quality

Energy-efficiency

Renovation

* Total Green Store: Philips business proposition for daylight/LED retail lighting

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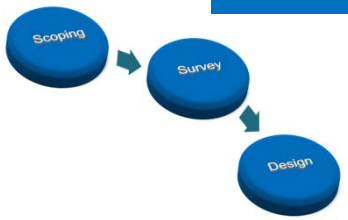
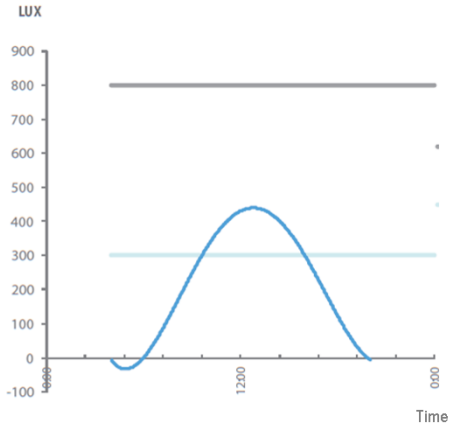
Use Case 2



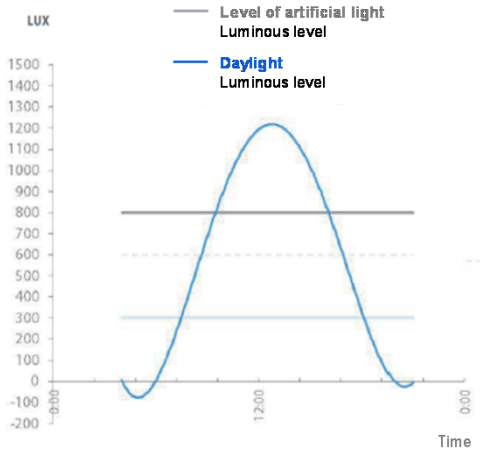
Hybrid LED/Daylight Solutions

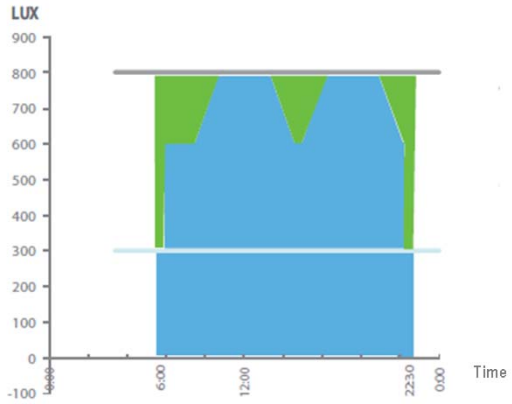
Skylight/LED Integration

Intelligent Lighting Controls



Daylight-Harvesting





Peak-Time Lighting Control

Level of artificial light
Luminous level

Artificial light dimmed
Peak-Time-Dimming

Saving potential
With Peak-Time-Dimming

Store times:

06:00 – 07:00 Uhr Refilling of shelves
07:00 – 08:00 Uhr Few customers
09:00 – 13:00 Uhr A lot of customers
14:00 – 17:00 Uhr Few customers
18:00 – 20:00 Uhr A lot of customers
20:00 – 22:00 Uhr Few cutomers
22:00 – 22:30 Uhr Light for cleaning

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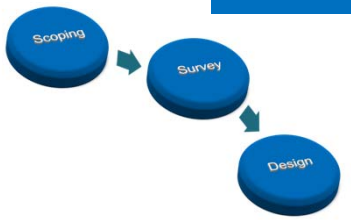
Use Case 2



Survey-Design-Analysis Tooling

Need for detailed Lighting/Climate/Load Analysis

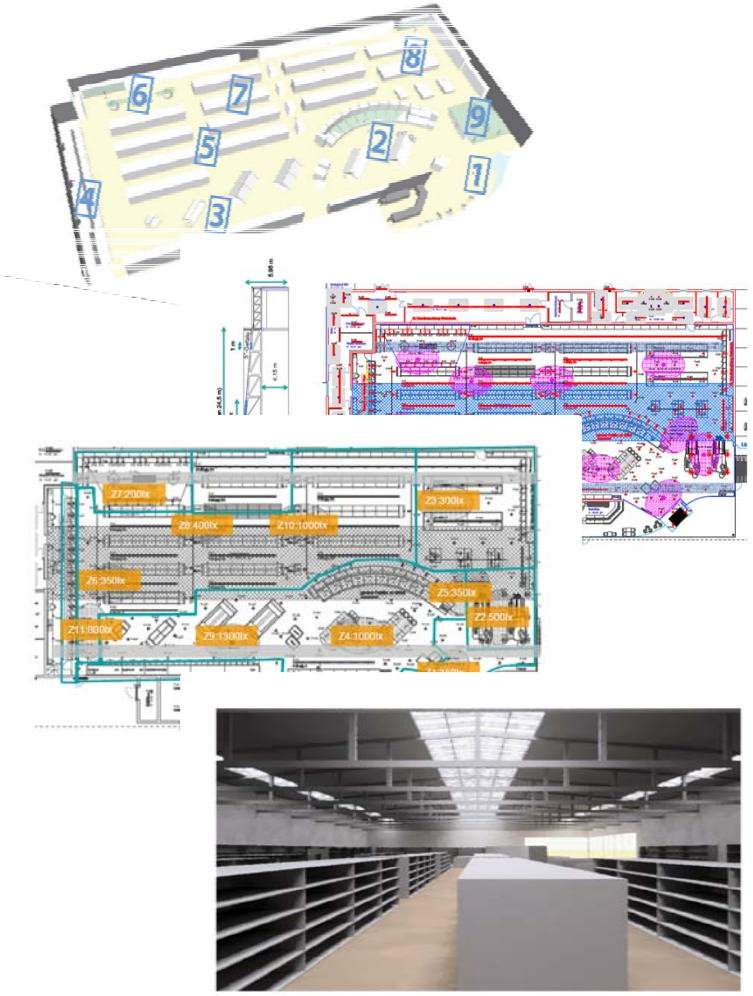
Energy scan for artificial lighting for existing building

Concept

- Draft of the artificial lighting concept including all lighting controls components
- Daylight concept and skylight simulation including annual energy savings with daylight-controlled artificial light – based on individual building parameters (Daylight-Survey)

Business Case Creation

- Arithmetical simulation of the energy savings through constant light-output- and peak-time lighting controls based on individual project parameters
- Total cost of ownership analysis including initial investment, energy- and maintenance costs



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Green Evolution*: Workflow & Service Chain for Advanced Lighting Retrofitting

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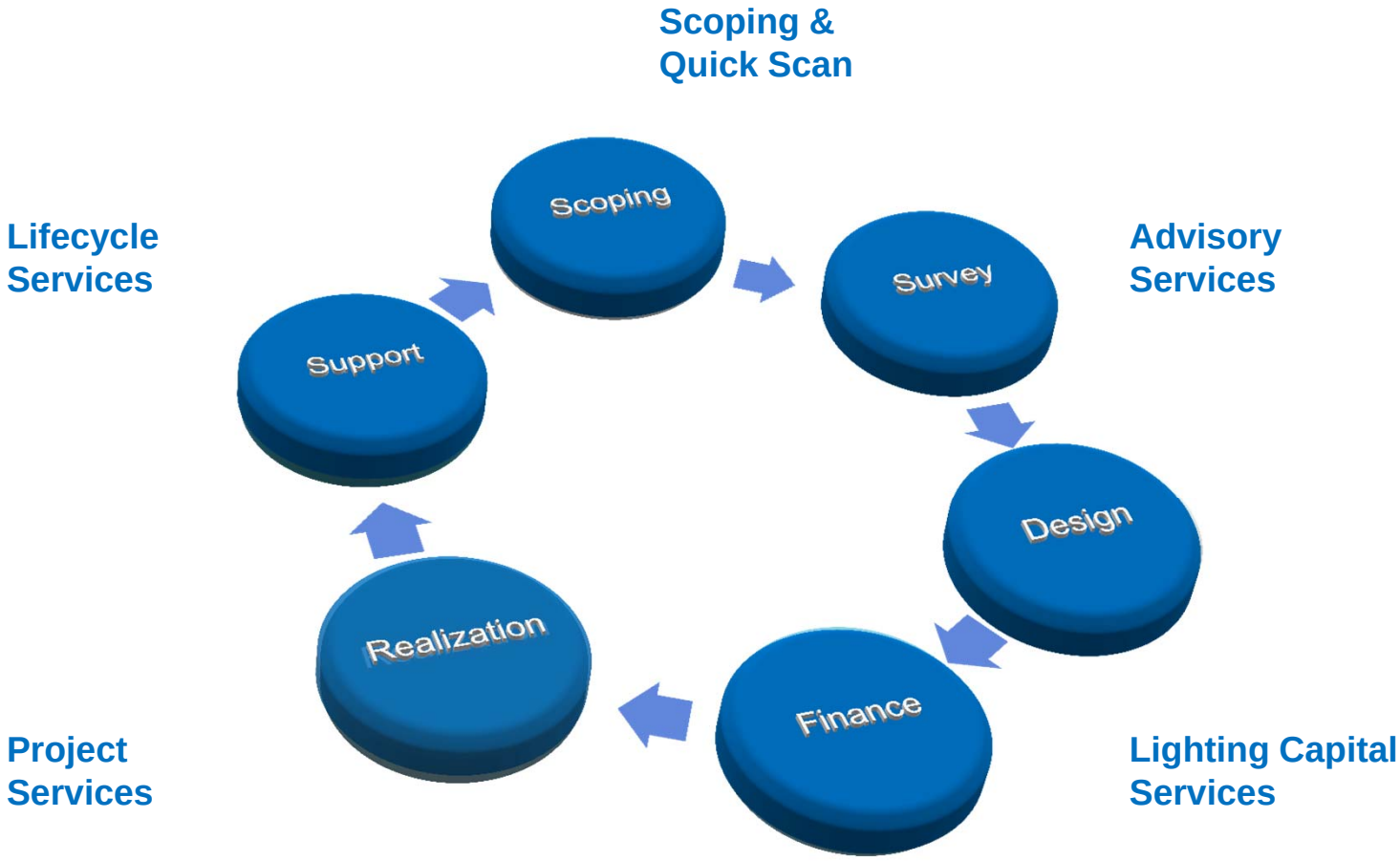

* Green Evolution: Philips service business proposition for professional lighting retrofits

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THANK YOU FOR YOUR ATTENTION!

Contact: peter.fuhrmann@philips.com

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