



Een SWOT analyse van de verlichtingssector in Vlaanderen

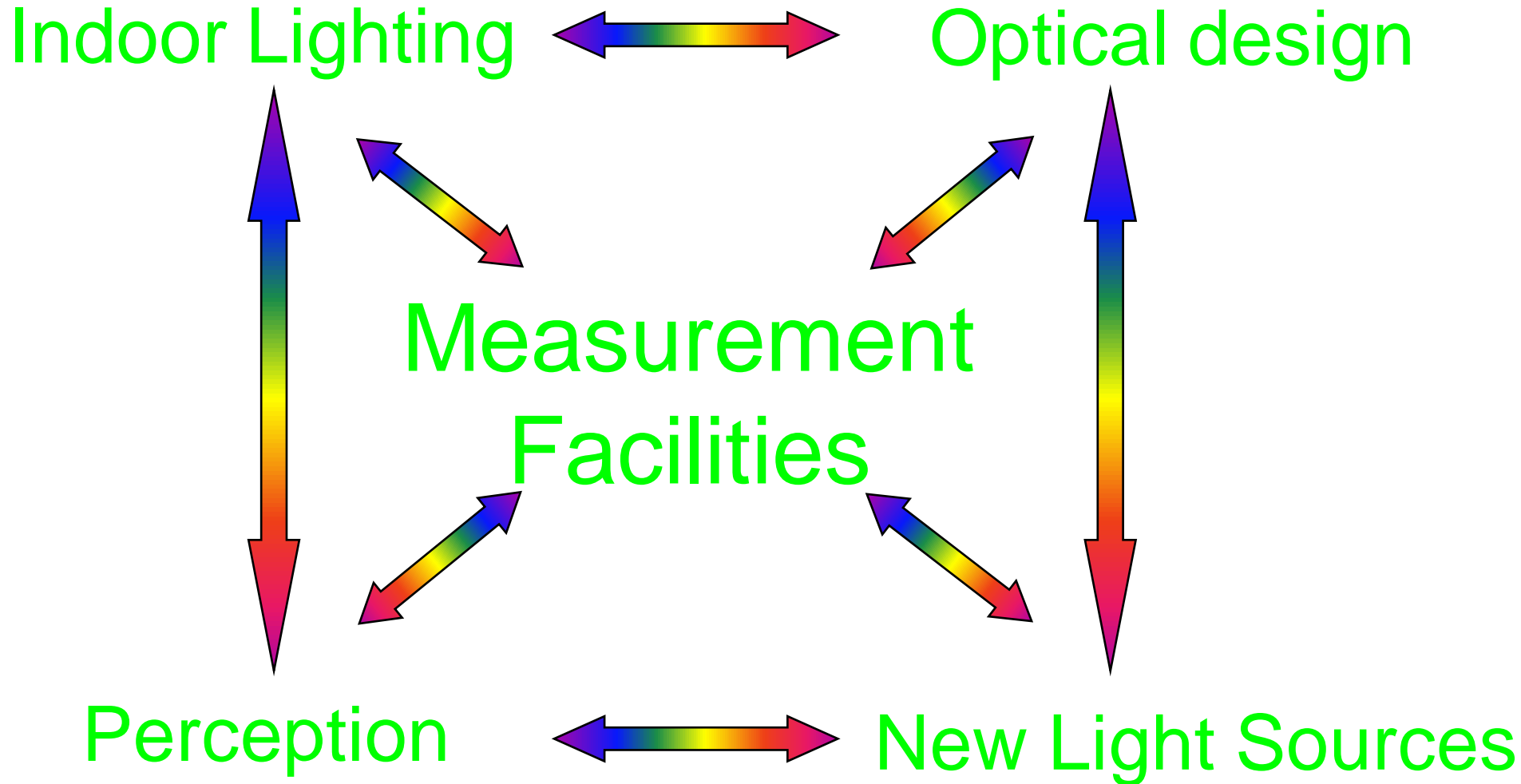
Peter Hanselaer
2 december 2015



Light&Lighting Laboratory

The team





Light&Lighting Laboratory

Groen Licht Vlaanderen



DELTA LIGHT®

SYLVANIA



BIS lighting
Makers in Lighting Solutions

Axioma
enlightening your business

WeThink.
ideas for energy

cebeo
your link to electricity



WFrans



luxon.be
by REL-score



ASB Lichtadvies
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ESYLUX

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TRONIXX
BELGIUM HIGHTECH SOLUTIONS



ERCO



Vrije Universiteit Brussel

LUMINACT



niko
Illuminating ideas.



LED LITE



PHILIPS
Indal

Alexpo
Consultants

D'Haenens | Uw lichtpartner
Professioneel lichtadvies voor al uw projecten

altijd in uw buurt

lightplus
A bright vision on light

NAV.
de vlaamse architectenorganisatie



KU LEUVEN

EU 2020 – HORIZON 2020: Three priorities

Excellent Science

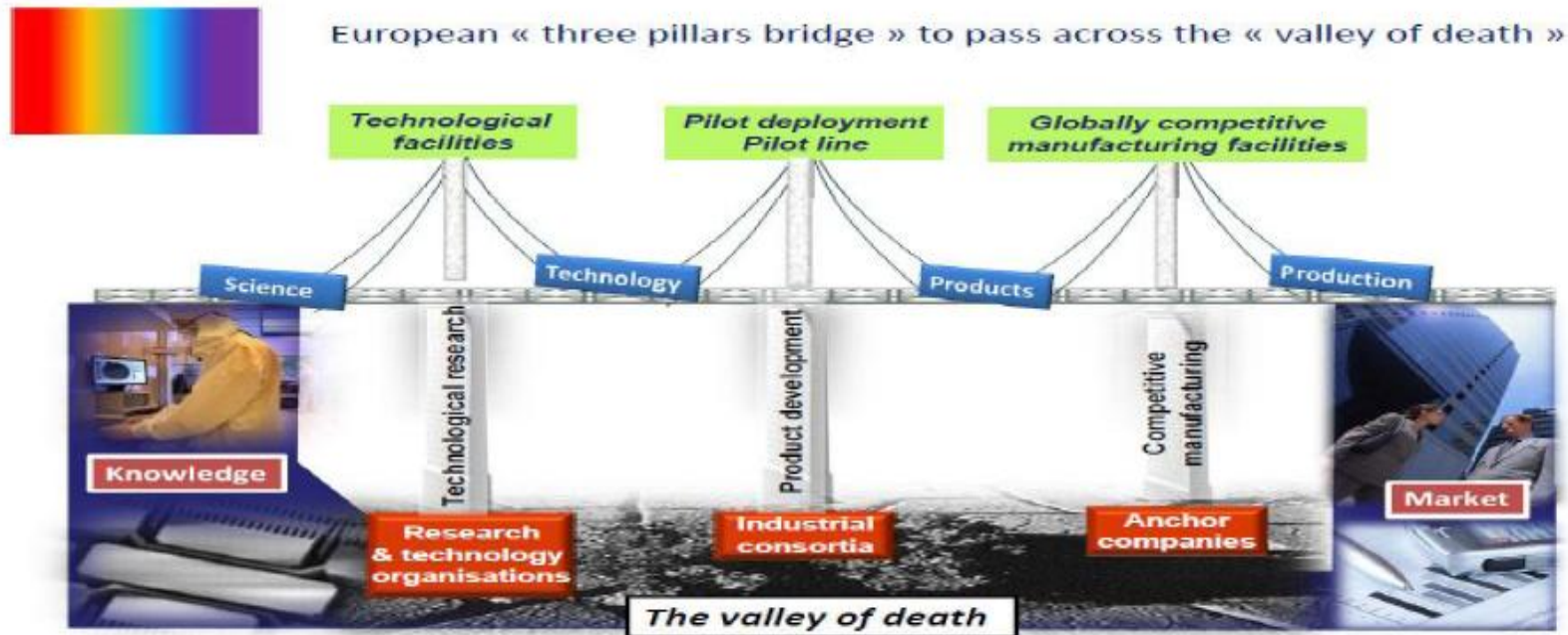
ERC

Industrial Leadership

Key Enabling Technologies

Societal Challenges

Health, Food, Energy...



2012

EU defines 6 “Key Enabling Technologies” and develops corresponding roadmaps (framework “Horizon 2020”):

1. Nanotechnology
2. Micro-nano electronics
3. **Photonics**
4. Industrial biotechnology
5. Advanced materials
6. Advanced manufacturing

Photonics – The Science and Technology of Harnessing Light

Photonics is the science and technology of the harnessing of light.

Photonics encompasses the generation of light, the detection of light, the management of light through guidance, manipulation and amplification, and most importantly its utilisation for the benefit of mankind .

Photonics bears the same relationship to light and photons as electronics does to electricity and electrons.



Photonics will Impact Most Areas of our Lives

► Healthcare

- Early diagnosis through new detection methods
- Minimal invasive surgery

► Energy Efficiency

- LEDs, OLEDs and intelligent networks can save 2/3 of electricity for lighting

► Safety & Security

- Smart sensors for automotive safety; IR detection systems

► Manufacturing

- Lasers enable new lightweight structures
- Laser drilling: 25,000 holes per second for efficient solar cells

► Inclusion

- High speed fibre networks with multi-terabit capacity are backbone for web 2.0 & 3.0 products & internet of things



2013

European Technology Platform Photonics21 publishes the KET Photonics Roadmap

Subsections:

1. Information & Communication
2. Industrial Manufacturing & Quality
3. Life Science & Health
4. *Emerging Lighting*, Electronics & Displays
5. Security, Metrology & Sensors
6. Design and Manufacturing of Components & Systems
7. Education, Training & Disruptive Research



Spring 2013

- Call from IWT/AI&O to develop Flemish counterparts of the European KET roadmaps
- Looking for consortia of academic and industrial partners to do the work
- Future funding programs of IWT/AI&O will be inoculated on the KET roadmaps

August 2013

- An ad hoc consortium “Flanders Photonics Consortium” was founded
- Academic executors: VUB, UGent, KU Leuven

Approach Flanders Photonics Consortium



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7 mirror working groups, each coordinated by an academic and an industrial partner

WG4 was splitted in “Emerging Lighting” and “Displays”

1. Information & Communication
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Roadmap sections

Information & Communication

Industrial Manufacturing & Quality

Life Science & Health

Emerging Lighting, Visualization & Displays

Security, Sensors & Metrology

Components & Systems

Education, Outreach & Disruptive Research

December 2013

- Preparation and initiation of the questionnaire for stakeholders

28 January 2014

- preparing a first draft (“teaser”) by KU Leuven
- Workshop 1 organised by “Groen Licht Vlaanderen”, open to all parties involved in lighting; discussion of the first draft
- 65 participants

28 February 2014

- Preparing next draft by KU Leuven
- Workshop 2

March 2014

- Finalising the draft in cooperation with all parties
- Editing and proof reading the complete document

Major strengths

- Large number of companies active in the lighting industry
- Decorative and architectural sector
- Product design and development
- Diverse (HID, LED, TL, . . .)
- Existing consortium (Groen Licht Vlaanderen)
- High-quality research centers in optics & photonics
UG, VUB, UA, IMEC – Holst, KU Leuven

Major weaknesses

- Limited manufacturing industry; more sales offices than technological driven companies
- Complete value-chain in lighting is not present in Flanders
- Limited international cooperation
- Limited international normalization
- Limited or no quality control of installed lighting systems
- Limited availability of qualified personnel with adequate knowledge of light and lighting (designers, architects...)

Major opportunities

- Many buildings (companies, public buildings, schools) in Flanders still use old lighting technology
- Public tenders for lighting installations need an update
- Multidisciplinary collaboration (building sector, lighting companies, design offices,...)
- Provide lighting as a service (install, maintain, leasing, manage, administer)
- Creative solutions using remote phosphor technology
- Lighting in (health-)care, agriculture and horticulture
- Intelligent/flexible lighting installations that provide the right light, at the right place, at the right time, for everybody
- Decorative and technological outstanding luminaires

Major threats

- High labor costs and other costs result in a further erosion of the manufacturing industry
- The price is more important than the quality
- Role of contractors
- Inertia in the building sector
- Highly dependent on components produced elsewhere
- Component manufacturers become luminaire manufacturers

Major socio and macro economic challenges

Socio-economic challenges

- Reduction of energy consumption by lighting (indoor and outdoor lighting)
- Intelligent lighting for improved quality of living (human-centric design) with special attention for elderly and impaired people (“levenslang wonen”)
Flexible organization of work demands for flexible and intelligent lighting
- Recycling of lighting systems (Design for better recyclability)

Macro-economic hurdles

- Labor costs – need for cost reduction
- How do we hold/get back the manufacturing industry in Flanders



Iedere week duikt Metro de Europese coulissen in

Europese industrie in de lappenmand

De sluiting van enkele grote industriële sites bracht de achteruitgang van de sector in Europa pijnlijk onder de aandacht. De Europese Commissie stelde daarom gisteren een reeks maatregelen voor de «wedergeboorte van de industrie» voor.

De tijd dat er sprake was van de bouw van een postindustriële Europa is al lang voorbij. «Zonder industrie geen sterke economie», benadrukt Antonio Tajani (foto rechts), de Europese Commissaris die bevoegd is voor het dossier. Alleen gaat die industrie op het oude continent er zienderogen op achteruit. De sector vertegenwoordigt nog amper 15,1% van het bbp van de Europese Unie. De Commissie wil dit cijfer optrekken tot 20% tegen 2020. Dat is een ambitieuze doelstelling. Antonio Tajani stelde gisteren een reeks maatregelen voor om ze te verwezenlijken, al zit-



AFP / G. Gobet

aanzienlijk gestegen de laatste jaren», stelt de Commissie vast. Europese industriële betalen maar liefst twee keer zo veel voor hun energie als hun Amerikaanse rivalen, en 20% meer dan de Chinezen. De concurrentiekracht van de sector herstellen, begint bij «het ontwikkelen van pan-Europese infrastructuur voor gas en elektriciteit», onderstreept de Commissie. Antonio Tajani roept de lidstaten ook op de prijsverschillen met

die daarvoor moet opdraaien, zou wel eens het klimaatbeleid kunnen zijn. Daar dreigt de lat een pak lager te komen liggen dan de objectieven die het Europees Parlement momenteel bespreekt. Ook de ondernemerspolitiek van sommige landen zal moeten worden herzien, via een nieuwe small business act (SBA). Die moet het mogelijk maken «in minder dan drie dagen en met honderd euro een bedrijf op te richten».

KORTE METTEN

«Zonder industrie geen sterke economie»

Antonio Tajani, Europees Commissaris voor Industrie, had het onder meer ook over de banden tussen de Europese industrie en de internationale politiek.

DECENTRALISATIE

West-Europa zag zijn fabrieken vertrekken naar de Oost-Europese landen. En die verliezen ze nu op hun beurt aan Azië.

Antonio Tajani: «Het is onaanvaardbaar dat we winstgevend fabrieken moeten sluiten, gewoon omdat ze ergens anders nog meer winst kunnen maken. In het geval van een verlieslatend bedrijf is dat natuurlijk anders. Maar als een onderneming goed draait, dan laat je ze draaien. We moeten ons verzet-

den tegen dit fenomeen?

«Ik heb alleen maar politieke macht. Zo werk ik aan het verminderen van de administratieve rompslomp, om bedrijven zin te geven hier te blijven. Verder ontmoet ik de ondernemers die willen verhuizen, overtuigen dat niet te doen. Lakshmi Mittal bijvoorbeeld, heeft uiteindelijk ons plan aanvaard om zijn staalproductie en de bijhorende jobs in Europa te houden.»

INTERNATIONALISEREN

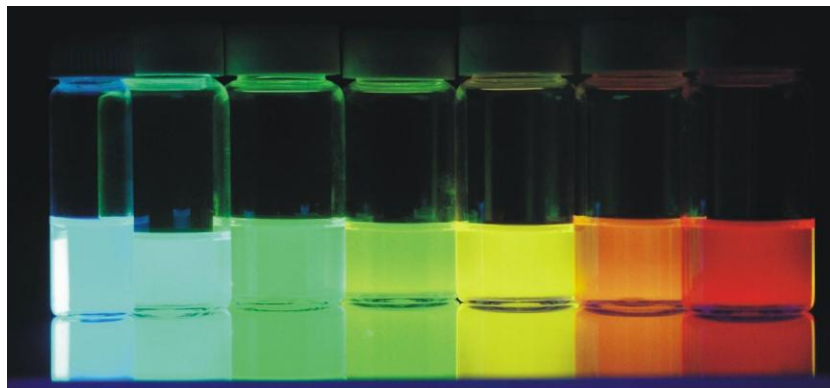
De motor van de internationale groei bevindt zich momenteel buiten de Europese Unie. Maar dat hoeft geen rem te zijn op de economie van de 28?

«Onze bedrijven, en vooral onze kmo's, moeten zich internatio-

Major technological challenges

Light sources

- Tunable spectrum (beyond tunable white)
- Phosphor alternatives (quantum dots, . . .)
- Transparent, flexible, efficient, cheap OLED with sufficient life-time
- Laser based lighting with high flux and luminance for outdoor lighting
- Standardization of LED characteristics (binning, lifetime ...)

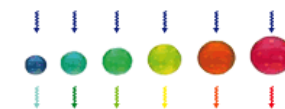


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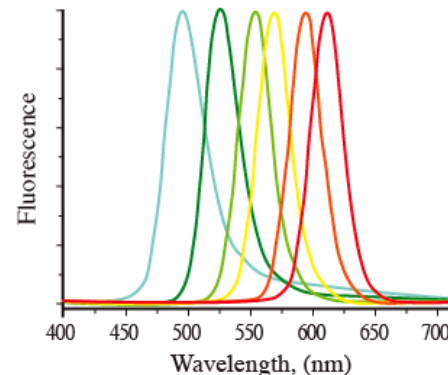
Size (nanometers)

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Simultaneous excitation at 365 nm



Size-dependent emission

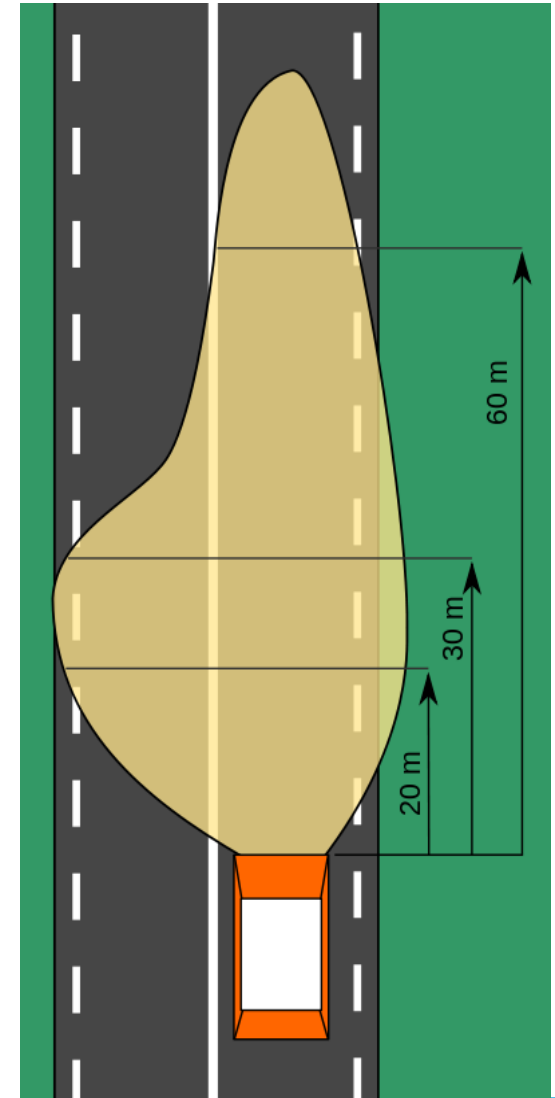


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Major technological challenges

Optics/luminaire

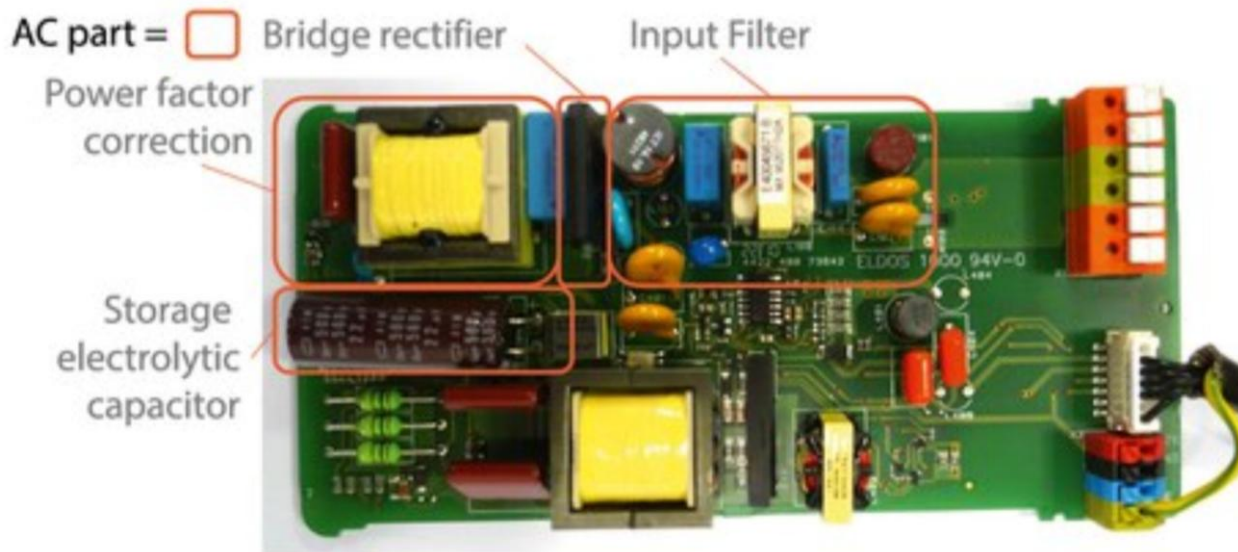
- Advanced secondary optics: free-form, dynamic LID
- Rapid prototyping of secondary optics (3D printing)
- Plastic luminaires
- Perception of luminaires: glare, CRI, . . .
- Advanced cooling systems
- Added functionality: sound/smell



Major technological challenges

Drivers/Control Systems

- All-in-one systems and related compatibility aspects
- Holistic approach of control systems (secondary optics, drivers, sensors, lighting design, visual comfort and energy consumption) becoming part of the Building Management System
- Visible light communication
- Local DC grid: less complex consumer devices, reduced losses using 380 V DC



40% of LED driver pcb is dedicated to ac-dc conversion

Major technological challenges

Lighting design

- Quantify light quality en visual comfort (e.g. functional contrasts)
- Daylight integration
- The need for realistic visuals (both qualitative and quantitative)
- Accurate and realistic TCO determination of the complete installation (MF)



Major technological challenges

Impact of lighting & recycling

- Improve understanding of the impact of lighting on humans, animals, plants. What is visual comfort? Photometry for elderly and impaired, blue light hazard, flicker.
- Recycling of raw materials
- Life-cycle issues of LED luminaires (lamp, luminaire and driver replacement because of fast generation changes, upcycling)



Innovation requirements & actions for Flanders

- KMO and O&O funding (IWT/AI&O) are valuable instruments but administrative overload should be reduced
- A single channel for short term innovation funding
- Flemish SME's should discover European funding channels
- Short term project financing versus structural financing
- Multidisciplinary partnerships with companies, research centers, public organizations; common R&D means supplemented by the government but the entry threshold should be low given the small-scale of most Flemish lighting companies

Recent IBN-call can help to make these partnerships

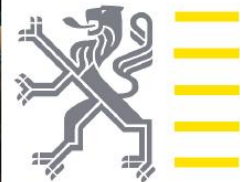
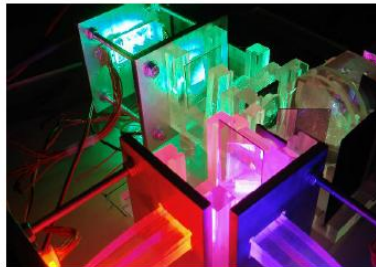
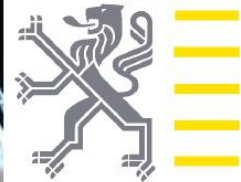
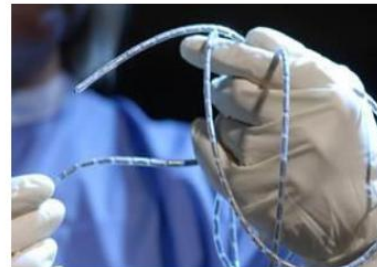
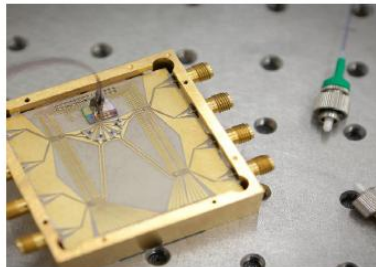
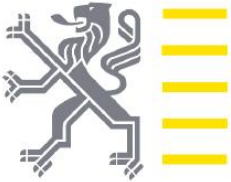
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Urgent research items?!?!?!?

- Development of OLED luminaires
- Glare of LED luminaires
- Intelligent lighting: the luminaire as a communication hub (indoor and outdoor)
- Maintenance factor of a LED lighting installation
- Lighting requirements for the elderly
- Light therapy (dementia, depression, . . .)

TOWARDS 2020 - PHOTONICS AS A KEY ENABLING TECHNOLOGY (KET) FOR THE ADVANCEMENT OF SOCIETY AND ECONOMIC GROWTH IN FLANDERS

A MULTIANNUAL STRATEGIC RESEARCH & INNOVATION ROADMAP 2014-2020
PREPARED BY THE FLANDERS PHOTONICS CONSORTIUM WITH THE SUPPORT OF IWT



Thanks to

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- All co-authors and coordinators
- Editor Peter Doyle (VUB)

- Organisers of this event
- YOU!