FP7-ICT-2013-11-619249

Accelerate SSL Innovation for Europe

Deliverable

D2.3 Workshops on building SSL use and business interest among sustainable cities actors

Dissemination Level:	PU
Deliverable type:	Other
Due Date of deliverable:	M6
Completion date of deliverable:	03.10.2014
Lead beneficiary responsible for deliverable:	Lund University
Related work package:	WP2

Author: Reine Karlsson, Lund University Open Innovation C enter
reine.karlsson@luopen.lu.se

Co-authors: Markus Johannesson, Lund University
Florian Jacques, IIIEE, Lund University
Tove Karlsson, Lund University
Anna Ntinidou, Lund University

Document history:

Revision	Date	Status
V0.1	8.6.2014	Draft
V0.2	25.9.2014	Updated draft
V1.0	02.10.2014	Final
V1.1	03.10.2014	Updated final
V1.2	26.02.2015	Updated and inclusion of Annexes

Table of Contents

Summary

The aim of the SSL-erate project is to accelerate the uptake of high-quality SSL in Europe. Workshops with an open dialogue setting between users and suppliers have been organized in all the different project cities. Each workshop focused on one application field relevant and attractive for the respective city. All fields for health and well-being lighting applications envisaged for SSL-erate (Education, Workplaces, Healthcare, Domestic Applications, Smart Cities) have been addressed.
Application specific business and societal actors, such as hospital and home representatives, architects, representatives from building industry and public space planners, were invited to take part in the workshops.
In total 12 application workshops have been held up to now (as well as, two Open Innovation workshops with evident synergies brought to the work of WP2.3) in which 21 different cities took part.

The dialogues aimed to identify current policies, mind-sets and market inadequacies that are hindering a smooth transition to SSL. The results and conclusions of the workshops, summarized in deliverable D2.4, will be used as key input for the creation of a map of Green Business development opportunities for SSL.

A valuable lesson from the workshops is that numerous people think that there is a lot of added value potential for SSL and Smart Lighting (LED & smart ICT-systems, including various sensors and user interfaces). Nevertheless, there is a lack of standards and specification guidance for product quality & light character/quality. The user interfaces need to be standardized and to become easy to use. A main barrier is that the soft co-benefits – the positive aspects given by human-centric lighting for health and well-being – are intangible and hard to measure. Better communication between the value chain actors is needed in order to get a specified lighting and technical functionality, all the way from the planning phase to the final installation. Numerous people express a need for clear trustworthy information.

1 Introduction

The report concerns Deliverable 2.3 “Workshops on building SSL use and business interest among sustainable cities actors”.

The aim of SSL-erate is to accelerate the uptake of high-quality SSL in Europe. The strategy applied is to organize workshops with at first the city partners and then their local network to create awareness and to address opportunities and obstacles for public use of SSL solutions and supporting business.

In all participating cities workshops have been held, organized by the city/municipality or a (regional) lighting cluster organization. Each workshop focused on one application and on clarifying how the city could make better use of SSL as a tool for the enhancement of better living environments. Application specific business and societal actors, such as hospital and home representatives, architects, representatives from building industry and public space planners, were invited.

Each application workshop aimed:

- To initiate an open dialogue between all potential stakeholders to stimulate ideas about innovative green business development opportunities for high quality SSL and Smart Lighting;
- To present inspiring examples and stories to encourage the uptake of high quality SSL solutions (from deliverable D2.2);
- To clarify the cities motives for investments in SSL;
- To identify the current policies, mind-sets and market inadequacies that are hindering a smooth transition to lighting solutions that generate higher customer values.

Each workshop had the following agenda:

- Presentation of the local setting and the application theme
- Presentation of the SSL-erate project and the background motives for the project
- Presentation of the SSL-erate perspective of application related Green Business Development Opportunities and Challenges
- Open dialogue among the workshop participants

In deliverable D2.4 the outcome of the application workshops on building SSL use and business interest among sustainable city actors will be reported in more detail by describing knowledge and new ideas gathered by the regional lighting clusters (CICAT, LiV, CL, LUCI, DLIN, GLV) and the city partners. This will be key input for the creation of a map of Green Business development opportunities for SSL, clarifying the potential customer advantages with green high-quality SSL and Smart Lighting solutions in order to enhance the interest to perform innovative business development experiments later on.

1.1 Cross-linking ambitions in set-up of workshops

Lund University is involved in both the WP2 Application Workshops (AWS) and WP4 Open Innovation (OI) workshops, as well as the ENIGMA Market Consultations (MC). In the planning for all the local workshops we have been suggesting that the local organizers’ aim for crosslinking between different actors and different perspectives.

As a basic principle we have suggested simultaneous involvement of both cities and companies, as well as other development actors, in the same local meetings to get a kind of Matchmaking dialogues.

The clusters and Eindhoven and Bassano have organized open innovation oriented events, where the Green Business presentations and feedback on these has been integrated in the program. In those events the application theme is collaboration in innovative business development experiments.

Malmö, Stavanger, Hamburg, Espoo and Zabrze have organized application workshops, each one focusing a different thematic field. In the preparations for those events we have been aiming to also involve participants from companies.

Table 1 and 2 clarify the type of event and classification of the workshops between:

(i) Application Workshops (AWS) (organized for this purpose by the SSL-erate WP2 partners – including those hosted elsewhere, i.e Poland and the preparatory AWS in Gent);
These are the workshops directly related and contributing to the analysis in the present report. Only the reports from these events are included in the D2.3 and its Annexes.

(ii) Open Innovation (OI) workshops organized by the clusters (DTU/DLIN, CICAT, CL, KuL/GLV, LiV in Bassano) which were set-up to start preparing business experiments and have been reported on in WP4; These are workshops that are analysed in the WP4 results. However, their results also provide valuable input to this report in the cross-linking effort that was undertaken to improve efficiency and capitalize on the interaction opportunity and synergies achieved with OI. The reports from these events are not included in the D2.3 Annexes but their relevance is discussed in this report.

(iii) Workshops organized and accounted in Enigma (such as the one held in a 2 day event Bassano). These are not considered in the present report.

1.2 Documentation of application workshops

The documentation to this report is made out of:

- Annex 1: Participation Overview. A compilation of all participating organisations, cities, companies, authorities, etc. which provide valuable input on the Key Performance Indicators of the Application Workshop effort under WP2. A critical read of all background information related to each event (i.e. invitation, agenda, invitation lists, participant lists, signed participant lists, AWS reports).

- Annex 2: AWS documentation. Contains the instruction documents from the WP2 leader, as well as the original AWS reports and documentation provided by the application workshop organisers. Most of the organisers want the lists to be confidential. Note that in some cases invitation lists are not available and in some they are so extensive (even 50 pages of data). A decision was made to include only invitation lists that are not very extensive. All invitation lists are available upon request.

  Note that all names and lists should be removed by the public version of the D2.3 report for confidentiality reasons i.e. protection of privacy.

2 Application Workshop Results

2.1 Completed application workshops

In total 21 cities have attended 12 application workshops (AWS) and 2 Open Innovation workshops (OI) with evident synergies to the work of WP2.3 and its workshops (See Table 1 and 2).

We have been aiming for a common template for all workshops, while adapting the workshop processes and contents to local conditions.

The SSL-erate project cities Malmö, Stavanger and Hamburg have each organized two application workshops. Several of the other workshops have been co-organized with WP4 Open Innovation (OI) meetings and ENIGMA Market Consultation (MC) meetings.

Lund University has prepared the content for all the workshops except for the Eindhoven workshop where TNO had this role. LU has engaged a number of international master students from the International Institute for Industrial Environmental Economics, IIIEE, for interpretation of dialogues held in national language.

Table 1: Completed application workshops and cross-linking workshops (AWS – application workshop, OI – open innovation workshop, MC – project market consultation meeting jointly with ENIGMA project)

Place	***Date***	***Activities***	***Language***	***Report***
Malmö	Apr 03	2 AWS	Swedish	X
Stavanger	Apr 08	2 AWS	Norwegian	X
Eindhoven	Apr 23	1 AWS, OI & MC *	Dutch	X
Hamburg	Apr 24	2 AWS	German	X
Espoo	Apr 25	1 AWS & MC **	English	X
Bassano	Apr 29	2 AWS, OI & MC ***	Italian	X
Zabrze	June 11	1 AWS	Polish	X

** The event was divided in-between workshops related to SSL solutions for better outdoor public lighting (AWS), Open Innovation (OI) and a Market Consultation (MC) related to the forthcoming procurement process in ENIGMA.*
*** The first part of the day dedicated LED/SSL application opportunities (AWS) and the other half to a Market Consultation (MC) workshop (ENIGMA)*
**** A two day event, one devoted to AWS (part of SSL-erate), the other to Open Innovation (part of SSL-erate) and Procurement (part of ENIGMA), to create synergy.*

Table 2: Completed workshops generating synergies with AWS in Table 1 (OI – open innovation workshop)

Place	*Date*	*Activities*	*Language*	*Report*
Gent	Mar 13	Preparatory AWS *	English	X
Copenhagen	Apr 23	OI & Limited AWS **	Danish	X
Barcelona	May 20	OI & Limited AWS **	Spanish	

** The Gent conference was used as a networking / information gathering event on the future perspective for intelligent lighting (meeting of minds). The outcome used as input for the green business development opportunities/mapping, as well as for input to the following workshops organized by the cities. It is thus considered a preparatory AWS and its results are included in the present report.*
*** These events were Open Innovation workshops with an agenda item on green business. The dialogues and discussions have served as valuable input for WP2 and its Application Workshops. Reports not included in the Annexes since they are officially accounted for in the Open Innovation workshops under WP4.*

2.2 The Application Workshop results

Table 3 illustrates that the key performance indicator of D2.3 has been achieved with >20 cities participating in the 12 AWS and 2 of the Open Innovation workshops (which generated valuable synergies with the application workshops).

Table 3: Key Performance Indicator >20 cities at AWS

Country	*No. of Cities*	*No. of participating actor categories**
Belgium	1	4
Malmö	2	4
Norway	3	5
Netherlands	2	5
Denmark *	3	4
Germany	1	7
Finland	1	4
Italy	4	6
Spain *	3	4
Poland	1	4
TOTAL	21	
**including: Business/industry, Trade, Science/academia, Society/Public, Authorities, Light Planners, Architects*		

** These events were Open Innovation workshops with an agenda item on green business. The dialogues and discussions have served as valuable input for WP2 and its Application Workshops, hence these cities 'participation are accounted for. Reports not included in Annex since they are officially accounted for in the Open Innovation workshops under WP4.*

Table 4 gives an overview of all the lighting applications addressed in the workshops. All fields for health and well-being lighting applications envisaged for SSL-erate (Education, Workplaces, Healthcare, Domestic Applications, Smart Cities) have been addressed. Most of the workshops focused on outdoor applications. Still, in a considerable amount of workshops indoor lighting was the main topic.

Table 4: Subject areas for the SSL-erate Application Workshops

Theme of Workshop	***City***
Lighting for health and well-being for elderly people	Stavanger
Lighting for health and well-being in schools	Malmö
Lighting for health and well-being in offices	Hamburg
Lighting for safety and security in public spaces	Malmö, Stavanger, Eindhoven, Bassano, Hamburg
Lighting for health & wellbeing	Copenhagen *
Outdoor and Indoor Lighting	Lyon **
Possibilities and benefits of LED and Smart Lighting for public transport systems	Espoo
Lighting for tourist purposes	Eindhoven
Monumental lighting for health and well-being	Bassano
Smart lighting for intelligent development	Zabrze
Street lighting for health and well-being	Bassano

** Open Innovation workshops with an agenda item on green business. The dialogues and discussions have served as valuable input for WP2 and its Application Workshops. Reports not included in the Annexes since they are officially accounted for in the Open Innovation workshops under WP4.*
*** Not included in this report as it was a kick-of for WP4 but there were synergies with the application workshops.*

2.2.1 The invitation process

The invitation process in preparation for the application workshops were mainly conducted via email, website exposure, phone or in person. Networks and clusters were frequently utilized among the organisers. The invitation process is described for each event below.

2.2.2 Workshop summary reports

This is a structured compilation of uniform AWS summary reports based on original AWS reports (Annex 2), as well as notes and relevant emails with the organisers sent to WP2 leader. The content is extracted from original reports and uniformly structured to increase clarity and completeness of information.

1. Stavanger Application Workshop 1: Lighting for health and well-being in institutions for

elderly people, 8th April 2014
2. Stavanger Application Workshop 2: SSL for safety and security in public places, 8th April 2014
3. Malmö Application Workshop 1: Lighting for health and well---being in preschools and schools, 3rd April 2014
4. Malmö Application Workshop 2: SSL for safety and security in public places, 3rd April 2014
5. Eindhoven Application Workshop: SSL for enhancement of safety and wellbeing in cities, 23rd April 2014
6. Hamburg Application Workshop 1: Indoor Lighting (Workplaces) - Potential for innovation in the development and application of LEDs and intelligent lighting systems - vision and reality, 24th April 2014
7. Hamburg Application Workshop 2: Outdoor Lighting (Street lighting) - Potential for innovation in the development and application of LEDs and intelligent lighting systems - vision and reality, 24th April 2014
8. Bassano Application workshop 1: Monumental lighting for health and wellbeing, 29th April 2014
9. Bassano Application workshop 2: Street Lighting for health and wellbeing, 29th April 2014
10. Zabrze Application workshop: Smart Lighting for Intelligent Development of Zabrze, 11th June 2014
11. Espoo Application workshop: Possibilities and benefits of LED and Smart Lighting as a part of public transportation systems, 25th of April 2014
12. Gent (preparatory) Application workshop: Intelligent control for lighting, 13th of March 2014

1 Stavanger Application workshop 1 2014.04.08

Lighting for health and wellbeing in institutions for elderly people

Invitation process (for AWS 1 and 2)
Invitation to the event was made through email, in person and by phone.

Application being considered
The aim of the workshop was to clarify how Stavanger can make better use of SSL as a tool for enhancement of the health and well-being characteristics of the living conditions in elderly institutions.

The vision of Stavanger municipality is to catch opportunities and be pioneers in the utilization of new technological and societal possibilities. They are certain that light is important for our health and wellbeing and especially in a Nordic country where there is a lack of light several months of the year.

The character of the dialogue
There was a lot of positive engagement in the dialogue about the potential development value by deployment of the evolving ICT and developments in control system technologies and SSL.

The participants were self-propelled – the dialogue was very open, in all the three work groups and also the dialogue in the complete groups was active and open. Some participants were sometimes asking for more concrete guidance regarding what to do.

Barriers
One primary barrier for the uptake of SSL is that we do not know what we want. There is lack of tools to describe and dimension the light and a need for communication between the developers and the end users.

Dynamic lighting in the public space can be individually adapted, in order to use light as a communication tool it is important that we manage to create a coordinated system e.g. that the same colour need to say the same thing in order to avoid confusion and safety risks. Individually adapted lighting will give information about the users in the space which is why it is important to consider ethical concerns.

Another barrier is the perception that it is expensive to invest in the new lighting technology. When the new lighting technology (LED) is marketed as light sources there is a high risk that they are seen as expensive in comparison to the old light sources.

One concern that creates confusion regarding what installations to make is that different investigations give different result. Some investigations say that more light in the public space decreases the criminality; some say that it makes it easier for the criminals to see their victim.

There are many elderly people living in Stavanger and lighting can help them to a more active life. But, more
activity in the elderly care facilities tends to be viewed upon as a burden. We need to look upon community benefit e.g. that elderly people can stay longer at home and take care of themselves with the help of technical means, to avoid institutionalization and immobility.

Intelligent Green Business Opportunities
To create room for intelligent green business opportunities we need to shift the focus from energy savings to better solutions. Energy analyses can give information about the flow of energy in order to make sure that we get the right light, at the right place at the right time.

Lighting and electric companies are promoting more light. We need a strong spokesperson that can clarify how we can sell the interest in interchanging, dynamic light.

Health and wellbeing
Our visual system is created to detect differences and contrasts while the main discussion among lighting designers is referring to tables with lux levels and in some cases CRI. Colder colour temperatures are becoming increasingly popular in offices and the importance of the ambience light for the alertness of the human being is highlighted.

Door light reduces the risk of falling for elderly people and green light makes it easier for Parkinson patients to speed up the steps. The International Agency for Research on Cancer (IARC) is going out with a warning that that electric light during night-time increases the risk of cancer. Colours are stimulating the brain and that there are no colours in January can be one explanation for why we often feel so depressed during the first month of the year.

Open innovation

One concern that was expressed during the workshop was that we in the future will be even more dependent on our cellular phones to control the lighting and other functionalities. There are other possibilities to control the lighting, for example with our body language but we must be careful in the design in order to create a system that will work well for everyone at all times. An easily used user interface is basic to provide equal possibilities for everyone. In order to create a functional system we need collaboration between for example behaviourists, psychologists and technicians.

It is important to try demo environments and to make sure that the systems are working separately as well as together. Lighting designers at theatres have long experience with dynamic lighting and this knowledge can be useful now that dynamic lighting will be used in a wider perspective.

Until now, lighting has been viewed upon as something that lit up objects. With the new opportunities it's becoming obvious that light is a medium that mediate contact between human beings and the world around them. This shift of perspective can help us to figure out new ways to create interactive lighting, to get away from the thinking about luminaires. One barrier is that the change to LED in many cases requires a change of the whole luminaire, but in the future (with OLED) we will not need luminaires.

Drivers

In order to create a learning spiral around the new possibilities we need to create test beds where we can analyse the risks as well as create room to find new opportunities. As human beings we know that there is a difference in light and light and we need to figure out how to measure the new kind of lighting and also in some cases put science aside and try different solutions based on our "inner knowledge".

The new platform LightingForPeople provides a good opportunity for storytelling and the sharing of positive examples and learnings from different attempts.

Examples and stories

Stavanger has a large amount of elderly and the numbers continue to increase. This has inspired to a project where they try to create possibility for the older part of the population to stay longer at home. Lyse has one of the world's most extensive fiber network with almost unlimited data capacity where the fusions of the fiber network and the power gives Lyse opportunity to deliver smart home solutions. With Smartly Welfare, elderly or people in need of care can live longer and safer in their own home. Different types of sensors communicate wirelessly with each other, including direct contact with the fire department.

BioOffice is one positive example of a company that is making use of co-branding. The new Norwegian public health act is providing a good basis to spread the importance of a healthy life style in media. This means that many companies want to be seen as companies that think about their employees. All improve their image by working together for a healthier Norway.

Conclusion

One primary barrier for the uptake of SSL is that we do not know what we want. There is lack of tools to describe and dimension the light and a need for communication between the developers and the end users.

Stavanger has a large amount of elderly, the numbers continue to increase and lighting can help them to a more active life. But, more activity in the elderly care facilities tends to be viewed upon as a burden. Therefore we need to look the upon the community benefit e.g. that elderly people can stay longer at home and take care of themselves with the help of technical means, to avoid institutionalization and immobility. With Smartly Welfare, elderly or people in need of care can live

longer and safer in their own home. Different types of sensors communicate wirelessly with each other, including direct contact with the fire department.

2 Stavanger Application workshop 2 2014.04.08

SSL for safety and security in public places

Application being considered
The aim of the workshop was to clarify how Stavanger can deploy SSL as a tool for improvement of the safety and security in public places.

The vision of Stavanger municipality is to catch opportunities and be pioneers in the utilization of new technological and societal possibilities. The municipality park and road administration are working actively with lighting. Stavanger has won an award for the significantly improved lighting around Breivatnet and the church in the city centre which in the extension has led to their participation in SSL-erate and ENIGMA. They are interested in the radical developments of ICT for supervision and control in outdoor applications and building automation.

The character of the dialogue
There was a lot of positive engagement in the dialogue about the potential development value by deployment of the evolving ICT and developments in control system technologies and SSL.

The participants were self-propelled – the dialogue was very open, in all the three work groups and also the dialogue in the complete groups was active and open. Some participants were sometimes asking for more concrete guidance regarding what to do.

Barriers
One main barrier is that we do not know what we want. A standardization is missing and we do not know how to measure and procure the new kind of lighting. Another barrier is the perception that it is expensive to invest in the new lighting technology. When the new lighting technology (LED) is marketed as light sources there is a risk that they are seen as expensive in comparison to the old light sources.

Dynamic lighting in the public space can be individually adapted, but it is hard to find a solution that goes well together and works for everyone. One upcoming opportunity is to use the lighting infrastructure for surveillance, but we need to be prepared for this and be aware of the risks with a control society.

There seem to be a general idea that dynamic light is connected to the intense city lighting that many people perceive as intrusive. One woman expressed concern that the new changing lighting would trigger epileptic seizures in her friend. When light is used as a communication tool it is important that we manage to make a coordinated system that will not create any safety risks.

One concern that creates confusion regarding what installations to make is that different investigations give different result. One example is that some investigations say that more light in the public space decreases the criminality; some say that it makes it easier for the criminals to see their victim.

Intelligent Green Business Opportunities

To create room for intelligent green business opportunities we need to shift the focus from energy savings to better solutions. Energy analyses can give information about the flow of energy in order to make sure that we get the right light, at the right place at the right time.

There is a need to identify what it is that makes us feel safer. It seems to be a general belief that more light increases the safety, but this is not necessarily true. Glary light decreases the visibility and lit up valuables at night-time can attract burglars. Too much light decrease the visibility. Lighting and electric companies are promoting more light. We need a strong spokesperson that can clarify how we can sell the interest in interchanging, dynamic light.

On the roads and in the traffic it is likely that we will see a decrease in lighting in the future. A significant part of the road lighting is more disturbing (glary) than useful. Furthermore, there will be a possibility for cars to use other navigation techniques in the future.

It is possible to use luminaires as communication units. This can help us to get quick information about accidents and committed crimes. But before we make use of this opportunity we need to think about the ethical aspect. Is it ethically viable to control everyone at all times? And what might be even more important; if the system fall into the wrong hands we never know what might happen.

Health and wellbeing
Our visual system detects differences and contrasts while the main discussion among lighting designers is referring to tables with lux levels and CRI. Colder colour temperatures are becoming increasingly popular in offices and the importance of ambience light for the alertness is highlighted. The lighting should facilitate the possibility to see facial expressions.

The International Agency for Research on Cancer (IARC) is going out with a warning that that electric light during night-time increases the risk of cancer. Colours are stimulating the brain and that there are no colours in January can be one explanation for why we often feel so depressed during the first month of the year.

Open innovation
One concern that was expressed during the workshop was that we in the future will be even more dependent on our cellular phones to control the light and other functionalities. There are other possibilities to control the lighting, for example with our body language, but the information needs to be provided in the same way in different places, e.g. the same color need to say the same thing in order to avoid confusion and safety risks. In order to create a functional system we need collaboration between for example behaviourists, psychologists and technicians. It is important to try demo environments and to make sure that the systems are working separately as well as together. Lighting designers at theatres have long experience with dynamic lighting. This knowledge can be useful now that dynamic lighting will be used in a wider perspective.

Until now, lighting has been viewed upon as something that lit up objects. With the new opportunities it's becoming obvious that light is a medium that mediate contact between human beings and the world around them. This shift of perspective can help us to figure out new ways to create interactive lighting, to get away from the thinking about luminaires. One barrier is that the change to LED in many cases requires a change of the whole luminaire, but in the future (with OLED) we will not need luminaires.

Drivers
In order to create a learning spiral around the new possibilities we need to create test beds where we can analyse the risks as well as create room to find new opportunities. As human beings we know that there is a difference in light and light and we need to learn how to put science aside in some

questions and try different solutions based on our "inner knowledge". The new platform LightingForPeople provides a good opportunity for storytelling and the sharing of positive examples and learnings from different attempts.

Examples and stories
Some examples in Norway show that intensive lighting in areas around pedestrian crossings has increased the rate of accidents. Two probable reasons for this is that more light increases the drivers' sense of control and the strong light attracts the eyes and create glare.

BioOffice is one example of a company that is making use of co-branding. The new Norwegian public health act is providing a good basis to spread the importance of a healthy life style in media and the companies want to follow the good example and improve their image.

Conclusion
One main barrier for the uptake of SSL is that we do not know what we want. There is lack of tools to describe and dimension the light and a need for communication between the developers and the end users.

There is a need to identify the need; what it is that makes us feel safer. It seems to be a general belief that more light increases the safety, but this is not necessarily true. When light is used as a communication tool the information needs to be provided in the same way in different places, e.g. the same colour need to say the same thing in order to avoid confusion and safety risks.

One upcoming opportunity is to use the lighting infrastructure for surveillance. We need to be prepared for this and be aware of the risks with a control society. If the system falls into the wrong hands we never know what might happen.

3 Malmö Application workshop 1 2014.04.03

Lighting for health and well---being in preschools and schools

Invitation process (for AWS 1 and 2)
The invitation was spread through the Stockholm Chamber of Commerce, as well as through business offices in the South of Sweden. In addition, companies within the business area lighting in the Oresund region were approached (See invitation list in Annex 2) No indication of how many invitees who were reached due to that the promotion channels such as the Business Offices used their websites as main tool to target potential participants.

Application being considered
The aim of the workshop was to clarify how Malmö can make better use of SSL as a tool for enhancement of the health and well-being characteristics of the living and working conditions in the preschools and schools.

Malmö is a multicultural city and is making considerable investments to enhance the value of this diversity and to handle the related challenges. It is a main priority to improve educational results in the schools in Malmö. One part is that Malmö has taken a strategic decision to improve the lighting in the schools and to make the deployment of SSL by means of open system solutions for all kinds of supervision and control systems.

The character of the dialogue

There was a lot of positive engagement in the health and wellbeing value of better lighting. The only direct school representative used to be head master for the school of Rosengard. She was very engaged in the dialogue, but still most of the dialogue about the potential health and wellbeing value was rather generic.

There was a fair bit of interest in the potential development value by deployment of the evolving ICT and developments in control system technologies and SSL.

The participants were self-propelled – the dialogue was very open, in all the three work groups and also the dialogue in the complete group was active and open. Some participants were sometimes asking for more concrete guidance regarding what to do.

Barriers

One primary barrier in the uptake of SSL is that we do not know what we want. Every lighting solution needs to be adapted to each specific situation, which requires exchange between the developers and the users. There is a lack of communication between the end users and the developers of the user interface. The importance of readily useable user interfaces cannot be stressed enough when the technical freedom of action and flexibility increases. To create a simple user interface there is a need deep knowledge.

It is hard for the user, e.g. the teacher or the doctor, to take time to familiarize themselves with the new opportunities on top of the work tasks that they already have. A united organization is needed to operate and show the way for the municipalities' deployment of SSL.

It is important to educate and train both the actors that are procuring and installing the lighting and the users.
When we build more advanced systems, we need to learn how to handle and make use of them.
To become appreciated it is important to make the new lighting system is as easy as possible to use. The focus on the technological part might be too strong. We need to focus on the experience in order to be able to make the new technology attractive.

There is a lack of tools to describe and dimension the wanted light. What is the right balanced, user adapted light and how can it be described? There are many parameters, which we need to find a way to describe. It is important to enable smooth communication between different professionals.

It is vital that the early adoption of the new technologies is done in such a way that it finds appreciation in order to avoid dissatisfaction and resistance in a later stage of the process. There is a great need for clear lighting priorities, otherwise nothing significant will happen. In this sense the question of the new lighting is a political issue. It is a question of who will pay. And even more, why should we pay more for the new lighting?

The incandescent light bulb is generally presented as the best alternative and the goal not only for all fluorescent lighting but also for the coming SSL technology. In order to really invest in SSL we need to shift the focus from energy savings to the new possibilities to get the right light in the right place at the right time. We also need to put the conversation about the risks a bit aside so that so that they do not become too limiting.

In order for the users (e.g. the teacher, the doctor etc.) to be involved in the decisions regarding the lighting installations their knowledge needs to be improved. As it is now most of those people have limited interest in better lighting, because they lack the knowledge about how important it is. Their involvement is central because they have place and user specific knowledge and they also need to

be able to handle the user interfaces. One key for those users is to see the light as a tool to improve for example the education.

Regarding the scientific dimension there is some mistrust in the actual added value of the lighting that the presented technology enables; especially investigations regarding improvements in pedagogic results. It is almost impossible to prove which specific arrangement that crate a certain improvement of the pedagogical result. The general opinion in the meeting was that it is easier to show that the lighting stimulates a raise in the level of concentration.

Regulations are good, but they risk becoming a barrier when we ought to change our way of working. The legislation is not adapted to the new lighting. The lux levels that need to be fulfilled can be one reason that the clients choose the old way because they then know that they have fulfilled the requirements. There tend to be a conflict of interest between the old requirements and flexibility and user values that SSL enable.

We need to put in more time in the design and projection; the area of lighting is the most neglected part of the building process.

Intelligent Green Business Opportunities
To create room for intelligent green business opportunities we need to shift the focus from energy savings to better solutions. The right light, at the right place at the right time is central. The solution needs to be optimal both for the people and the environment. The simplicity in the design of the user interface is important.

There is a huge need for reference facilities and to develop demonstrations, and to clarify how intelligent deployment of SSL can raise the number of green jobs.

Sometimes we make it too complicated to get something done. We need to start with the basics to get going with the new. There is a need for a clear vision.

Health and well being
The general belief is that it is possible for us to feel a lot better if we invest in a better light environment. One proposal is to let the scientists prove this and more specifically what a better light environment is. It is important to find and develop reference facilities with good user values and possibility to make measurements in order to get started. It is not easy to know which values that are good to measure in connection to the new lighting technology. Some examples are heart frequency, cortisol and component of blue light. It is important not to forget the soft values that are related to health. But in order to be able to measure the soft values we need to find the hard parameters, which correlate with the soft values.

One good example of a light related arrangement is from Lund's hospital where they have forbidden fluorescent lighting in the evening and invested in spotlights. The sick leave has decreased and the staffs feel better.

One concrete aspect regarding lighting in schools is that the existing lighting situation is adapted to the old work situation with paper and pen whilst the current situation is more dealing with screens. Glare and reflections in the screens has become a common but unwanted scenario. In the classrooms of today it is hard for the children to find their own space. Many children need their own space and the new lighting technology provides a possibility to create smaller rooms in the big room. But the school culture is rock-hard and not easy to change.

In the 1960:s John Ott described the impact of light as similar to the impact from food – something that can make us sick, or more healthy depending on how we use it. This might be a useful description when speaking to the public and especially for teachers in schools. The effect of the light can be described in similar terms as the food that we get in our schools. This description can also be useful when speaking to the parents. It is important to enable the teachers see the light as a tool for the education.

One potential use of the new possibility to choose wavelengths is to use it to grow vegetables in containers in wintertime. In this way it is possible to provide organic salad in winter-time which is hard to get a hold of otherwise.

In the perspective of health and wellbeing indoor lighting is important.

Open innovation
In order to be able to provide user adapted solutions
that people are interested in, it is important that we work with mixed groups with technicians as well as teachers and doctors. One suggestion during the workshop was to get a better articulation and integration of soft value consideration by involving more women in the dialogue.

It is important that we show the possible advantages that can be accomplished for health and wellbeing with the new lighting. In this respect it is important to make demo installations as well as to create more illustrative examples.

Drivers
Today there are advanced 3d tools to visualize what a building will look like and maybe they can be used as a communication tool. Visualizations make it easier for people to understand each other and to speak the same language. When the computer game world will enter the CAD-world a lot will happen.

Examples and stories
In some of the auditoriums at Lund University a possibility to use different lighting scenes has been provided: One for video, one for cleaning etc. But this does not work. The people who use the facilities cannot handle the user interface and therefore a pushbutton for full lighting has been provided. This illustrates how important it is to formulate the user interface in a pedagogic way.

One interesting example is that school children have suggested that there should be light when someone is using the bathroom in order to make sure that no one is pulling the handle, which is stressful for the person using the bathroom. It is a simple but important solution.

The effect of blue lighting on teenagers can be harmful. When they get a message and pick up the phone during the night they are exposed to the light which is activating and prevents them from falling asleep again.

Conclusion
One primary barrier for the uptake of SSL is that we do not know what we want. There is lack of tools to describe and dimension the light and a need for communication between the developers and the end users. In order to find solutions that improve our health and wellbeing we need to find a way to put measurement values on the soft (subjective) experience values.

4 Malmö Application workshop 2 2014.04.03

SSL for safety and security in public places

Application being considered
The aim of the workshop was to clarify how Malmö can deploy SSL as a tool for improvement of the safety and security in public places. This is a main angle of the Malmö application case in the ENIGMA project for Heleneholmsskolan, www.enigma-project.eu/en/

Malmö is making considerable investments in Sustainable Development aiming to be a lead actor as a Smart City with Smart Buildings. Malmö is very interested in the radical developments of ICT for supervision and control in outdoor applications and building automation. Furthermore, Malmö has taken a strategic decision to only use open system solutions for all kinds of supervision and control systems.

The character of the dialogue
There was a lot of positive engagement in the dialogue about the potential development value by deployment of the evolving ICT and developments in control system technologies and SSL.

The participants were self-propelled – the dialogue was very open, in all the threes work groups and also the dialogue in the complete groups was active and open. Some participants were sometimes asking for more concrete guidance regarding what to do.

Barriers
One primary barrier in the uptake of SSL is that we do not know what we want. Every lighting solution needs to be adapted to each specific situation, which requires exchange between the developers and the users. The importance of easily accessible user interfaces cannot be stressed enough when the number of technical alternatives increases.

There is a general lack of knowledge about how to describe and procure the lighting, among those who handle the procurement. What is balanced light and how can it be described? There is a need to find a way to put measurement values on the soft experience values (subjective), even if it needs to be done indirectly. We do not know how costly the new installations will be and we do not know that until we are able to dimension it.

One suggestion to why we forget to think about what we really want from the solution is that it is a male dominated industry where the focus is on technology push. Another reason can be that we forget the importance of communication between different professionals. It is significant that we develop the skill to order the new light solutions. There are many parameters, which we need to find a way to describe.

It is important that the early adoption of the new technologies is done in such a way that it finds appreciation in order to avoid dissatisfaction and resistance in a later stage of the process. A general opinion was that it is inefficient from resource point of view to make a switch that includes a replacement of not only the light sources themselves but also the luminaires and the surrounding structure. This creates a certain resistance to the new technology.

One obvious barrier is the economy; why are the public procurers buying the cheapest lighting solutions? It was suggested that it may be suitable to develop leasing contracts, as one possible way to get professional management of the challenges of the rapid technical developments. If the changes are too comprehensive the tenant will not be able to pay. We tend to think about the new

lighting as independent of the solutions that are already there, but many of the changes are done in existing properties and systems.

Most people agree on that if we knew and could specify what we want to accomplish, it is easy to create a control system for the specified functionality, i.e. control system set point. Standardization is needed in order to be able to connect different systems together in the total public network.

It is hard to find a suitable level on the control system. Some of the participants want to create a good lighting with a system as simple as possible. There is some disagreement on the suitable level of advancement for the control systems. KNX is one example of a control system that is described as very advanced by the sellers while the users (the participants in the workshop) find it more limited.

Regarding the science investigations there is some mistrust in the reliability; especially investigations regarding improvements in test results. It is almost impossible to prove which specific arrangement that is responsible for a certain improvement. It is easier to prove a raise in the level of concentration.

Regulations are good but they can be a barrier when one changes the way to work. The legislation is not adapted to the new lighting. The lux levels that need to be fulfilled can be one reason that the clients choose the old way because they then know that they have fulfilled the requirements. It is not easy to find a lighting solution that fulfils all the requirements and is flexible. We need to put in more time in the projection; the area of lighting is the most neglected one.

Intelligent Green Business Opportunities
To create room for intelligent green business opportunities we need to shift the focus from energy savings to better solutions. One main aspect is to provide the right light, at the right place at the right time. Intelligent supervision and control systems also provide a greater potential for synergies with the infrastructure systems for other societal functions that are related to safety.

There is a huge need for reference facilities and to develop demonstrations, and to clarify how intelligent deployment of SSL can raise the number of green jobs.

Sometimes we make it too complicated to get something done. We need to start with the basics to get going with the new. There is a need for a clear vision.

Health and well being
Safety is not only related to lighting. In public areas we need areas with a suitable amount of people for people to be able to feel safe. Control systems can be used to keep track of the movement of people in different parts of the city that can also be used to create suitable meeting places and also to keep track of if something is happening (an accident, an assault etc.). In Malmö city there are examples that the right light can be used to reduce vandalism. Sometimes there is a lack of light in the public space but it is important to remember that more light is not always equivalent to a higher amount of safety.

It is not easy to know which values that are good to measure in connection to the new lighting technology. Some examples are heart frequency, cortisol and component of blue light. It is important not to forget the soft values that are related to health. But in order to be able to measure the soft values we need to find the hard parameters, which correlate with the soft values.

Open innovation

It is important that we show the possible advantages that can be accomplished by intelligent system solutions. It is vital to make demo and test installations as well as to create more illustrative examples.

It is considerable to improve the value chain collaboration. Furthermore there are great opportunities for synergy between different infrastructural systems. To be able to work with this in a renewal oriented way there is a need for open innovation oriented collaboration.

Drivers
It is important that the tax payers receive a better knowledge about the new light because they have a big influence on the realization of the new light solutions. In order to attract the bigger mass it is important to develop our ability to describe and measure the soft values. A property owner needs to develop leasing contracts and when there are changes it will cost. Many times the tax payer does not have the money to get there. When the school vouchers and the tax money are not enough there will be no changes which make it a political question. We like to believe that it is the big mass that makes the right decisions but this is not necessarily true.

Examples and stories
One example is schoolgirls that do not feel safe outside sport halls and similar places. A lot can be done with lighting to improve the situation.

One interesting example is that school children have suggested that there should be light when someone is using the bathroom in order to make sure that no one is pulling the handle, which is stressful for the person using the bathroom. It is a simple but important solution.

The effect of blue lighting on teenagers can be harmful. When they get a message and pick up the phone during the night they are exposed to the light, which is activating and prevents them from falling asleep again.

Conclusion
One primary barrier for the uptake of SSL is that we do not know what we want. There is lack of tools to describe and dimension the light and a need for communication between the developers and the end users. Intelligent supervision and control systems provide a great potential for synergies with the infrastructure systems for societal functions that are related to safety.

5 Eindhoven Application Workshop 2014.04.23

SSL for enhancement of safety and wellbeing in cities

Invitation process
Participants were invited via dissemination of an invitation and brochure (enclosed in Annex of original AWS report). The channels of distributing the invitation were:

- Publication on www.igov.nl, the site of the inter-municipal platform for public lighting IGOV (with 140 local authorities' members and 16 regional authorities' members);
- Publication on the site of the IGOV Innovation Platform. Besides the IGOV-members mentioned above also 33 companies and knowledge organisation are member of this platform;
- Publication on the municipal website: www.eindhoven.nl/smartlight: approx. 4 pc;
- Dissemination among specific Dutch stakeholders at fair Light & Building 2014: approx. 70 pc;

- Dissemination among specific stakeholders at fair 'Week van de Openbare Ruimte': approx. 25 pc.

In total dissemination of 140 + 16+ 33 + 1 + 4 + 70 + 25 = 289 pc.

Application being considered
The aim of the workshop was to clarify how cities could benefit from SSL solutions for better public outdoor lighting.

The character of the dialogue
In contrast with other regions in Europe there are no lighting business clusters known in the Netherlands. Therefore participants were invited via dissemination of an invitation and brochure on the site of the Inter-municipal platform for public lighting IGOV (with 140 local authorities members and 16 regional authorities members) and the IGOV Innovation Platform, in which representatives of cities and companies are stimulating and initiating innovative developments for public lighting, both in technical and policy or regulatory sense. Furthermore the invitation and brochure were disseminated among visitors of some national professional meetings and fairs and Light & Building 2014. The workshop was clustered with presentations of WP3 and WP4, the Dutch Top sector High-Tech Systems and Materials and a Market Consultation for the ENIGMA-project (Framework Program).
The 67 participants represented authorities (14), architects and designers (15), research Organizations (11) and other companies (27)

Although the dialogue about the potential for safe and secure lighting was rather generic, the participants were very engaged and really saw the combination of SSL with ICT as a necessity for the development of the SSL sector. The participants didn't seem to have any problem regarding what they were asked to do and didn't need much guidance.
A voting wall was installed during the afternoon session to rank, in order of importance, the various business opportunities, and barriers to the uptake of SSL and the identification of the key stakeholders.

Intelligent Green Business Opportunities
What intelligent green business opportunities are there related to this particular application? How can SSL present sustainable value for investment in this application field? Do you know any good/bad examples of this?

Rating of opportunities	
Attractiveness area results to higher value	25
Improving reachability and accessibility	25
Hotspots (Apps development)	15
More activity	2
Adapting light at external conditions (weather, traffic, flora/fauna)	31
Guiding of visitors	17
Indicating alternative routes/traffic flows	15
Adapting private and public lighting	6
Services based on data	33

Making visible that something has happened	20
Supporting emergency services	6
Use of social media	4

There were many green business opportunities that were named during the dialogues related to outdoor public lighting. The first one was to build smart systems with new services based on data in which lighting points operates as hot spots. For example, streetlights would not only be home to the dynamic lighting system but also to other functionalities, such as traffic lights, sensors, weather station, Wi-Fi terminals and so on. In this way the lighting grid will evaluate to a grid for other services, light- related as well as non-light related, and will be step towards a smart-cities infrastructure. Another business opportunity that was met with a lot of enthusiasm is to improve accessibility, e.g. to create an interactive tourist circuit around the city of Eindhoven. With this tourist would not miss out on all the attractions and historical buildings the city hosts.

Other business opportunities that were identified were the possibility take advantage of the advertising that could be done around SSL, namely by providing services thanks to the data retrieved from the various smart systems and to increase the appeal of the lighting sector with the purpose of activating the added value from the customer point of view.

Open Innovation
How can open innovation help in this application field? Do you know any good/bad examples of this? Open Innovation between businesses always starts with a first feeling of reluctance; sharing knowledge with the fear of giving business ideas to competitors. But once the ice has been broken, there is a large potential that could be taken out of open innovation. One of the ideas was co-creating; creating a product/service in collaboration with other companies and stakeholders. In the D2.2 report co-branding is mentioned, which could be seen as one example of co-creating.
With, in mind, all the benefits that open innovation can bring, there was a request to build a knowledge platform with the purpose of sharing ideas, experience and knowledge between all stakeholders in the field of SSL.
Lastly, entrepreneurship was seen as a potential driving force in the field of SSL.

Drivers
Who are the relevant actors and how can they be motivated to take advantage of green business opportunities? Do you know any good/bad examples of this?
In the case of public outdoor lighting solutions, besides the main stakeholders (user, supplier, manufacturer…) other key stakeholders were identified. Many people agreed on the fact that owners of energy-grids are important stakeholders to take into account, since SSL will play an increasingly important role in their business.
Next to that it was also highlighted that nature conservation organizations (i.e. WWF, Greenpeace) should be involved in the implementation process of dynamic lighting solutions.

Finally, because of the potential benefits it could have from a safety and security perspective, police and emergency services should be involved in the process. Being involved with these latter stakeholders will enable the outdoor lighting application to be user adapted to the fullest extent for it would draw on the police and emergency services possibilities and knowledge.

Other stakeholders, besides users, government, research organizations and industry, relevant to stimulate sustainable solutions?
- Objective translaters/interpreters (a kind of communication specialists) to generate solutions that really add value (user- society) -> independent producer to control open platform (customization, because each environment/city is different)
- Owners of (electricity)grids (power quality, impact van SSL on actual grids)

- Producers of energy;
- Architects and urban planners
- Emergency services (e.g. visualization of emergency routes)
- Police: reducing of burglaries and crimes
- Citizens

Barriers

What barriers to uptake of SSL are there (i.e. costs, quality, financing)? How can these be overcome? Do you know any good/bad examples of this?

The main barrier that was identified was to determine the added customer value that arises from the different SSL applications. In order for the business and municipalities to justify the costs of SSL solutions, there is a clear need for them to be able to value the potential increased value that these new lighting solutions can provide. The development of tools to determine the added value is recommended. This hindrance is partly related to the rather limited scientific knowledge currently available to back the LED superiority over incandescent and CFL bulbs. This leads to another barrier that was established during the conversation: the quality of the SSL. The last so-to-say business barrier that was identified was the financing part of those applications. Given the fact that there was no one from the banking sector present that day, the dialogue on that topic was only briefly discussed.

Rating of Barriers

Determination of added value	33
Methods of finances	19
Quality of SSL	11
Cost	5

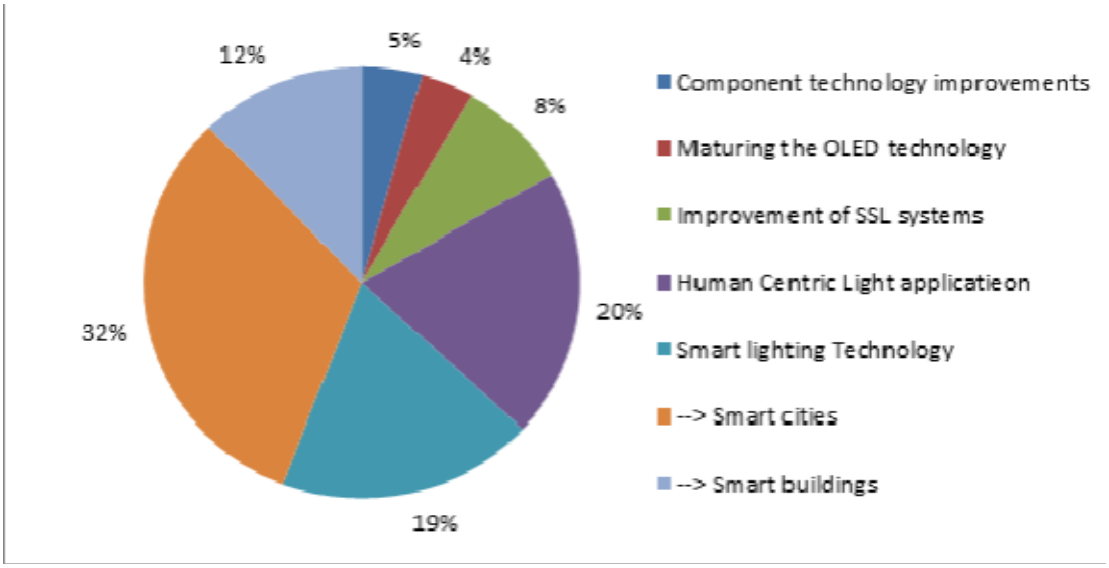
One surprising conclusion of this workshop is that costs in themselves were not really seen as problems for the uptake of SSL.

From a technological perspective one problem that needs to be solved so as to be able to build more integrated systems is the agreement on the communication media. This is the most basic requirement that should be fulfilled for smart solutions to bloom; a protocol explaining how the human-machine and machine-machine communication should occur (i.e. Bluetooth, Wi-Fi).

Some participants also agreed on the fact that there is a need to help the customer transition from the current lighting system to the smart lighting system that SSL-erate strives to achieve.

Examples and stories

In the context of the progress of the Roadmap Lighting, part of the Dutch Top sector High- Tech Systems and Materials, the participants prioritize the different subjects (see graph).



There is a very significant interest to use lighting as a platform and enabler for Smart Cities and Smart Buildings. Over 60% of the participants valued the 'extended' smart lighting as most important topic

Richard Verhoeven, University Researcher at Eindhoven University of Technology, presented his conclusions after a one-year outdoor experiment on residential lighting. From a sheer energy consumption point of view, the study concluded that depending on the street, and thus the traffic flow, a decrease of 20% to 38% in energy consumption could be achieved.
The exact effect of the experiment on the people's wellbeing has not been fully assessed yet, partly because this part is currently being studied by scientists from the psychology
and sociology faculty, in a study being done parallel to this one. However, it can already be said that customer valued the new lighting solution. Some of them want to understand the functioning behind the dynamic street lighting system, other just want it to be easy to use.

Conclusions
Much added value of smart SSL-solutions is recognized as green business opportunities to improve the quality of life. There is a significant interest to use smart light as a platform and an enabler for Smart Cities and Smart Buildings. Owners of existing grids should be involved. The co-creation policy, which is coming up in many cities, asks the involvement of many other stakeholders, including end-users. Open innovation makes it easier to align the interests of these different stakeholders to one another.

The need for a tool to determine the added value of SSL-solution is of great importance to accelerate the decision process.

6 Hamburg Application Workshop 1 2014.04.24

Indoor Lighting (workplaces)

Invitation process (for AWS 1 and 2)
Invitations were sent to relevant contacts in the Hamburg University database (Annex 2). Company and municipal representatives were also contacted directly by phone and email (Annex 2). Also

many speakers/panel participants agreed to circulate the event via their networks; so light planners circulated it to their clients (the users + architects), the companies circulated it to their clients (large users, light planners/ architects), etc. The cluster representatives and partner cities from Netherlands (specifically Pieter Bolt and his colleagues/contacts) were also personally invited by LU Open. Invitations to other cluster members and cities were restricted because of the language of the workshop being German. Note that while this was a barrier for invitations to participants outside Germany, it was also a necessary enabler for broader participation on the more local level.

Application being considered

The aim of the workshop "interior lighting --- workplaces" was to be introduced to the SSL project and discuss potential ways forward. The experience to date of LEDs was discussed by speakers in terms of energy efficiency, health aspects, well---being, cost savings and functionality, in order to develop ideas and approaches of how to accelerate SSL's market penetration.

The workshop incorporated presentations from key speakers including lighting designers, installers and authorities who compared theory and practice. Where initially positive experiences were highlighted, also initial failures and obstacles were observed and discussed, which led to the discussion in many suggestions for improvements and green business opportunities.

Participants by group represented

Business/Industry	6
Trade	1
Science/Academia	8
Society/Public	2
Authorities	5
Light planners	8
Architects	1

Dialogue

Participants presented questions to the different groups of stakeholders represented, but also contributed a lot of interesting suggestions. However, there was also criticism of the conduct of industry and politics. It was criticized that SSL product terms and information are not uniform nor adequate to describe the experience of light for the consumer. From there was discussion comparing theory and practice to develop a variety of ideas contributed by all participants. While a range of relevant society stakeholders were invited to this workshop, it was felt further workshops and actions should involve a wider group of stakeholders too.

Opportunities for Intelligent Green Business

1) An approach for intelligent green business was seen in the combination of lighting and IT systems, since it is precisely in the interior lighting are both directly related to jobs and increasing wellbeing. In the combination of multiple applications, many stakeholders saw new opportunities for Green Business.

2) Another possibility was seen in the development of lighting controls. As LEDs are not adopted in many areas due to high initial cost, intelligent lighting controls can achieve the desired savings potential, at the same time as providing a functional improvement of the lighting situation.

3) The representatives of business and industry also discussed the possible further development of contracting which would give major buyers and users the possibility to optimize light at neutral cost.

4) The retrofit solutions (old bulbs exchanged 1:1 with SSL lamps) have not proven optimal in practice because the systems are not always well harmonized with each other. There would be the opportunity for the industry the opportunity to develop new light band systems that allow the long--term replacement of the light source in the future.

5) In the discussion there was the suggestion to set up (analogous to the pharmaceutical industry) a package insert for SSL bulbs, which gives a simpler description of the performance and tips for optimal use of the relevant lamp.
6) Lighting designers could create new Green business in which they were to offer seminars for consumers and offices, where knowledge about the use of light as a working and well---being medium and light source types and their correct use would be disseminated. This idea could also be taken up together with the utilities that have collected preliminary, but not sufficient experience here.
7) The bulb manufacturers and distributors could recycle old bulbs, since the value of recyclables at the moment is climbing sharply.

How SSL can be a sustainable value for investments in this field of application?

SSL technology is only able to represent sustainable value for investment if the uncertainty can be eliminated by reliable values for consumers and lighting designers. Consumers are asking for information on packaging that laypeople can better understand and that reflects consumers ‘perception of light. However, the lighting designers wish for more planning security, that is, that the bulbs must first be more durable and longer available, so that calculations become more valid. For more planning security an improvement of the current standards is also necessary.

Health and Well being
The lighting designers and lighting retailers recognized a strong relationship between light, health and well---being but also that the perception of light is individually very different. It is dependent on the region in which a person grew up, which is why you also make a distinction between " hot and cold " countries. So, for example, Northern Europeans preferred a warm light, while Asians preferred a cold , bright light. Therefore, especially in places where people from different countries work together finding the optimal light control is a major challenge.

In terms of lighting in the workplace, the lighting designers saw one of the largest discrepancies is between the functional requirements for the work light and the personal well---being of employees. The individually adjustable lighting, as often recommended by architects and office planners, is not always the ideal solution, because often the light field of the neighboring employee is also affected. It is therefore important to develop new solutions for variable user interests in public rooms or multiple use areas.

In the workplace too much value is still placed on functional light with the well---being of the employees neglected according the lighting designers. In addition, LED changes the perception of light, because we have to get used to this light source first. Since light is such an important factor for the well---being of the people, it will become even more important in the future to involve light in the consideration of occupational health management.

Open innovation
The dialogue participants were quick to agree that one can establish SSL on the market faster only if all stakeholders work together and the public is involved. Participants criticized the current approach to politics, because the focus is only on the aspect of "save energy and costs" and consumers with their light needs are ignored. Even the actions of the industry were seen as capable of improvement, because the given specific product data not correspond to the reality.

Since terms like “lumens " and " lux " are not really useful to the consumer, the participants of the discussion proposed to formulate the light and color reproduction in a way consumers could understand the light properties better. To this end, a workshop from politics, government, lighting designers, industry and science was proposed, which could develop new names which should be

linked to the perception of the consumer. Therefore, the workshop should be directed by the consumer protection agency and take into account results of science to human perception of light. Such a workshop should, in the second step, also give guidelines for handling SSL / LED bulbs, since the consumer knows too little about the proper use and proper disposal of the bulbs.

In order to optimize the development of light sources and their use, it was suggested to involve the public in the subject. This could be done through projects such as SSL-erate or above workshops, thorough a survey conducted through social media, or local events that could capture the desires of consumers in more detail.

The use of public utilities was quite encouraged. It was noted, however, that one should leave by no means the initiative once more alone to politics that equates the subject of lighting design only with " energy saving " , and for example in the past, recommended the use of fluorescent tubes , an antiquated technology ..

Drivers
At the moment, government and industry are seen as drivers of the SSL issue. Since in the current policy the topic is "only" occupied with "energy saving " and the industry advertises the monetary incentive to save costs , the success on the market so far is moderate. Market success could be further realized more quickly if you communicate wider information in a better manner to consumers (represented by the consumer protection) and to bring all the stakeholders such as politics , government, lighting designers, industry and science on board.

Barriers
Lighting designers and crafts complained that the requirements of the industry did not correspond to the reality in terms of durability and brightness of the lamps. The industry is therefore encouraged to review their details so that installers and lighting designers were given better information for planning.
Since the information to the consumer is not well understood, the SSL---/LED market is not tapped into as well as theoretically possible. In addition, the retrofit bulbs have not yet proven themselves in use and are perceived as too expensive. Thus, this measure must be reconsidered. The industry itself pointed out in the discussion that retrofit is always a crutch because old lighting systems and new bulbs were not designed to directly fit for each other.

One of the most critical barriers to the rapid introduction of SSL was also the very different individual perceptions of light and well---being. As long as the industry does not succeed in representing human perception in intelligible "units" and communicating lighting information better, the consumer will only accept LED products hesitantly and continue to look for old light bulbs on the internet.

The reason for introducing LED is many companies desiring justified by cost savings, but the issue of health and well---being is still not adequately taken into account in the planning by trade and architects. So we cannot yet fully benefit from the positive effects of good lighting such as increased motivation and better health. It is also possible that light must be purchased and readjusted in way that the desired cost savings are not achieved at the end and the SSL becomes unpopular.

Often, only the use of the new bulbs, but not the care and maintenance of old luminaires and/or reflectors is calculated so that the bill is either financially more than expected or there is a loss in light quality.

In practice, it has become clear that light sources must always be ordered and bought from the same manufacturer and system must, if you want the same lighting as before since a certain amount of

kelvins of one manufacturer in practice not necessarily corresponded to the same amount of kelvins from another manufacturer. That makes it even more difficult for the consumer.

Examples and stories
A local installer reported that if he seriously wanted to present the customer with the theoretical calculations of the cost savings, he would have to use the manufacturer's instructions for lifetime of the bulbs, but he knows from experience that these are not correct! Factoring this into the calculation of the actual values corresponding to his experience, the investment in the majority of cases, is no longer justified.
The same is true when calculating the light intensity. Given the information supplied by producers, it often computes a cost savings. But if he factored in the light sources, which the customer actually perceived as equivalent, there were no longer recognizable cost savings and the customer would have to expect higher future costs for the project.
The dilemma: his calculations are only according to the manufacturer, he therefore runs the risk of having a dissatisfied customer and his reputation in the region damaged. If he used data from his own experience, the chance to get the job was low because the customer cannot see any monetary benefit. According to the experience of the installation operator therefore, in practice, less benefit can be expected from the use of LED bulbs, but rather more from an optimized light control or at most a combination of both.

7 Hamburg Application Workshop 2 2014.04.24

Outdoor Lighting (street lighting)

Application being considered
The workshop on exterior street lighting, key speakers included public authorities and lighting designers. They shared their projects and experiences on the use of SSL/LED in outdoor lighting and exchanged ideas with the attending representatives of business and science.

Participants by group represented

Business/Industry	6
Trade	1
Science/Academia	8
Companies	2
Authorities	5
Light planners	8
Architects	1
Society	2

The character of the dialogue
The dialog for the field of outdoor lighting was largely influenced by the experiences and product ideas of the participants regarding the functionality of the LED products. Participants also enthusiastically discussed the opportunities to bring more aspects about light (than only cost savings and energy efficiency) to the public perception. So ideas were developed and considered about whether SSL can be accelerated from top to bottom, i.e. from EU to countries and cities, or the other way around, with a focus on the subject of soft co---benefits. At the end of the dialogue, it was agreed that it would be good to continue dialogues and there was interest to develop further workshops. While a range of relevant society stakeholders were invited to this workshop, it was felt further workshops and actions should involve a wider group of stakeholders too.

Opportunities for Intelligent Green Business

1) Often financial incentives can accelerate the market the fastest, so the participants first discussed the previously determined main factors for the topic SSL/LED: cost and energy savings. However, if one wanted to consider other aspects, such as health, wellbeing, and social these should be looked at these in terms of their monetary influence. If it were possible to measure the impact of these so called soft co---benefits, investors in companies and authorities could be convinced faster. These calculations, in turn, would result in new opportunities for lighting and light planners. The aim must be, therefore, to identify soft co---benefits, and to quantify them to be included in the calculations. Examples of soft co---benefits were mentioned, for example: less police operations, higher wellbeing, more useful work, fewer sick days, etc.

2) Local authorities, business, industry, lighting designers and trade groups could launch regional projects and this approach could serve as a good example to the EU (Lyon is already represented, and for example, Hamburg could be presented as night city with interesting lighting examples and encourage tourism and business). Such examples could be used by the city planners then as recommendations to pass on to the policymakers.

3) LED installations of outdoor and street lighting, in addition to only providing light, could function also take on more and more additional functions, such as traffic control, mobile phone towers, etc.

4) The business representatives presented the idea to make the LED power programmable, so it can the installation operator could be purchasing large quantities of led at a lower price and program the required LED power itself. In case of changing requirements, a change in the programming of the controls in the office would obviate the need for replacing the LEDs. This would be a completely new product environment that is more oriented to the needs of the authorities and lighting designers.

5) Depending on project, lighting designers sometimes have to contend with the problem of light glare. The industry could therefore develop new lighting systems that counteract this problem with built-in mirrors.

6) The point was made that the manufacturer has often been involving the lighting designers only in the development of rough concepts, but in product development, sought only the feedback of the lighting engineers. It was suggested that they integrate and develop new lighting with the lighting designers and urban planners for a better end product.

How SSL can be a sustainable value for investments in this field of application?

To make SSL a valuable long term investment, there is a need for standardization of SSL Service Specifications standardized and new, more reliable standards should be created. Secondly, the lighting designers (referring to the Green Paper on the future of lighting) should be involved in developing Green Papers. So far, only the manufacturers are involved, so the information cannot be guaranteed to be unbiased or reliable. The participation must, however, take place on neutral ground and free of cost for all stakeholders to ensure the independence of the results.

The entire light industry could also network better and take into account the research of science/academia, associations and urban planners. This knowledge must also be included in the courses for architects in which the subject of lighting design is so far rather neglected. Therefore the wish was expressed to convey the project SSL-erate and its results to the architects and interior designers, as well.

It was noted also as an important aspect for sustainable investment that there is cooperation of different stakeholders. So you could get the emergency services on board as well, who can make it clear how important is good exterior lighting for the efficiency of their work. Also, the regional city marketing could contribute through feedback to lighting design in the region, an important aspect to sustainable planning.

In order to address scepticism about the long life of the LEDs, more manufacturers should offer and market stronger guarantees of longer duration.

Health and Well being

For people is important that so called 'fear spaces' such as parking garages or dark paths are sufficiently illuminated at night. With the LED technology it is now possible to achieve very accurate illumination. However, this will not been perceived as sufficient. For example, if a path is precisely lit, but the bushes at the edge are not, this is functionally useful, but it does not satisfy the desire for security. The question is how far one deviates from the precise lighting to more diversified lighting to take this factor into account.

The decision as to how far outside the desired section is lit, continuously or only when needed on approach, also affects the sleep patterns of people. For diffused light can shine in the bedrooms of the people and affect the quality of sleep. Also diffused light may affect the biorhythm of animals living near a path. If necessary, the population must be further educated here and shown that darkness also has a value.

Open innovation

The use of SSL in outdoor lighting systems can also be beneficial besides the lighting itself. For example, it could enable combination of lighting and data transport through the multifunctional use of lamp posts.

In the preparation and evaluation of the soft co-benefits, the public could participate and evaluate surveys on the importance and popularity of certain factors such as light intensity or light colour. The human resources departments of companies could measure their experience with new lighting concepts and, for example, its effect on sick leave.

An aim of awareness efforts on SSL introduction should be to achieve a greater appreciation of energy. It is clear that energy is to become more expensive, and this has been used so as to promote the use of SSL. The revenues could also be invested in the better standardization of lighting products and lighting research, because we still do not know enough about how people perceive light.

Participants agreed that regional and local actions can be realized faster than through the EU. In order to develop ideas about what you could do regionally to make LED use issues more visible, a green forum or workshops was proposed with all stakeholders and regional authorities and town representatives. In this green forum, lighting visions could be developed at the district level to make Hamburg more attractive. To this end, members of the Hamburg Parliament should be invited. It was agreed that proposals that would come from such bodies would get more attention than from individuals.

Drivers

At the moment, lighting government policies were seen as main driver of SSL introduction. But it was agreed that this actually should be the operator of the lighting systems, as they have the most experience and influence in this area. The government policies are more of an "anti-driver ", since initially only the cost factor would be considered without taking into account the impact on income and health.

Barriers

The city authorities declared that the long-term safe operation of the outdoor and street lighting is the most important consideration for them, but this cannot be guaranteed by the LEDs currently on the market. The LED life does not satisfy their requirements nor does the information provided by the manufacturer convince them. The most important issue from the perspective of the authorities is that LEDs do not last long enough so that in the long term these would be far too costly. It was also mentioned that there are no clear standards in terms of quality or cost effectiveness.

The credibility of the LED has also been damaged, because the public cannot understand the comparisons of the light intensity with conventional light sources. The advantages of LEDs, especially in outdoor lighting (such as the precise control of light, infinite adjustment, the better efficiency, etc.) are not yet perceived by the public.

Installers and lighting designers explained that the products and their performance and service life is not stable enough or proven in practice. In addition, there were no standards and modules that are easy to replace with the LEDs (Plug & Play). The fact that some manufacturers would offer longer warranties, but often only on request and requiring extra payment, though understandable, but would lead to a lasting hatched projects often do not expect .

Examples and stories
Günther Frank from the Agency of Roads, Bridges and Waters, said that his agency had previously not had good experiences with LED for the Hamburg street lighting. Many LEDs are already failed after a year and some ¾ of lamps are also heavily infested with insects inside (it is not yet clear how the insects find their way into the bulbs). The insect infestation was observed regardless of the LED manufacturer.
The agency outlined clearly that residents prefer the conventional diffuse illumination for paths because of the fear spaces, such as hedges, which require lighting also the side of the paths. Specific studies with measurable results have not be done, however. Information from other cities also show that residents sometimes retrofitted with LED light resulting in more illumination in their front yards. This is a problem in itself in terms of ecological aspects.
The street lighting with LEDs is still suboptimal for cost reasons. Thus, the cost situation would enable only too wide luminaire spacing of 45 m at the moment. It pays off, not to use a lamp in between. Due to the selective lighting this would work but it might be perceived by the population as inadequate. Therefore, LEDs would not be used to cover surfaces in Hamburg at the moment.
For optimum operation, the Authority would want a plug and play system, which enables the use of bulbs from any manufacturer. At the moment there would be due to the rapid rate of innovation already after 6 years of no more spare parts for existing plants. The plants would operate but at least 8 years, meaning new high costs for the taxpayer.

8 Bassano Application workshop 2014.04.29

Monumental lighting

Invitation process
Dissemination process – promotion of the Bassano's Application workshops were made using 3 different communication channels:

- City website – information about the event were published on the Bassano's website (home page, news section)
- Direct mailing - about 700 stakeholders were directly invited (via email with attached invitation/flyer) to participate in the Application workshops on 29.04 by Bassano and Luce in Veneto cluster – for list of contacted stakeholders see Annex 2 (note: confidential)
- Energheia* newsletter (direct email marketing service) – Bassano purchased a dedicated newsletter which was disseminated to 11.000 stakeholders of the Energheia magazine (entities at national and regional level as public bodies, industrial associations, companies, professional orders etc.), where beside the Enigma market consultation was promoted also the SSL-erate Application workshop. Invitation to the workshop was also published on the Energheia magazine

website.*Energheia is a technical online magazine dedicated to renewable energy and green building.

Application being considered

The purpose of this workshop was to illustrate possible applications of SSL for the illumination of monuments and historic buildings in the municipality of Bassano del Grappa. Being an important tourist destination in the area, it is a main concern for the city to improve the quality of tourist sites in order to deploy their full potential. Therefore, means of enhancing the perception of monumental buildings while reducing energy consumption are a topical issue.

Challenges and opportunities related to this matter were discussed in the workshop. Particular emphasis was given to the illumination of the old town centre of Bassano, which is of critical importance for the city. The expected goals of this project were to involve relevant stakeholders in the process of transition to a dynamic, intelligent lighting, and to foster sharing of knowledge and expertise between the network of actors in Bassano and the other cities participating in the SSL-erate program.

The character of the dialogue

The workshop created significant interest among the audience, who seemed to be willing to be involved in the transition process. The audience was composed of a wide array of different stakeholders, e.g. municipality officers, private businessmen, researchers, academics. However, while the interest of the audience was perceived to be high, creating active involvement and participation in the discussion proved to be a challenge. Input from the audience was not always spontaneous, since sometimes the public needed to be asked questions in order to participate in the discussion. A take-home message for future workshop sessions is that building a stimulating environment to improve the attitude of the audience is a critical factor for success.

Nevertheless, when the audience was engaged in the debate, the discussion was rather detailed and entailed many ideas of practical applications of SSL for the illumination of monumental buildings. The presence of a heterogeneous audience guaranteed a debate that touched upon different aspects, e.g. technology, regulation, financing, and public perception.

Barriers

One primary barrier to SSL deployment is related to financing issues. Raising capital for an investment through a bank loan is very expensive and therefore reduces the returns on the investment. At the current state, and partly because of the consequences of the economic contraction, few businesses can afford to make a significant investment on a developing technology. These limitations in relation to the initial investment substantially hinder possibilities of up taking SSL. Similarly, as many actors are struggling with their current businesses, it is challenging to plan on the long term when there are more urgent need on the short-term. A similar issue regards the lack of private funding in R&D. This aspect limits possibilities of innovative technology development; although it could be seen as a driver to participate in an open innovation dialogue with stakeholders from all Europe.

The required illumination system to be implemented in Bassano has to be open and modular. Therefore, requirements imply that it should be possible to connect the illumination system with other systems, and that it would be adaptable with potential future needs. These characteristics are perceived as challenging to be achieved.

Another issue relates to specificity of the products. Clarifications about the future use of the network were asked several times; according to the audience's opinion, local business should concentrate on solutions to local problems and would have no interest in finding solutions for other

cities than Bassano. Thereby, local business would only focus on specific and practical problems in the city of Bassano rather than developing concept ideas with diverse applications.

A discussion regarding visually impaired persons was raised during the workshop. Lighting of monumental buildings should ensure proper lighting for people with visual disabilities. This issue, however, could be considered an opportunity, since current illumination system does not address visually impaired people.

Public perception of innovative lighting for monuments was, in general, positively perceived, although some participants showed scepticism towards night time illumination, arguing that it would bother locals and encourage night disturbance. While most of the audience disagreed with this objection, it seems to be an issue that should not be underestimated.

Intelligent Green Business Opportunities
During the workshop, the audience was engaged to identify and describe Intelligent Green Business opportunities related to the practical applications discussed; many ideas were collected.

The starting point of the discussion was the concept of smart lighting – to illuminate where it is needed, when it is needed, to the extent that is needed and in the way that is needed. Bassano is a city with two dimensions: a "public" one, when tourists visit the old town centre and the city is a dynamic, living environment; and an "intimate" one, at late hours in the night or during the weekdays, where the peaceful and relaxing side of the town is shown. Through the use of smart SSL, it would be possible to provide the right light according to the time of the day, or the week, or the season. In addition, illumination of special events that require particular lighting, such as the Carnival, could be improved.

The need of a customized, adjustable illumination system, suitable to the historic and artistic features of the old town centre, was identified. Lights could be used to lead the visitors in the discovery of the old town centre through the creation of pathways driven by different lights. Existing technology can make these pathways exchangeable according to different needs or preferences. The system would create new marketing value in the area and foster local tourist and commercial economy. Therefore, designing and organizing this light system should be done involving various stakeholders, such as local shops and businesses, as well as the municipality.

Other ideas of Intelligent Green Business opportunities that were presented ranged from developing transparent paints that could use SSL technology to illuminate monument surfaces, and to offer lighting retrofit as a financial product for business to invest on.

Health and wellbeing
The general belief is that using SSL light in public spaces will increase the citizens' quality of life, and lead to a more comforting living environment. The audience agreed on the fact that improving light quality in everyday life would bring along better life quality. A main concern is to reduce light pollution, in accordance to recent regulations to curb unnecessary lighting at night. In order to increase the light performance, it is important to hire lighting designers, who can structure the disposition of lights in an efficient and appropriate manner.

Open innovation
Opportunities given by open innovation were considered a critical factor for success of SSL- related business. The audience highlighted the importance of establishing an European platform for networking and dialogue among stakeholders. In order to increase the level of know-how, all the actors in the market need to collaborate to overcome initial fragmentation. Know-how will become a

fundamental factor of competitive advantage. Clusters and municipalities, with their wide network possibilities, should cooperate to get local actors on-board.

Drivers
People described the main reason to look at SSL and its possible development as a mean to improve the attractiveness of the city in an innovative way. Enriching spatial perception and quality of light ensures a more sapient management of public heritage, which is a critical asset for the municipality of Bassano. Through the deployment of intelligent and dynamic lighting one can lay the foundation of future smart cities.

Examples and stories
Many examples were brought up in the discussion. Particularly interesting was the topic of dynamic illumination according to diverse periods of the day, week or year. Regarding the issue of various phases of illumination for different times of the night, a study concept for Gran Madre di Dio church in Rome was presented. The concept is based on the idea of using "little light, but right light" to have a dynamic progress of lighting and dimming of the building throughout the night, using various light colours and illuminating different parts of the church.

The idea of creating light pathways for tourists is already used for lighting the historic city walls in Verona, where buildings are illuminated in many different ways.

In Roncade, SSL has been used on many monumental buildings – the bell tower, the castle, a roadside shrine, etc. –to highlight architectural lines.

Conclusion
The general impression is that there is much room for development for SSL in the region. Many important features, such as network activity and sharing information, need to be empowered. Lack of knowledge and know-how are limiting SSL deployment. Financial hurdles are a significant barrier to Intelligent Green Business development that cannot be overcome without public support.

9 Bassano Application workshop 2014.04.29

Street lighting

Application being considered
This workshop has been organized to raise awareness among the public about SSL opportunities in the field of street lighting, and to facilitate communication among relevant actors in order to create a dialogue between local stakeholders and the European lighting industry. The lighting sector is experiencing a rapid change due to the development of new light technology: information and know-how will be critical success factors that cannot be achieved without networking activities. Thereby, in order to get competitive advantage, it is imperative to establish connections with local and international stakeholders to seize the opportunities given by such a rapid technologic improvement.
In this context, the city of Bassano aims to use new lighting technology to improve the quality of street lighting and lay the foundation for the development of a smart city. SSL can convey various types of information that can be used to optimize traffic, energy consumption and safety.

The character of the dialogue

Although the audience was very engaged in the discussion, the dialogue was mainly generic. However, the discussion entered into details when practical applications of SSL were examined: an Open Innovation exercise where the audience could suggest ideas, identify needs, and present existing technologies, was organized and many interesting applications were brought up.

The audience was composed of various stakeholders with different backgrounds. This has been very useful for diverse contribution to the dialogue, in which several points of view were taken into consideration. The success of the workshop showed the importance of open innovation and networking among stakeholders. The public was genuinely interested, since it was perceived that the topic was important for future development in the lighting market. The role of the moderators in involving the public was fundamental for the success of the workshop, since the audience needed to be engaged in the dialogue to participate actively in the discussion.

Barriers
People agreed that to manage a business dealing with rapidly changing technology is a challenging task. Investing in a dynamic sector can yield large economic returns, but nevertheless it entails high risks. Financing an innovative business is difficult for business and should be planned carefully.

The public sector is the main driver of street lighting development, and needs to take the initiative for engaging private business to develop ideas regarding traffic control, monitoring and safety that could be used by the municipality.

The business actors participating in the workshop expressed their perplexity and unwillingness to develop ideas that are not suitable for the city of Bassano, arguing that they have no interest in having business abroad. They would rather focus on the needs of Bassano and be confident to sell their products to a familiar entity. Scepticism towards international networking and business opportunities abroad was recognized as a crucial barrier that needs to be addressed in the future.

Intelligent Green Business Opportunities
The Open Innovation exercise organized during the workshop allowed the audience to present their business ideas related to innovative street lighting. A fascinating idea is to install special light sources emitting modulated wavelengths on the dashboard of cars and trucks: the special light helps the driver to keep focused, preventing road accidents.

The discussion focused on the development of light systems for a smart city. Applying modern technology to lampposts could lead to many advantages for the municipality and business applications for the private sector. Firstly, use of light could be optimized by installing movement detectors, so that unnecessary illumination is avoided. The detectors might be used by police forces to prevent crime and increase safety of the citizens. Moreover, a system collecting information about traffic and weather could be implemented, and would have great business success since many weather forecast companies and traffic report agencies are striving to get accurate, real-time data.

Health and well being
The first potential benefit of SSL application to street lighting to health and well-being is the increased road safety for vehicles, bikes and pedestrians. In particular, bikes can install inexpensive lights to improve safety of night cycling. In addition, improved street lighting would mean more safety at night and a better living environment. Another benefit of this field of application is the light pollution reduction, which has become a topical matter of debate.

Open innovation
The Open Innovation exercise has been a very inspiring practice. The audience had the opportunity to realize that many valuable ideas can be collected by a heterogeneous group of actors. People

seemed to be intrigued by the possibility to use open innovation and to develop a network with other stakeholders from the European lighting sector.

Drivers
There are several needs that are addressed by the development of SSL on street illumination. Firstly, national legislation is setting strict limits to light pollution. Municipalities have to find ideas to reduce lights emitted at night time and SSL can provide dynamic and smart lighting solutions. Secondly, municipalities aim at reducing electricity costs as well as maintenance costs for lights. Thereby, reliable and energy-efficient illumination is demanded. Thirdly, information is a main driver for technology change. Accessibility of information regarding city traffic using different means of transportation is critical for reducing commuting time and can therefore grant massive cost reduction and increased efficiency. Lastly, empowering street lighting is important in relation to viability and safety, particularly for pedestrians.

Examples and stories
In the town of Roncade, SSL lighting has been installed on streets to improve intelligent lighting and reduce costs. SSL has been used to highlight dangerous turns and buildings that could not be seen by the driver.

A centralized light control system has been already developed by local business. Through small devices installed on lamppost it is possible to adjust the light to the current needs and to monitor traffic optimizing local transportation.

Conclusion
There is much interest among local stakeholders towards future development of SSL technology and its application to street lighting. Some barriers are present but they could be overcome through knowledge sharing and networking with other European actors. Many applications are directly related to the development of a smart city. Municipalities willing to establish an intelligent and energy-efficient system will have to look at innovative street lighting.

10 Zabrze Application workshop 2014.06.11

Smart Lighting for Intelligent Development of Zabrze

Invitation process
The invitation was displayed on the website www.um.zabrze.pl. Key city officers were invited per email or by phone. The application workshop was also shown on local TV station TVZ.

Application being considered
The application workshop was aimed at promoting and investigating the roadmap to implement Smart Lighting for Intelligent Development of Zabrze, and how this could be aligned with city goals related to energy efficiency and low emission programs as well as with regulations and already made plans for the future.

The character of the dialogue
There was a lively discussion about possibilities of implementation of Intelligent Light System in Zabrze. There were 27 participants in the workshop, representatives of public authorities of Zabrze and private entrepreneurs.

Barriers
Main obstacles for the implementation of Intelligent Light Systems in Zabrze were considered to be related to: High investment costs, financial limits, incompatible software systems for intelligent light management. Problems with compatibility of the systems for intelligent lighting management. It is necessary to create an open source international software system that would be a standard for Intelligent Light Systems producers.

Intelligent green business opportunities

Health and wellbeing
Costs of "good" light is higher but reduces alternative costs (like health problems). Impact of the light on people's health and wellbeing. Cities should become platforms of development of new technologies. Need a change of mind-set that lighting should be similar to sunlight spectrum to avoid health problems.

Open innovation

Drivers
During the discussion participants mentioned some positive factors that can support development of such a system and some obstacles of the development. Positive factors mentioned were: a raise of space attractiveness, better life conditions, dropping prices of SSL sources, technology already exists.

Examples and stories

Conclusion
It was concluded among the participants that beautiful lighting makes the city more pleasant place to live and makes it more attractive to visit, and an Intelligent lighting solution make people feel more welcomed in a certain place. There was a positive feel to the event with an evident willingness to grasp the possibilities that Intelligent lighting solutions could offer in different aspects to the city of Zabrze.

11 Espoo Application workshop 2014.04.25

Possibilities and benefits of LED and Smart Lighting as a part of public transportation systems

Invitation process
Most of the invitations was sent out as direct emails to different companies in Finland. Information about the application workshop was also shared on the web site of City of Espoo. The invitations were sent out with the help of Aalto University. In addition, the operator of Urban Mill (premises where the workshop was held) shared the invitation in their network.

Application being considered
The main aim of the workshop was to have an open dialogue among various stakeholders about the possibilities and benefits of LED and Smart Lighting as a part of public transportation systems in the City of Espoo. The presentations on *Green Business Development: improving the user value of lighting and energy saving* and *The potential of light for positive impacts on health and wellbeing* functioned as catalysts to start and open up the dialogue among the participants.

The character of the dialogue

The discussion evolved around how Espoo and Finland could get better started with accelerated deployment of Smart lighting, in particular related to the public transportation. The background is that Helsinki, Espoo and Alto University has grand development plan for this university and innovation area, including numerous new buildings and large investments in infrastructure. In this perspective LED and Smart Functional Beautiful lighting is conceptualized as a kind of branding tool. The dialogue presumed that this potential exist and most questions dealt with various barriers:

Barriers

Luminaires and lamps:

- What should be done to get started with new significantly better lighting, i.e. to not only do replacement? One problem is the socket. There should be an adapted socket that supports controllable LED lights. This is not easy, due to standards etc.
- When using public money, the new technology initially can be a bit more expensive in investment cost, but the installations have to last. There is a need for proof that they last a long time.
- Temperature control is still very poor. Have not given the promised lumens, about 20 % lower. But is improving very rapidly.
- The price has to be in a reasonable range. The payback time of… 60-190 years. However, eternal lifetime would not be good, the technology is changing quite rapidly. Replacement calculations are problematic. Even more so when the light poles are also replaced. Comparisons are difficult.
- Glare and reliability are serious concerns.

Intelligent green business opportunities

- The key green business issue discussed was how to make the advanced LED solutions more attractive - in order to make things happen. In the Espoo perspective, LED and Smart Lighting have great technical potential for creation of functional attractive lighting environments. However there is a need for serious investments to be able to achieve something really good. This is one reason why Espoo is talking about the new lighting as a kind of branding tool. To oversimplify, branding has an investment budget for beautification.
- Finland has funding for development work. The funding opportunities will be assessed.

Health and wellbeing

Main issues to consider when it comes to light solutions and the impact on health and wellbeing:

- Important to have the claims backed by evidence.
  - Takes time and timing is important.
  - Risk of the market going to other actors, e.g. Asian, in the meantime. Those solutions may not be so good.
- Energy saving important, “19 % is used for electric energy going into lighting”. Larger share before => Do not start from this direction.
- Have three levels of solutions depending on how much/good evidence there is for each one.

Drivers

A possible way of getting things started could be to initially find a test area, as in the case with the streets with 60 year old lamps. Eventually a new area could be built based on this. Tests like this are already ongoing and evaluated elsewhere; Espoo wants to get started as well. To do benchmarking from other test sites could be a way to speed up the process in Espoo.

Conclusion

The feeling of security could is believed to be improved in Espoo with better lighting although the City is fairly safe today. The prominent safety already prevailing could be used to brand Espoo as a city.

Lighting has been dimmed in Espoo for quite some time so there isn't much to do regarding energy savings. This was also suggested to be a possible topic for branding. However, in relation to lighting it is better to investigate the added value rather than energy savings. This could make out a part of more unique branding strategy.

12 Gent preparatory Application workshop 2014.03.13

Intelligent control for lighting

Invitation process
Email was the main tool to promote the event. A larger number of invitations were sent out to the Groen Licht Vlaanderen lighting cluster network.

Application being considered
One main ambition with this activity was to collect early feedback on a preliminary version of the WP2 Green Business Development Map from the control system experts, business people and researcher that participated in the Gent seminar, and should be considered a preparatory application workshop (AWS). The presence at the Gent conference was used as a networking / information gathering event on the future perspective for intelligent lighting (meeting of minds). Please find enclosed invitation lists (confidential), agenda and participation lists (confidential) in Annex 2.

The character of the dialogue
Directly after the last presentation there was a networking mingle where spontaneous feedback was collected. Most of the feedback was collected in two-person and small group dialogues. The general atmosphere in most of the dialogues was that the SSL-erate Green Business presentation held as the last point of the event was well in line with the respondents' interpretation of the need for further development.

The Gent energy, control and lighting network combines the Groen Licht Vlaanderen lighting cluster network, the Green Building Department daylight control network and the Energy Department home automation network. There were 112 attendees in the seminar and network event including participants from the Belgian Government Buildings Agency, Flemish Government, City of Bruges, City of Turnhout, electricity network operators (responsible for street lighting in Belgium), facility and/or technical department managers of large enterprises, school associations and hospitals; architects, engineering firms, manufacturers, distributors, and developers of Internet-of-Things applications amongst others.

The main advantage of the access to the participating group of people was that several of the persons in this network have extensive experience and leading knowledge about facility management systems and the related products that now are starting to enter the market.

Barriers
One important interpretation was that the lack of coherence between lighting systems and building automation systems and modern ICT systems is a serious hurdle for smooth introduction of smart

lighting and value enhancing utilization of the lighting communication infrastructure as a base for developments aspects of smart buildings and smart cities.

Intelligent green business opportunities
The green business focus on the social sustainability importance of better lighting and functionality was considered to be interesting. It was also noted that is a quite unusual perspective and that it thereby is likely be difficult to explain.

Drivers
Move towards and preference for open protocols (internet protocols). Local wireless or wired communication to the lighting system will be able to communicate to IP with cheap interfaces thanks to the economy of scale but can be proprietary and/or extra secured (Zigbee, Zwave, DALI, gateways).
The subsystems and software for other IP and IoT applications (than lighting) move on a larger scale and thus faster, and the lighting applications will follow/use these developments.

Some big application oriented companies like Microsoft, Apple, Samsung, Google will have an impact on this development, because big data, data mining, handheld devices and the operating systems for the apps are of major interest to them.
The controls should be easy and adapted to the specific application. The intelligent control system should do exactly what is wanted and expected.

Examples and stories
At the specific level we talked about the lack of coherence between different communication protocols and e.g. KNX and ZigBee and various proprietary systems and that the lighting products development so far hardly are integrated in the development process for modern forms of communicating devices.

Conclusion
The dialogues in Gent influenced the invitations for the later events, e.g. Malmö and Stavanger. It was an additional reason to try to engage persons with a broader ICT and control systems perspective in those later dialogues.

A number of persons in the Gent network was interested in Energy saving and Green Business Development already before this event. After the March 13 seminar there has been a broader dialogue about the green business development perspective including the value enhancing social dimension and also more intensively about recycling of material. This dimension of dialogue was growing already before the seminar. In particular, the information gathered was used as input for the green business development opportunities/mapping and as input for the subsequent workshops organized by the cities in WP2.3, and thus created valuable synergies.

2.3 Main outcome of workshops

A deeper analysis of the outcome of the workshops is described in detail in deliverable D2.4. The results and conclusions will be used as key input for the creation of a map of Green Business development opportunities for SSL.

The main observations of the workshops are:

- Numerous people think that there is a lot of added value potential for SSL and Smart Lighting (LED & smart ICT-systems, including various sensors and user interfaces).
- A main barrier is that the soft co-benefits – the positive aspects given by human-centric lighting for health and well-being – are intangible.
- There is a lack of standards and specification guidance for product quality & light character/quality. The user interfaces need to be standardized and easy to use.
- Better communication between the value chain actors 'End user – Designer – Installer – Manufacturer – Developer' is needed in order to get a specified lighting and technical functionality, all the way from the planning phase to the final installation.
- There are hardly any clear Directives for procurement of better lighting.
- Numerous people express a need for clear trustworthy information.

2.4 Suggested improvements for workshops

WP2 is aiming to continuously improve the process for the application workshops.

The following improvements for framing and process have been suggested during and in the follow up of the workshop dialogues:

1 Try to attract a more mixed group of participants
2 Adapt the process better for the specific audience
3 Divide the open dialogue in two consecutive sessions
3.1 Dialogue in separate supplier and user groups
3.2 Suppliers and users interaction in mixed groups
4 Include a presentation about funding opportunities
5 Invite a wider group of stakeholders

3 Conclusion

In all participating cities workshops have been held. In total 12 workshops have been organized by the city/municipality or a (regional) lighting organization, as well as, two Open Innovation workshops (WP4) which generated strong synergies to the benefit of the WP2.3 application workshops. In total 21 cities participated in these events. Application specific business and societal actors, such as hospital and home representatives, architects, representatives from building industry and public space planners, were invited.

Each workshop focused on one application and on clarifying how the city could make better use of SSL as a tool for the enhancement of better living environments. All envisaged fields for health and well-being lighting applications have been addressed.

The outcome of the workshops is further analysed in Deliverable D2.4.

The workshops with their open dialogue setting between users and supplier representatives have provided important input for SSL-erate.

Annex 1 - Participation Overview

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
AWS 1		Stavanger		2014-04-08	09.00 - 11.30					
	1						Company	Lyse	Jan Magne Forseth	
	2						Company	Lyse	Øystein Rian	
	3						Company	Luxsave	Jarl Karlsen	
	4						Company	Datek	Steinar Olsen	
	5						City of Stavanger	Park og vei Stavanger komune	Trygve Petter Nilsen	
	6						City of Stavanger	Park og vei Stavanger komune	Kari Smådal Turøy	
	7						City of Stavanger	Transportplan Stavanger komune	Hildegunn Hausken	
	8						City of Stavanger	Idrett Stavanger komune	Arne Tennfjord	
	9						City of Stavanger	Park og vei Stavanger komune	Torgeir Esig Sørensen	
	10						City of Stavanger	Park og vei Stavanger komune	Rolf Øyvind Østefjells	
	11						City of Stavanger	Kultur og byutvikling Stavanger komune	Gunn Jorunn Åsland	
	12						City of Stavanger	Byplan Stavanger komune	Anne Skare	
	13						Norwegian Public Roads Administration	Statens veivesen	Lars Arild Bråtveit	
	14						Norwegian Public Roads Administration	Statens veivesen	Leif Lindefjell	
	15						City of Sandnes	Sandnes komune	Håkon Auglend	
	16						Time municipality	Time komune	Ole Bjørn Maråk	
	17						Strand municipality	Strand komune	Ole Tuntland	
	18						Sola municipality	Sola komune	Johannes Tonning	
	19						City of Sandnes	Sandnes komune	Sven Tysdal	
	20						Rennesøy municipality	Rennesøy kommune	Jarleiv Sørbo	
	21						Randaberg municipality	Randaberg komune	Jorunn Bogavik	
	22						Kvitsøy municipality	Kvitsøy kommune	Helge Koll Frafjord	
	23						Kvitsøy municipality	Kvitsøy kommune	Johan Vistnes	
	24						Hjelmeland municipality	Hjelmeland kommune	Reidun Segadal	
	25						Gjesdal municipality	Gjesdal komune	Asgeir Kleppa	
	26						Sola municipality	Sola kommue	Rune Hatteberg	
	27						Sola municipality	Sola komune	Egil Haga	
	28						Company	DEFA	Lars Øyvind Haarklou Hansen	
	29						Company/ education	Høgskolen i BuskHøgskolen i Buskerud, Siteco	Tore Krok Nielsen	
	30						Norwegian Public Roads Administration	regionvesen, region øst	Morten Iversen	
	31						Company	Mesta AS	Oddmund Lefdal	
	32						City of Oslo	Oslo kommue	Eirik Bjelland	
	33						Company	Optmal	?	
	34						Company	Comlight	?	
	35						Company	Lyse	Trond Thorbjørnsen	
	36						Company	Zenisk	Kristin Bredal	
	37						Company	Noralarm	Terje Knag	
	38						Company	Smartly	Terje Moi Nilsen	
	39						Company	Nordconsult	Nordconsult	
	40						Company	Multiconsult	Multiconsult	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
	41						Company	Sweco	?	
	42						Company	Cowi	?	
	43						Company	Rambøll	?	
	44						Company	?	Henrik Ekrheim	
	45						Company	Rogaland Ipark	?	
	46						Company	Smi energi & miljø as	Arne Olsen	
	47						Company	Nordconsult	Pål Larsen	
	48						City of Stavanger	Framtidens byer	Gerd Seehus	
	49						City of Stavanger	?	Espen Svendsen	
	50						Organisation	Funksjonshemmedes råd	Anne Marie Auestad	
AWS 2		Stavanger		2014-04-08	12.30 - 15.00					
	1						Company	Lyse	Dagfinn Wåge	
	2						Company	Lyse	Per Erling Fjelde	
	3						Company	Lyse	Gunnar Crawford	
	4						Company	Sensio	William Holm	
	5						City of Stavanger	Stavanger komune	Odd Kåre Kvelvane	
	6						City of Stavanger	Stavanger komune	Hans Erik Lundberg	
	7						City of Stavanger	Stavanger komune	Inger Lise Faltinsen	
	8						City of Stavanger	Stavanger komune	Olav Stredet	
	9						City of Levekår	Levekår Stavanger komune	Ellen Ronold	
	10						City of Levekår	Levekår Stavanger komune	Anne Kjersti Salte	
	11						City of Levekår	Levekår Stavanger komune	Bente Gunnarshaug	
	12						City of Horten	Horten komune	Bjørn Langjorde	
	13						City of Ledlighet	Ledlighet Group		
	14						Company	Rambøll	Anne Merete Skogland	
	15						City of Leiv	Leiv Nes Arkitekter	?	
	16						City of Link	Link Arkitektur Stavanger	?	
	17						Company	Lyse	Trond Thorbjørnsen	
	18						Company	Zenisk	Kristin Bredal	
	19						Company	Noralarm	Terje Knag	
	20						Company	Smartly	Terje Moi Nilsen	
	21						Company	Nordconsult	Nordconsult	
	22						Company	Multiconsult	Multiconsult	
	23						Company	Sweco	?	
	24						Company	Cowi	?	
	25						Company	Rambøll	?	
	26						Company	?	Henrik Ekrheim	
	27						Company	Rogaland Ipark	?	
	28						Company	Smi energi & miljø as	Arne Olsen	
	29						Company	Nordconsult	Pål Larsen	
	30						City of Stavanger	Framtidens byer	Gerd Seehus	
	31						City of Stavanger	?	Espen Svendsen	
	32						Organisation	Funksjonshemmedes råd	Anne Marie Auestad	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
AWS 1		Malmö		2014-04-03	08.30 - 11.30					
	1							aaxsus	Alexander Weiland	
	2							Grontmij	Magnus Rosberg	
	3							Mpel AB	Stina Wulff	
	4							Specialelektronik	Johan Nantin	
	5							Specialelektronik	Peter Dahl	
	6							Midroc	Rikard Sjöqvist	
	7							ÅF	Peter Rosenqvist	
	8							Lund stad	Peter Kisch	
	9							Malmö stad/Sef/Sf	Olle Strandberg	
	10							Malmö stad/Fysisk miljö	Bodil Johansson	
	11							Malmö stad/Fysisk miljö	Demba Sanyang	
	12							Malmö stad/Sef/Sf	Lars Kristensson	
	13							Malmö stad/Sef/Sf	Lennart Andersson	
	14							WSP	Katarina Hennig	
	15							Malmö stad/Sef	Magnus Ekelund	
	16							Malmö stad	Anto Tomic	
	17							Malmö stad	Zeljko Pavlovic	
	18							Mobile Heights	Bogdan Tudosoiu	
	19							Danske lys	Lene H. Hartmeyer	
	20							**LU Open Innovation Center, Lunds u**	Reine Karlsson	
	21							**LU Open Innovation Center, Lunds u**	Tove Karlsson	
	22							**LU Open Innovation Center, Lunds u**	Boel Kjellsdotter	
	23							IIIEE, Lunds universitet	Jessika Luth Richter	
	24							IIIEE, Lunds universitet	Florian Jacques	
	25							Malmö stad/Sef	Sofia Traneflykt	
AWS 2		Malmö		2014-04-03	13.00 - 16.00					
	1							aaxsus	Alexander Weiland	
	2							Grontmij	Magnus Rosberg	
	3							Specialelektronik	Johan Nantin	
	4							Specialelektronik	Peter Dahl	
	5							Midroc	Rikard Sjöqvist	
	6							ÅF	Peter Rosenqvist	
	7							Hoab	Anders Hinn	
	8							Lund stad	Peter Kisch	
	9							Malmö stad/Sef/Sf	Jonna Myrebris	
	10							Malmö stad/Sef/Sf	Olle Strandberg	
	11							Malmö stad/Fysisk miljö	Bodil Johansson	
	12							Schneider	Marie Holmgren	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
	13							Malmö stad/Fysisk miljö	Demba Sanyang	
	14							Malmö stad/Sef/Sf	Lars Kristensson	
	15							Malmö stad/Sef/Sf	Lennart Andersson	
	16							Danske lys	Lene H. Hartmeyer	
	17							LU Open Innovation Center, Lunds u	Reine Karlsson	
	18							LU Open Innovation Center, Lunds u	Tove Karlsson	
	19							LU Open Innovation Center, Lunds u	Boel Kjellsdotter	
	20							IIIEE, Lunds universitet	Jessika Luth Richter	
	21							IIIEE, Lunds universitet	Florian Jacques	
	22							Malmö stad/Sef	Sofia Traneflykt	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
AWS		Eindhoven		2014-04-23	10.00 - 15.30					
	1						contractors	A. Hak Zuid B.V.	B. van der Linden	
	2							Anteagroup	W. Oijen	
	3						architects/designers/cor	Attiva Lichtprojecten	R. Koopman	
	4						architects/designers/cor	Bxseven Engineering	R. Geurts	
	5						architects/designers/cor	Bxseven Engineering	R. Bloemers	
	6						architects/designers/cor	Caronlightdesign	C. Rietbergen	
	7						contractors	CityTec BV	J.A. Markus	
	8						architects/designers/cor	Concepting Nu	M. Grotenhuis	
	9						city authorities	ENIGMA	T. Elissen	
	10						city authorities	ENIGMA	M. van Dommelen	
	11							Entropia Digital NV	R. Toma	
	12						city authorities	Gemeente Eindhoven	I. Kaal	
	13						city authorities	Gemeente Eindhoven	J. Strating	
	14						city authorities	Gemeente Eindhoven	G. Henselmans	
	15						city authorities	Gemeente Eindhoven	M.A. Schreurs	
	16							Gemeente Zundert	A. van Goch	
	17							Grontmij Nederland B	R. de Leeuw	
	18						architects/designers/cor	Haskoning/DHV Nede	S. Wilgers	
	19						contractors	Heijmans Wegen	S.E. Stuifzand	
	20						contractors	Heijmans Wegen	B. Coppelmans	
	21						architects/designers/cor	HET LUX LAB	E. de Vries	
	22						architects/designers/cor	Infra Engineering	T. Ickenroth	
	23						architects/designers/cor	Infra Engineering	R. Oskam	
	24						architects/designers/cor	Infra-Lux	T. Vermeulen	
	25						architects/designers/cor	Infra-Lux	M. van Noort	
	26						architects/designers/cor	ipv Delft Creatieve Ing	R. Kruizinga	
	27						architects/designers/cor	JR Advies	M. Louman	
	28						manufacturers	Kaal Masten bv	K. de Louw	
	29						manufacturers	Kaal Masten bv	J. Smook	
	30						regional authorities	Kamer van Koophande	C. Westerbaan van der Meij	
	31						regional authorities	Kamer van Koophande	R. van de Pas	
	32							Lichtkunst	D. Sturm	
	33						city authorities	Light & Culture City of	R. van Stiphout	
	34						research	Lighthouse	R. Valkenburg	
	35						manufacturers	Lightonics B.V.	M. Hermans	
	36							LOS Stadomland	H. van Kempen	
	37						manufacturers	OSRAM Benelux B.V.	R. Driessen	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
	38							Philips Lighting	H. van Diem	
	39						manufacturers	Philips Lighting	J. Rögels	
	40						manufacturers	Philips Lighting Benelu	H. de Boer	
	41						architects/designers/cor	PicusLED	R. Alferdink	
	42						manufacturers	Roadled	K. Heijs	
	43						manufacturers	Schréder	K. Roelofsen	
	44						manufacturers	Schréder	T. Maanen	
	45						architects/designers/cor	Spectrum Advies & De	B. van de Bunt	
	46							Stedelijke en Regional	M. Louman	
	47						manufacturers	System Development	T. Dreven	
	48						manufacturers	System Development	O. Boiten	
	49						manufacturers	Technolution	W. Prinssen	
	50						research	TNO	J. Nauta	
	51						research	TNO	H. van Meerveld	
	52						research	TNO	N. Erkamp	
	53						research	TNO	J. Zwartkruis	
	54						manufacturers	TRILUX BENELUX	P. Bosmans	
	55						manufacturers	TRILUX BENELUX	W. Dammers	
	56						manufacturers	Valmont Nederland B.	J. Bergh	
	57						manufacturers	Valmont Nederland B.	C. Waitzman	
	58						contractors	WSP Volker Wessels	A. van Wijngaarden	
	59						architects/designers/consultants		P. van Kempen	
	60						research		F. Jacques	
	61						architects/designers/cor	Alexpo	T. Mackaay	
	62						city authorities	Gemeente Eindhoven	J. Kip	
	63						manufacturers	Philips Lighting	B. Smets	
	64						regional authorities	RVO	Ruben Prins	
	65						manufacturers	LEDNED	Rob Merzen	
	66						research	TU/e ILI	Elke den Ouden	
	67						city authorities	Gemeente Eindhoven	Mary-Ann Schreurs	
	68						research	TU/e HTI	Anne Schietekat	
	69						research	TU/e HTI	Indre Kalinauskaite	
	70						research	TU/e Building lighting	Alex Rosemann	
	71						city authorities	Gemeente Eindhoven	Ran Haase	
	72						architects/designers/cor	Connection Partner	Anastase Shyirambere	
	73						architects/designers/cor	Triafaire	Hr. Smits	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
AWS 1 & 2		Hamburg		2014-04-24	09.00 - 16.00					
	1							HAW Hamburg (Masterstudent)	Niklas Bastian	
	2							Ulrike Brandi Licht GmbH	Alina Brenger	
	3							Ulrike Brandi Licht GmbH	Monika Elendt	
	4							Working Light LED Lichtsysteme GmbH	Reinhard Krotz	
	5							KMLS	Tülay Özmüş	
	6							Pohlmann & Partner GmbH	Nic Pohlmann	
	7							IWP Beratende Ingenieure	Dirk Schaller	
	8							Schlotfeldt Licht	Tom Schlotfeld	
	9							Philips GmbH	Myla Störtebeck	
	10							HAW Hamburg	Alexander Weber	
	11							Stadtreinigung Hamburg	Andreas Westphal	
	12							HAW Hamburg	Roland Greule	
	13							Stageled GmbH	William Dietrich	
	14							Licht01 - Lightening Design	Robert Sichert	
	15							Working Light LED Lichtsysteme GmbH	Alexander Bichert	
	16							Dr. -Ing Dieter Lange	Dieter Lange	
	17							Team Licht	Sabrina Penning	
	18							Team Licht	Julia Katerji	
	19							Lichtforum e.V.	Peter List	
	20							AURA LIGHT GmbH Hamburg	Ismail Cetinkaya	
	21							High-Tech-Center GmbH	Cornelia Zolghadri	
	22							Green Light Systems GmbH	Daniel Hahn	
	23							Philips GmbH	Gerd Wiesemann	
	24							BERATENDE INGENIEURE FÜR LICHTPLANUNG GbR	Peter Andres	
	25							Freie und Hansestadt Hamburg	Günther Frank	
	26							oskar PR	Christian Holling	
	27							Baumanagement	Rolf Liedtke	
	28							AURA LIGHT GmbH Hamburg	Hauke Bunzel	
	29							AURA LIGHT GmbH Hamburg	Jens Leiding	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
AWS 1		Bassano		2014-04-29	9:30 – 13:30					
	1							Urban Center Bassano	Mr. Lazarotto	
	2							F.LLI Carollo SRL	Paolo Merlo	
								Alecasaps Cruppo Mera	Luca Zaia	
	3							CPL Concordia	Angelo Agunenieri	
	4							Adarpo	Adamo Bellini	
	5							Adarpo	Andrea Bertolo	
	6							Veneto Scillato	Leopoldo Della Cassa	
	7								Mr. Faccin	
	8							Comune di Malo	Giovannio Toniolo	
	9							Comune di Malo	Silvia Sandri	
	10							Comune di Malo	Enrico Pianezzola	
	11							Comune di Pove	Paolo Lobban	
	12							Luce di Veneto	Antonella Venza	
	13							UMPI	Ivo Casotti	
AWS 2		Bassano		2014-04-29	15.00 - 19.00					
	1							Comune di Malo	Enrico Pianezzola	
	2							Industrie Lotto Possigno	Auxlio Costa	
								BAXI S.P.A.	Giovanni Taglioli	
	3							Veneto Innovazione	Ivan Boesso	
	4							Lig. Prof. - ANAB	Matteo Coletto	
	5							Ub. Prof. - Architetto	Michele Bassio	
	6							Comune Bassano del Grappa	Alberto Zarbon	
	7							Comune di Malo	Giovanni Toniolo	
	8							Comune di Malo	Silvia Sandri	
	9							Architetto	Maria di Rossi	
	10							Architetto	Andrea Fennisi	
	11							Architetto	Annab Anca Compostella	
	12							Architetto	Roberto Santi	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
AWS		Zabrze		2014-06-11	09.30 - 14.10					
	1							Zabrze City Hall, Investors' Office	Marcin Bania	
	2							Zabrze City Hall	Walenty Biedulski	
	3							Zabrze City Hall	Małgorzata Bombelka	
	4							Zabrze City Hall	Grzegorz Boral	
	5							Innovation Centre, Silesian University of Tech	Aleksandra Dusza	
	6							AF Tuning	Adam Foltyn	
	7							Municipal Roads and IT Infrastructure Authori	Katarzyna Gawlik-Król	
	8							Zabrze City Hall	Katarzyna Gorzałczyńska	
	9							Zabrze City Hall	Grzegorz Janecki	
	10							Zabrze City Hall	Krzysztof Joniec	
	11							Zabrze City Hall	Halina Karbowska	
	12							APM Bielsko-Biała	Dawid Kasprzycki	
	13							Zabrze City Hall	Rafał Kobos	
	14							Zabrze City Hall	Kryztyna Kurowska	
	15							Zabrze City Hall	Marcin Lesiak	
	16							Detal Projekt	Andrzej Lesiak	
	17							Zabrze City Hall	Adam Łobko	
	18							Zabrze City Hall	Jacek Mogielnicki	
	19							Zabrze City Hall	Ewa Pawłowska	
	20							Zabrze City Hall	Zbigniew Rau	
	21							VOX NET	Mariusz Schulz	
	22							Zabrze City Hall	Sylwia Szulc	
	23							Zabrze City Hall	Małgorzata Juchniewicz	
	24							Zabrze City Hall	Leszek Królicki	
	25							Zabrze City Hall	Łukasz Choroba	
	26							Zabrze City Hall	Robert Sierla	
	27							Zabrze City Hall	Paulina Gala	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
AWS		Espoo		2014-04-25	09.00 - 12.00					
	1							City of Espoo	Jussi Lehtinen	
	2							Helsinki Energy	Olli Markkanen	
	3							Aalto Yliopisto	Leena Tähkämä	
	4							Aalto University	Eino Tetri	
	5							City of Espoo	Laura Yli-Jama	
	6							Lumine Lighting Solutions	Santeri Oksanen	
	7							Lumine Lighting Solutions	Juha Haarnoja	
	8							Lumine Lighting Solutions	Sampo Saukkonen	
	9							Inside Light, Lund University	Håkan Lagerquist	
	10							Helvar OY	Max Björkgren	
	11							Aalto Yliopisto	Liisa Halonen	
	12							City of Espoo	Pekka Sillanpää	
	13							City of Espoo	Päin Ahlroos	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
AWS (Preparatory)		Gent		2014-03-13	13.00 - 19.00					
	1						University/College	KULeuven	Paula Acuna	
	2						Commercial company	Altemp nv	Jan Beeckmans	
	3						Commercial company	GDF SUEZ CC	Jaak Blocken	
	4						Commercial company	Cebeo	Gert Bordau	
	5						Commercial company	Cebeo	Jan Bourgios	
	6						Commercial company	KULeuven	Peter Bracke	
	7						Commercial company	Cebeo	Gino Bruynooghe	
	8						Commercial company	TAL Nv	Geert Callewaert	
	9						Association	Zonnewindt vzw	Steven Camertijn	
	10						University/College	HUBKAHO	Marijn Cantens	
	11						University/College	Universiteit Gent	Mattias Albert P Careel	
	12						Association	Tecnolec vzw	Tom De Beleyr	
	13						Municipality	OCMW Brugge	William De Beuckelaere	
	14						Government	Electrabel	Dimitri De Brandt	
	15						Commercial company	**Modular Lighting Instru**	Kris De Craemer	
	16						Commercial company	ATS Nv	Dirk De Cremer	
	17						Commercial company	Havells-Sylvania	Jean De Cuyper	
	18						Government	VDAB	Alexander De Grande	
	19						Commercial company	**T.E.E. nv - Arch & Teco**	Dirk De Meester	
	20						Commercial company	Bislighting	Dirk De Mol	
	21						Commercial company	TAL nv	Kim De Nijs	
	22						Commercial company	Harvard Engineering	Joachim De Schryver	
	23						Government	**Ministeries van Vlaams**	Stefaan De Taeye	
	24						Commercial company	Ingenium nv	Ruben Debo	
	25						University/College	Vives/Cretecs	Bart Degryse	
	26						Commercial company	ATS Nv	Christian Delabarre	
	27						University/College	KULeuven	Ruben Delvaeye	
	28						Commercial company	Cebeo	Alexander Demeulenaere	
	29						Commercial company	Antea Group	Olivier Deprey	
	30						Commercial company	**Architecten Delobelle E**	Marian Depuydt	
	31						Association	WTCB	Peter D'Herdt	
	32						Commercial company	**Ceratec electrotechnic**	philip Doornaert	
	33						Association	Infrax	Filip Drijkoningen	
	34						University/College	HUBKAHO	Jan Foubert	
	35						University/College	HUBKAHO	Joachim Goeminne	
	36						Commercial company	Cenergie	Koen Govers	
	37						Commercial company	TAL nv	Fien Guyonnaud	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
	38						Commercial company	Trilux Benelux	Andy Hellemans	
	39						Commercial company	Cebeo	Sandra Herrebosch	
	40						Commercial company	BNP Paribas Fortis	Ronny Janssens	
	41						Commercial company	KBC	Gerard Jaspers	
	42						University/College	Lund Lighting Initiative	Reine Karlsson	
	43						Commercial company	Esylux	David Ketelaers	
	44						Commercial company	Renson nv	Johny Leroy	
	45						Commercial company	GDG bvba	Hlodwig Lewyllie	
	46						University/College	KULeuven	Catherine Lootens	
	47						Commercial company	Renson Ventilation nv	Peter Louage	
	48						Association	KSO Tielt-Ruiselede vzv	Dominique Maertens	
	49						Commercial company	Fifthplay nv	Filip Maurus	
	50						University/College	HUBKAHO	Hendrik Merckx	
	51						University/College	HUBKAHO	Dimitri Michels	
	52						Commercial company	Vanhout Nv	Bert Michiels	
	53						Association	Eandis	Jan Michielsen	
	54						Commercial company	Bislighting	Elke Moens	
	55						Commercial company	Eurostation	Luc Mouwen	
	56						Commercial company	Ceratec Electrotechnic	Jan Mus	
	57						Commercial company	Beckhoff Automation	Ronny Noynaert	
	58						Commercial company	Dekra Certification	Jacob Nuesink	
	59						Municipality	Stad Turnhout	Erik Nys	
	60						Commercial company		Gert Oorts	
	61						Commercial company	Luxobel	Yvan Osten	
	62						Commercial company	Eurostation	Lef Pardon	
	63						Commercial company	ATS Nv	Hendrik Pisman	
	64						Association	Passiefhuis-Platform vz	Jeroen Poppe	
	65						Commercial company	Cebeo	Kevin Recollecte	
	66						University/College	KULeuven	Wouter Ryckaert	
	67						Commercial company	Luminact bvba	Alain Schaffers	
	68						Commercial company	Cofely Services	Philippe Scheerlinck	
	69						University/College	HUBKAHO	Maarten Schelfhout	
	70						Commercial company	TAL nv	Pascale Segers	
	71						Government	Regie der gebouwen	Nico Smets	
	72						Commercial company	Trilux	Eddy Snauwaert	
	73						Commercial company	Gevitec bvba	Tim Sprangers	
	74						Commercial company	Studiebureau Boydens	Marina Stavrakantonaki	
	75						Association	Eandis cvba	Dries Steynen	

workshop	# particpants	location	organiser	date	time interval	SSL-erate partner	type	organisation	representant	comment
	76						Government	Electrabel	Pascal Stiens	
	77						University/College	KULeuven	Ludwig Stroobant	
	78						Commercial company	ATS Nv	Dries Taelman	
	79						Commercial company	Ingenium nv	Matthias Terlaeken	
	80						Association	Infrax	Edwin Thieren	
	81						Commercial company	DTPlan	Sam Tytgat	
	82						Commercial company	Francis & Tytgat	Freddy Uyttendaele	
	83						Commercial company	B.E.G. Belgium	Johan Van Bael	
	84						Commercial company	Gevitec bvba	Walter Van Beylen	
	85						Commercial company	WDP	Robbert Van Boxelaere	
	86						Commercial company	GDG bvba	Raf Van Brusselen	
	87						University/College	HUBKAHO	Stef Van de Perre	
	88						Commercial company	TAL Nv	Dimitri Van De Velde	
	89						Commercial company	Alcatel-Lucent Bell	Kris Van Doren	
	90						Association	Eandis	Tol Van Eeckhout	
	91						**Commercial company**	**B.A.S.F. Antwerpen nv**	**Jürgen Van Moldergem**	
	92						**Commercial company**	**€co²-LED**	**Stefan Van Nieuwkerke**	
	93						**Commercial company**	**B.E.G. Belgium**	**Michel Vandenabeele**	
	94						**Commercial company**	**Wago Kontakttechnik**	**Tobias Vander Voorde**	
	95						**Commercial company**	**Vecolux**	**Michael Vandermeerschen**	
	96						**Commercial company**	**Beckhoff automation**	**Johny Vangeel**	
	97						Commercial company	Esylux	Jurgen Vanhaesbrouck	
	98						Commercial company	B.E.G. Belgium	Hans Vannoppen	
	99						Commercial company	KBC Group	Stefan Vansant	
	100						Commercial company	Domotic.Lounge	Daevy Vanstaen	
	101						Commercial company	Ecosucces	Marinus Jan Veltman	
	102						Commercial company	Luxendi	Robrecht Verbeelen	
	103						Commercial company	Havells Sylvania	Jos Verbist	
	104						Commercial company	CDI-projects bvba	Luc Vercruyssen	
	105						Association	AZ Sint-Lucas	Rik Vereecken	
	106						Commercial company	**Ceratec Electrotechnic**	Pauline Verzele	
	107						Commercial company	Cebeo	David Warlop	
	108						Commercial company	Encon	Hanssens Wouter	

Annex 2 - Complete Application workshop documentation

SSL-erate

CHECKLIST FOR ORGANIZATION OF APPLICATION WORKSHOPS

		City Role	LU	Complete?
Before workshop	Set up a potential **agenda** for 1 application workshop Specify **theme** of application (e.g. indoor lighting in schools, outdoor lighting as art, etc.). Specify **date/s, time/s, venue/s**, etc. Invite and confirm relevant expert speakers (can be invited stakeholders).	City lead organizer	LU comments on draft, supports with contacts, admin, approves final agenda after checking with task 2.3 KPI	Y/N
	Make **invitation** (see sample attached - may require translation into workshop language), **list of relevant stakeholders to invite, including:** • Application specific business actors • Application specific societal actors • SSL-erate cluster partners and associates • Workshops could be organized together with the regional lighting cluster partner • Key sustainability actors & decision makers in additional cities will be identified and invited to the workshops (KPI) (D.2.3)	City lead organizer	LU comments on draft, supports with contacts, admin, approves final agenda after checking with task 2.3 KPI	Y/N
	Add a description of "The SSL-erate green business perspective" (see document attached - may require translation into workshop language) to the invitation.	City lead organizer	LU comments on draft, supports with contacts, admin, approves final agenda after checking with task 2.3 KPI	Y/N
	Confirm participants and information about **focus applications** in the week prior to workshop	City lead, send to LU	Support	Y/N
During workshop	Expert presentation on intelligent green business development.	City if local expert known	LU representative	
	Moderate, encourage dialogue, take notes (see workshop dialogue summary for guidance of key topics and outcomes), **and collect quotes.**	City lead	LU representative to support	Y/N
	Make participants sign the attendance list (see document attached) and send a copy to LU.			
After workshop	Summarise key points of dialogue using the summary template	City lead	LU representative to support	Y/N
	Compilation of workshop dialogue summary for LU (D 2.3)	City representative comment	LU lead	Y/N

SAMPLE/ TEMPLATE

Welcome to two workshops on

Intelligent Green Business Development for Solid State Lighting

The right light, at the right place, at the right time

The City of _____ ***(city organizer)*** is participating in the EU project "Accelerate SSL Innovation for Europe" (SSL-erate). The project aims to accelerate deployment of improved SSL technology in Europe by Open Innovation. SSL-erate includes development of the innovation platform Lighting for People. The workshop is intended for business and societal stakeholders and employees of the City of _____.

The _____) and LU Open Innovation Center, Lund Univeristy invite you to a workshop to discuss and assess development opportunities for a field of application for smart lighting solutions using ICT - based SSL in the interest of the City of _____.

Theme 1 (example - see D 2.2 for more examples): Improving safety and security in public places.

The program includes:

The SSL potential, as a tool for enhancement of health and wellbeing. Energy Effectiveness by smart lighting solutions. Green business development in smart lighting for simultaneous enhancement of the user value and energy savings. Information regarding funding opportunities.

Open dialogue on the potential to enhance value-creating use of smart lighting ICT-based SSL solutions, for each of the application area.

When: Thursday April 3 8.30-16.00

Theme 1 is covered between 8.30-11.30

Where: Glasklart, Dockplatsen 1,____

Morning coffee is included

Welcome to register! Send an email to email@domain.com at the latest Friday 21 of March.

In collaboration with:

City logos here

Sample Program

9:00	Registration
9:30	Greeting
9:40	Introducting 'Accelerate SSL Innovation for Europe (SSL-erate)' City representative
9:50	Green Business Development: improving the user value of lighting and energy saving Lund University representative
10:10	The potential for Light for positive impacts on health and wellbeing ____ Representative
10:30	Expert talk related to the theme ____ Representative
10:50	Expert talk related to the theme/ Panel Discussion ____ Representative
11:10	Coffee break
11:30	Open Dialogue on the theme (see workshop summary sheet for expected topics covered/outcomes of dialogue).
12:30	Summary of main points/results of dialogues
12:45	Wrap up

City logos here

The SSL-erate "green business" perspective

To illustrate why the new lighting is so important in a human perspective, the following line of thought is thought-provoking: The latest hundred years we have become accustomed to static and somewhat reddish, faintly flickering lighting. The goal has been more lumens and the same light everywhere, all the time. The human visual system, however, is tailored for the varying light found in nature, where the colour composition, the proportions of direct and indirect light and the intensity vary quite a lot. We know that sometimes we need functional light and sometimes we want soft indoor lighting and also darkness. We know that the sparkling light from moving water and under the trees feels good. Many appreciate the play of light at sunrise and sunset, and we appreciate candlelight dinners. The new technology is starting to enable these sorts of light environments.

The SSL-erate "green business" perspective aims is to accelerate the deployment of SSL, which has great potential as a tool for sustainable development. One reason for the projects investment in "green "sustainability is to foster solutions with positive social impact, e.g. by enabling better living and working environments in kindergartens, schools and for our ageing population. System solutions that provide the right light in the right place at the right time give the best living and working conditions. Simultaneously they are also the optimal solution from energy effectiveness point of view.

The workshop describes the potential human value of LED and smart system solutions and exemplifies where it is possible to find up-to-date information. The workshops about the specific application areas aim for open dialogue about the opportunities and challenges by the technology shift to LEDs.

Intelligent green business development has great potential for closing the gap between, on the one hand, the users' needs and desires (which they themselves may be unaware of) and on the other hand, the technical development potential. However, there is considerable uncertainty about what kind of light dynamics it is that we should aim for and also regarding the properties and quality of various products and system solutions. The previous lighting technologies were static; so most people find it difficult to understand the significance of the benefits of the new freedom of action, new functionalities and dynamic lighting.

It is obvious that the lighting technology is changing very rapidly. The old products have been banned and ever better LED and smart systems solutions appear on the market. SSL technology and ICT provide almost unlimited flexibility. It is clear that it is possible to save significant amounts of energy. Moreover, the product lifetime can be very long. Still the main advantage is that the new technology enables much larger freedom of action to provide the right light in the right place at the right time.

SSL-erate

Attendance list for City + Date of workshop		
Participants	Organization	Signature

lightingforpeople
CONNECTING OPPORTUNITIES FOR INNOVATION

SEVENTH FRAMEWORK

LUND UNIVERSITY

City logos here

Workshop Dialogue Summary

City
Date of Workshop

Summary *(2-3 pages based on notes from dialogues - attach programme of workshop and list of participants with affiliation/actor group/city to this summary)*

Application being considered:

Please describe the application being considered whether indoors (i.e. elderly care, health care, schools, museum and art, working places, buildings) or outdoors (i.e. street lighting, traffic lighting, parks, playground, guidance during rush hours, lighting festivals).

Dialogue

Please comment on the process of the dialogue and how it was organised. Which actor groups (see checklist) were represented? (Insert table with actors and number, other cities represented)
What was the level of interaction and networking?

Intelligent Green Business Opportunities *(refer to 2.2 report for description of intelligent green business)*

What intelligent green business opportunities were discussed related to this particular application? How can SSL present sustainable value for investment in this application field?

Health and Wellbeing

What comments were made regarding health and well-being, SSL, and this application field?

Open Innovation

What comments were made regarding open innovation and this application field?

Drivers

Who are the relevant actors and how n they be motivated to take advantage of green business opportunities?

Barriers

What barriers to uptake of SSL were identified (i.e. costs, quality, financing)

Examples and stories

What examples or stories were shared relevant to SSL in this application field? Please provide a couple sentence summary of practical experiences (can be positive or negative) that demonstrate something about putting ideas into practice. Please provide short details of a contact person for more information to develop these stories as part of the SSL project.

Table with relevant stakeholder groups

Stakeholder / Participants	Application specific business actors	Application specific societal actors	SSL-erate cluster partners and associates	Regional lighting cluster partner	Key sustainability actors & decisions makers in additional cities

Dialogue

Intelligent Green Business Opportunities

What intelligent green business opportunities are there related to this particular application? How can SSL present sustainable value for investment in this application field? Do you know any good/bad examples of this?

Health and Wellbeing

How can health and well-being be further enhanced through SSL and this application field? Do you know any good/bad examples of this?

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Open Innovation

How can open innovation help in this application field? Do you know any good/bad examples of this?

SSL-erate

Drivers

Who are the relevant actors and how can they be motivated to take advantage of green business opportunities? Do you know any good/bad examples of this?

SSL-erate

Barriers

What barriers to uptake of SSL are there (i.e. costs, quality, financing)? How can these be overcome? Do you know any good/bad examples of this?

Stavanger Application workshops 2014.04.08

STAVANGER KOMMUNE

RETT LYS TIL RETT TID PÅ RETT STED FOR ALLE

INVITASJON TIL WORKSHOP

SSL-erate

PROGRAM TIRSDAG 8. APRIL

Kl 09.00 – 11.30 Workshop 1
Belysningsløsninger som medvirker til økt sikkerhet i byområder

Kl 11.30 – 12.30 Lunsj

Kl 12.30 – 15.00 Workshop 2
Belysningsløsninger som kan gi helsegevinst og økt følelse av velvære for beboere i institusjoner for eldre

Det er mulighet for å delta på begge workshopene.

INFO

Påmelding sendes pr. e-post til:
anne.cecilie.lassa@stavanger.kommune.no
(klikk på e-postadressen for å sende påmelding)

Ved påmelding må det oppgis hvilken workshop en vil delta i (eller begge), og om en ønsker lunsj.

Påmeldingsfrist fredag 4. april 2014.

Deltakelse er gratis.

Begge workshopene vil finne sted **8. april 2014**

Workshopene avholdes i Lyse sitt hovedkontor:
Adresse: **Breiflåtveien 18**, auditoriet "Lysefjorden".

Stavanger kommune er med i EU-prosjektet «Accelerate SSL Innovation for Europe». Prosjektets intensjon er å øke utvikling og bruk av ny belysningsteknologi. I den anledning vil det blir gjennomført to lokale workshops her i Stavanger, med følgende temaer:

- Belysningsløsninger som medvirker til økt sikkerhet utomhus
- Belysningsløsninger som kan gi helsegevinst og økt følelse av velvære for beboere i institusjoner for eldre

Hensikten med workshopene er å få frem mulighetene som blant annet LED og IKT-teknologi gir for smarte og fremtidsrettede belysningsløsninger. Et viktig aspekt er at den nye belysningen har egenskaper med betydelig høyere brukeropplevelse enn dagens belysning. Workshopene retter seg både mot produktutviklere, leverandører, konsulenter, utbyggere og brukere.

Programmet vil stikkordsmessig inneholde:

- Dynamiske belysningsløsninger – potensialet for økt helse, velvære, trygghet og sikkerhet
- Energisparing gjennom smarte belysningsløsninger
- Bærekraftig næringsutvikling innen smarte belysningsløsninger
- Informasjon om finansieringsmuligheter

Professor Reine Karlsson fra Lund Universitet i Sverige vil ta oss gjennom de ulike temaene. Det legges opp til gode muligheter for spørsmål og svar samt dialog.

LES MER PÅ NESTE SIDE

MER INFORMASJON OM PROSJEKTET

SSL-erate

STAVANGER KOMMUNE

EU-prosjektet «Accelerate SSL Innovation for Europe» sin intensjon er å øke utvikling og bruk av ny teknologi innenfor belysning.

SSL står for **Solid State Lighting** som er basert på bruk av halvlederteknologi som lyskilde, f. eks. LED. SSL har potensiale til å revolusjonere belysningsindustrien.

Stavanger er en av fire europeiske byer som deltar sammen med en rekke universiteter, forskningsinstitusjoner og næringsaktører. Vår rolle i prosjektet er å skape bevissthet om og avklare muligheter og hindringer for offentlig bruk av SSL-løsninger. Dette skal gjøres gjennom å arrangere to workshops hvor det som fremkommer tas med videre i prosjektet. Det er universitet i Lund, Sverige, som leder denne delen av prosjektet.

Disse workshopene skal sette fokus den potensielle brukerverdien av de utviklingsmuligheter en ser for LED og smarte belysningssystemer. Det vil bli presentert hvor det er mulig å finne ulike typer informasjon om dette.

Målet med workshopen er å avklare deltakerens muligheter og utfordringer for grønne forretningsmuligheter innenfor SSL. Vi ønsker å gjøre deltakerne i stand til å benytte seg av finansieringsmuligheter for innovasjonsorientert innkjøp og investeringer for energisparing, hvor brukernes helse og velbefinnende er sentrale i prosessen.

En aktuell grunn til bruk av "Grønn" som en overskrift for LED-prosjekter, er at det i Europa er satt i gang ganske mange offentlige energibesparelsesprosjekter og investeringer.

Videre vises det stor politisk interesse med betydelig ambisjoner for prestisjetunge, grønne utviklingsmål.
Belysningsproduktene utvikles svært raskt. Gamle produkter har blitt forbudt og stadig nye LED-lamper og løsninger tilbys på markedet. Det er åpenbart at det er mulig å spare ganske mye energi, spesielt med smarte belysningssystemer. Videre kan produktlivssyklusen bli svært lang.

Dagens SSL- og IKT-teknologi gir store muligheter samt fleksibilitet, for å bygge belysningssystemer som gir riktig lys, på rett sted, til rett tid, for alle. Men, det er ganske mye usikkerhet om hva slags lysdynamikk vi bør ha som mål, og også om egenskaper og kvalitet for de ulike produkter og løsninger. De tidligere belysningsløsningene var statiske, derfor kan det være vanskelig for folk å se og forstå betydningen av fordelene med de nye typene funksjonalitet og dynamisk lys.

For å illustrere hvorfor endringen i belysning er så viktig for mennesker, er det interessant å tenke i følgende linje: I de siste hundre år vi har blitt vant til statiske, gulbrune, lysmiljøer hvor vi har etterspurt mer og samme lys overalt, hele tiden.

De menneskelige sanseorganene er tilpasset det varierende og dynamiske lyset ute i naturen hvor fargesammensetningen, andelen av retningsbestemt lys og intensitet varierer mye.

Vi vet at noen ganger ønsker vi et funksjonelt lys og noen ganger ønsker vi et mer stemningsfullt lys og mørke. Vi vet at glitrende lys fra bevegelig vann føles bra. Mange verdsetter lyset som oppleves ved soloppgang og solnedgang. Vi setter pris på middager med stearinlys. Den nye teknologien begynner å gi muligheter for å opprette slike forhold i våre lysmiljøer.

Se også:
www.sslerate.eu
www.lightingforpeople.eu

RETT LYS TIL RETT TID PÅ RETT STED FOR ALLE

INVITASJON TIL WORKSHOP

Stavanger kommune er med i EU-prosjektet «Accelerate SSL Innovation for Europe». I den anledning vil det blir gjennomført 2 lokale workshops her i Stavanger, med følgende temaer:

- Belysningsløsninger som medvirker til økt sikkerhet i byområder
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Hensikten med workshopene er å få belyst mulighetene som LED og IKT-teknologi gir for smarte og fremtidsrettede belysningsløsninger. Workshopene retter seg både mot brukersiden og mot utviklingssiden.

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Begge workshopene vil finne sted **tirsdag 8. april 2014 i Lyse sitt hovedkontor i Breiflåtveien 18, auditoriet Lysefjorden:**

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Påmelding på mail til anne.cecilie.lassa@stavanger.kommune.no. Ved påmelding må det oppgis hvilken workshop en vil delta i (eller begge) og om en ønsker lunsj

Det vises til ytterligere informasjon på invitasjonens bakside.

RETT LYS, PÅ RETT STED, TIL RETT TID, FOR ALLE

En aktuell grunn til bruk av "Grønn" som en overskrift for LED-prosjekter, er at det i Europa er satt i gang ganske mange offentlige energibesparelsesprosjekter og investeringer. Videre vises det stor politiske interesse med betydelig ambisjoner for prestisjetunge grønne utviklingsmål.

Denne workshopen skal belyse den potensielle brukerverdien av de utviklingsmuligheter for en ser for LED og smarte belysningssystemer. Det vil bli gitt informasjon om hvor det er mulig å finne ulike typer informasjon om dette.

Målet med workshopen er å avklare deltakerens muligheter og utfordringer for grønne forretningsmuligheter innenfor SSL. Vi ønsker å gjøre deltakerne i stand til å gjøre bruk av finansieringsmuligheter for innovasjonsorientert innkjøp og investeringer for energisparing, hvor brukerne er sentrale i prosessen.

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Liste over aktuelle deltakere for SSL-workshoper 8.4.1

Instans/ person	mailadresse	
Workshop Felles (both workshops)		
Trond Thorbjørnsen, Lyse	Trond.Thorbjornsen@lyse.no	Company
Kristin Bredal, Zenisk	kristin@zenisk.no	Company
Terje Knag, Noralarm	Terje.Knag@noralarm.no	Company
Terje Moi Nilsen, Smartly	TerjeMoi.Nilsen@lyse.no	Company
Nordconsult	firmapost@norconsult.com	Company
Multiconsult	sandnes@multiconsult.no	Company
Sweco	roger.strand@sweco.no	Company
Cowi	egwa@cowi.no	Company
Rambøl	stavanger@ramboll.no	Company
Henrik Ekrheim	henrik@ekrheim-elconsult.no	Company
Rogaland Ipark	terje.handeland@ipark.no	Company
smi energi & miljø as, Arne Olsen	post@smigruppen.no	Company
Pål Larsen, Nordconsult	pal.johannes.larsen@norconsult.no	Company
Gerd Seehus, Framtidens byer	gerd.seehuus@stavanger.kommune.no	City of Stavanger
Espen Svendsen	espen.svendsen@stavanger.kommune.no	City of Stavanger
Anne Marie Auestad, leder funksjonshemmedes råd	am.auestad@getmail.no	Organisation
Workshop 1 Lys for økt sikkerhet i byområdene (safety and security in public space(		
Jan Magne Forseth, Lyse	JanMagne.Forseth@lyse.no	Company
Øystein Rian, Lyse	Oystein.Rian@lyse.no	Company
Jarl Karlsen, Luxsave	jarl.karlsen@luxsave.com	Company
Steinar Olsen, Datek	so@datek.no	Company
Trygve Petter Nilsen, Park og vei Stavanger kommune	trygve.petter.nilsen@stavanger.kommune.no	City of Stavanger
Kari Smådal Turøy, , Park og vei Stavanger kommune	kari.smaadal.turoy@stavanger.kommune.no	City of

		Stavanger
Hildegunn Hausken, Transportplan, Stavanger kommune	hhausken@stavanger.kommune.no	City of Stavanger
Arne Tennfjord, idrett Stavanger kommune	atennfjo@stavanger.kommune.no	City of Stavanger
Torgeir Esig Sørensen, , Park og vei Stavanger kommune	torgeir.sorensen@stavanger.kommune.no	City of Stavanger
Rolf Øyvind Østefjells, , Park og vei Stavanger kommune	rolf.ostefjells@stavanger.kommune.no	City of Stavanger
Gunn Jorunn Åsland, kultur og byutvikling, Stavanger kommune	gunn.jorunn.aasland@stavanger.kommune.no	City of Stavanger
Anne Skare, byplan, Stavanger kommune	anne.s.skare@stavanger.kommune.no	City of Stavanger
Lars Arild Bråtveit, Statens veivesen	lars.bratveit@vegvesen.no	Norwegian Public Roads Administration
Leif Lindefjell, Statens veivesen	Leif.lindefjeld@vegvesen.no	Norwegian Public Roads Administration
Håkon Auglend, Sandnes kommune	hakon.auglend@sandnes.kommune.no	City of Sandnes
Ole Bjørn Maråk, Time kommune	ole.bjorn.marak@time.kommune.no	Time municipality
Ole Tuntland, Strand kommune	ole.tuntland@strand.kommune.no	Strand municipality
Johannes Tonning, Sola kommune	johannes.tonning@sola.kommune.no	Sola municipality
Sven Tysdal, Sandnes kommune	sven.tysdal@sandnes.kommune.no	City of Sandnes
Jarleiv Sørbø, Rennesøy kommune	jarleiv.sorbo@rennesoy.kommune.no	Rennesøy municipality
Jorunn Bogavik, Randaberg kommune	jorunn.bogevik@randaberg.kommune.no	Randaberg municipality
Helge Koll Frafjord, Kvitsøy kommune	helge.koll.frafjord@kvitsoy.kommune.no	Kvitsøy

		municipality
Johan Vistnes, Kvitsøy kommune	Johan.Vistnes@kvitsoy.kommune.no	Kvitsøy municipality
Reidun Segadal, Hjelmeland kommune	Reidun.Segadal@hjelmeland.kommune.no	Hjelmeland municipality
Asgeir Kleppa, Gjesdal kommune	asgeir.kleppa@gjesdal.kommune.no	Gjesdal municipality
Rune Hatteberg, Sola kommune	rune.hatteberg@sola.kommune.no	Sola municipality
Egil Haga, Sola kommune	egil.haga@sola.kommune.no	Sola municipality
Lars Øyvind Haarklou Hansen, DEFA	l.hansen@defa.com	Company
Tore Krok Nielsen, Siteco, Høgskolen i Buskerud	tore.nielsen@g24.no	Company/ education
Morten Iversen, Statens vegvesen, region øst	morten.iversen@vegvesen.no	Norwegian Public Roads Administration
Oddmund Lefdal, Mesta AS	Oddmund.lefdal@mesta.no	Company
Eirik Bjelland, Oslo kommune	eirik.bjelland@oslo.kommune.no	City of Oslo
EnergyOptimal	post@energyoptimal.no	Company
Comlight	siri@comlight.no	Company
Workshop 2 Lys for helsegevinst og økt velvære for eldre i institusjoner (health and well-being for elderly people)		
Dagfinn Wåge, Lyse	Dagfinn.Wage@lyse.no	Company
Per Erling Fjelde, Lyse	PerErling.Fjeld@altibox.no	Company
Gunnar Crawford, Lyse	GunnarEdwin.Crawford@lyse.no	Company
William Holm, Sensio	william@sensio.no	Company
Prosjektsjef Odd Kåre Kvelvane Stavanger kommune	okvelvan@stavanger.kommune.no	City of Stavanger
Eiendomssjef Hans Erik Lundberg Stavanger kommune	hans.erik.lundberg@stavanger.kommune.no	City of Stavanger

Arkitekt Inger Lise Faltinsen, Stavanger kommune	ifaltins@stavanger.kommune.no	City of Stavanger
Forvaltningssjef Olav Stredet, Stavanger kommune	ostredet@stavanger.kommune.no	City of Stavanger
Ellen Ronold, Levekår, Stavanger kommune	ellen.ronold@stavanger.kommune.no	City of Stavanger
Anne Kjersti Salte, Levekår, Stavanger kommune	anne.kjersti.salthe@stavanger.kommune.no	City of Stavanger
Bente Gunnarshaug, Levekår Stavanger kommune	bente.gunnarshaug@stavanger.kommune.no	City of Stavanger
Bjørn Langjorde, Horten kommune	Bjorn.Langjordet@horten.kommune.no	City of Horten
Ledlight Group	post@llg.no	Company
Rambøll v/ Anne Merete Skogland, arkitekt	anne.skogland@ramboll.no	Company
Leiv Nes Arkitekter	post@ln-arkitekter.no	Company
Link Arkitektur Stavanger	stavanger@linkarkitektur.no	Company

Som det vil fremgå av vedlagte invitasjon, deltar Stavanger kommune i et EU-prosjekt som vedrører hvordan belysningsløsninger utendørs og i innemiljøer, kan påvirke både sikkerhet, helse og trivsel. Dette gjelder blant annet bruk av ny teknologi som blant annet LED. Vi inviterer i denne forbindelse til workshops for å få fokus på muligheter, både når det gjelder bruk og utvikling.

Vi ber om at invitasjonen også blir videresendt til andre aktuelle innenfor organisasjonen.

Deltakere SSL-workshop 08.04.2014

Deltaker	Instans	Workshop 1	Lunsj	Workshop 2
Workshop Felles				
Tor Mjøs	Norconsult	x	x	x
Henrik Ekrheim	Ekrheim Elconsult a.s	x	x	x
Erlend Kulander Kvitrud	smi energi & miljø as	x	x	x
Tommy Dahl	Glamox Luxo Lighting	x	x	x
Hallvard Aanestad	Aanestad Elektro	x	x	x
Gunnar M. Aasland	Fagerhult Belysning AS	x	x	x
Sven-Erik Åkerman	COWI	x	x	x
Siri Rognø Sørbel	Stavanger eiendom Stavanger kommune	x	x	x
Frode Michaelsen	Lyse Elnett AS	x	x	x
Atle Olsen	Thorn Lighting AS	x	x	x
Bjørn-Arild Andersen	ERCO Lighting AS	x	x	x
Erna Helen Djursvoll	LINK arkitektur AS	x	x	x
Marit Brandsæter Hagland	ipark	-	x	x
Svein Søreide	Stavanger eiendom Stavanger kommune	x	x	-
Elisabeth Antone Olsen		x	x	x
Jarl Karlsen	LuxSave As	x	x	x
Rolf Øyvind Østefjells	Park og vei Stavanger kommune	x	x	x
Torstein Dahle	Bymiljø Park og vei Sandnes kommune	x	x	x
Asgeir Kleppa	Gjesdal kommune	x	x	-
Arild Volden	Gjesdal kommune	x	x	-
Kjell Ramberg	Defa Lighting AS	x	x	x
Ingjerd Bratterud	Park og vei Stavanger kommune	x	x	x
Jarl Hoogstad	Lyse Elnett AS	x	x	x
Olav Stav	Miljøseksjonen Stavanger kommune	x	x	x
Reine Karlsson	Lund universitet	x	x	x
Tove Karlsson	Lund universitet	x	x	x
Anne Cecilie Lassa	Park og vei Stavanger kommune	x	x	x

SSL - Workshop Stavanger 8.4.2014

Participant	Company	Actors	E-mail
Anne Cecilie Lassa	Park og vei Stavanger kommune	Societal	anne.cecilie.lassa@stavanger.kommune.no
Arild Volden	Gjesdal kommune	Societal	arild.volden@gjesdal.kommune.no
Asgeir Kleppa	Gjesdal kommune	Societal	asgeir.kleppa@gjesdal.kommune.no
Asta Vaaland Veen	Smi Energi & Miljø AS	Business	asta.vaaland.veen@smigruppen.no
Atle Olsen	Thorn Lighting AS	Business	atle.olsen@thornlighting.com
Bjørn-Arild Andersen	ERCO Lighting AS	Business	ba.andersen@erco.com
Elisabeth Antone Olsen	Gestaltverkstedet	Sustainability	elisabeth_antone@yahoo.no
Ellen Ronold	Levekår Stavanger kommune	Societal	ellen.ronold@stavanger.kommune.no
Erlend Kulander Kvitrud	Smi Energi & Miljø AS	Business	erlend.kulander@smigruppen.no
Frode Michaelsen	Lyse Elnett AS	Business	Frode.Michaelsen@lyse.no
Gunnar M. Aasland	Fagerhult Belysning AS	Business	gunnar.aasland@fagerhult.no
Hallvard Aanestad	Aanestad Elektro AS	Business	hallvard@aanestadelektro.no
Ingjerd Bratterud	Park og vei Stavanger kommune	Societal	ingjerd.bratterud@stavanger.kommune.no
Jarl Hoogstad	Lyse Elnett AS	Business	Jarl.Hoogstad@lyse.no
Jarl Karlsen	Luxsave As	Business	jarl.karlsen@luxsave.com
Jostein Førland	Stavanger eiendom Stavanger kommune	Societal	jforland@stavanger.kommune.no
Kjell Ramberg	Defa Lighting AS	Business	kjell. ramberg@defa.com
Mikke Stål	NorAlarm AS	Business	mikke.stahl@noralarm.no
Olav Stav	Miljøseksjonen Stavanger kommune	Sustainability	olav.stav@stavanger.kommune.no
Rolf Øyvind Østefjells	Park og vei Stavanger kommune	Societal	rolf.ostefjells@stavanger.kommune.no
Siri Rognø Sørbel	Stavanger eiendom Stavanger kommune	Societal	siri.sorbel@stavanger.kommune.no
Steinar Olsen	Datek Wireless AS	Business	so@datek.no
Svein Søreide	Stavanger eiendom Stavanger kommune	Societal	ssoreide@stavanger.kommune.no
Sven-Erik Åkerman	COWI AS	Business	seaa@cowi.no
Tommy Dahl	Glamox Luxo Lighting	Business	tommy.dahl@glamoxluxo.com
Tor Mjøs	Norconsult AS	Business	Tor.Mjos@norconsult.com
Torstein Dahle	Bymiljø Park og vei Sandnes kommune	Societal	torstein.dahle@sandnes.kommune.no

CITY OF STAVANGER

SSL - Workshop Stavanger 8.4.2014

Deltaker	Instans	Workshop 1	Workshop 2
Reine Karlsson	LU Open Innovation Center, Lunds universitet	x	x
Tove Karlsson	LU Open Innovation Center, Lunds universitet	x	x
Jarl Hoogstad	Lyse Elnett AS	x	x
Tor Mjøs	Norconsult	x	x
Henrik Ekrheim	Ekrheim Elconsult a.s	x	x
Erlend Kulander Kvitrud	smi energi & miljø as	x	x
Tommy Dahl	Glamox Luxo Lighting	x	x
Hallvard Aanestad	Aanestad Elektro	x	x
Gunnar M. Aasland	Fagerhult Belysning AS	x	x
Sven-Erik Åkerman	COWI	x	x
Frode Michaelsen	Lyse Elnett AS	x	x
Atle Olsen	Thorn Lighting AS	x	x
Bjørn-Arild Andersen	ERCO Lighting AS	x	x
Erna Helen Djursvoll	LINK arkitektur AS	x	x
Marit Brandsæter Hagland	Ipark AS		x
Elisabeth Antone Olsen		x	x
Jarl Karlsen	LuxSave As	x	x
Torstein Dahle	Bymiljø Park og vei Sandnes kommune	x	x
Asgeir Kleppa	Gjesdal kommune	x	
Arild Volden	Gjesdal kommune	x	
Kjell Ramberg	Defa Lighting AS	x	x
Siri Rognø Sørbel	Stavanger eiendom Stavanger kommune	x	x
Ellen Ronold	Rådgiver levekår Stavanger kommune		x
Svein Søreide	Stavanger eiendom Stavanger kommune	x	
Olav Stav	Miljøseksjonen Stavanger kommune	x	x
Ingjerd Bratterud	Park og vei Stavanger kommune	x	x
Anne Cecilie Lassa	Park og vei Stavanger kommune	x	x
Rolf Øyvind Østefjells	Park og vei Stavanger kommune	x	

CITY OF STAVANGER

SSL - Workshop 1 Stavanger 8.4.2014

SSL-erate

Participant	Company	Signature
Anne Cecilie Lassa	Park og vei Stavanger kommune	
Arild Volden	Gjesdal kommune	
Asgeir Kleppa	Gjesdal kommune	
Atle Olsen	Thorn Lighting AS	
Bjørn-Arild Andersen	ERCO Lighting AS	
Erlend Kulander Kvitrud	Smi Energi & Miljø AS	
Erna Helen Djursvoll	LINK arkitektur AS	
Frode Michaelsen	Lyse Elnett AS	
Gunnar M. Aasland	Fagerhult Belysning AS	
Hallvard Aanestad	Aanestad Elektro AS	
Henrik Ekrheim	Ekrheim Elconsult AS	
Ingjerd Bratterud	Park og vei Stavanger kommune	
Jarl Hoogstad	Lyse Elnett AS	
Jarl Karlsen	Luxsave As	
Jostein Førland	Stavanger kommune	
Kjell Ramberg	Defa Lighting AS	
Olav Stav	Miljøseksjonen Stavanger kommune	
Reine Karlsson	LU Open Innovation Center, Lunds universitet	
Rolf Øyvind Østefjells	Park og vei Stavanger kommune	
~~Ronny Hjørnevik~~ MIKKE STÅL	NorAlarm AS	
Siri Rognø Sørbel	Stavanger eiendom Stavanger kommune	
Steinar Olsen	Datek Wireless AS	
Svein Søreide	Stavanger eiendom Stavanger kommune	
Sven-Erik Åkerman	COWI AS	
Tommy Dahl	Glamox Luxo Lighting	
Tor Mjøs	Norconsult AS	
Torstein Dahle	Bymiljø Park og vei Sandnes kommune	
Tove Karlsson	LU Open Innovation Center, Lunds universitet	
Åsta Vaaland Veen	smi energi & miljø	Åsta Vaaland Veen

LUND UNIVERSITY

CITY OF STAVANGER

lightingforpeople

SSL - Workshop 2 Stavanger 8.4.2014

SSL-erate

Participant	Company	Signature
Anne Cecilie Lassa	Park og vei Stavanger kommune	
Atle Olsen	Thorn Lighting AS	
Bjørn-Arild Andersen	ERCO Lighting AS	
Elisabeth Antone Olsen	Gestaltverkstedet	
Ellen Ronold	Levekår Stavanger kommune	
Erlend Kulander Kvitrud	Smi Energi & Miljø AS	
Erna Helen Djursvoll	LINK arkitektur AS	
Frode Michaelsen	Lyse Elnett AS	
Gunnar M. Aasland	Fagerhult Belysning AS	
Hallvard Aanestad	Aanestad Elektro AS	
Henrik Ekrheim	Ekrheim Elconsult AS	
Ingjerd Bratterud	Park og vei Stavanger kommune	
Jarl Hoogstad	Lyse Elnett AS	
Jarl Karlsen	Luxsave As	
Jostein Førland	Stavanger kommune	
Kjell Ramberg	Defa Lighting AS	
Olav Stav	Miljøseksjonen Stavanger kommune	
Reine Karlsson	LU Open Innovation Center, Lunds universitet	
Rolf Øyvind Østefjells	Park og vei Stavanger kommune	
~~Ronny Hjørnevik~~ MIKKE STÅL	NorAlarm AS	
Siri Rognø Sørbel	Stavanger eiendom Stavanger kommune	
Sven-Erik Åkerman	COWI AS	
Tommy Dahl	Glamox Luxo Lighting	
Tor Mjøs	Norconsult AS	
Torstein Dahle	Bymiljø Park og vei Sandnes kommune	
Tove Karlsson	LU Open Innovation Center, Lunds universitet	
STEINAR OLSEN	DATEK Wireless AS	Steinar Olsen
Åsta Vaaland Veen	smi energi & miljø	Åsta Vaaland Veen

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Stavanger Application workshop
2014.04.08

SSL for safety and security in public places

Application being considered:

The aim of the workshop was to clarify how Stavanger can deploy SSL as a tool for improvement of the safety and security in public places.

The vision of Stavanger municipality is to catch opportunities and be pioneers in the utilization of new technological and societal possibilities. The municipality park and road administration are working actively with lighting. Stavanger has won an award for the significantly improved lighting around Breivatnet and the church in the city centre which in the extension has led to their participation in SSL-erate and ENIGMA. They are interested in the radical developments of ICT for supervision and control in outdoor applications and building automation.

The character of the dialogue

There was a lot of positive engagement in the dialogue about the potential development value by deployment of the evolving ICT and developments in control system technologies and SSL.

The participants were self-propelled – the dialogue was very open, in all the three work groups and also the dialogue in the complete groups was active and open. Some participants were sometimes asking for more concrete guidance regarding what to do.

Barriers

One main barrier is that we do not know what we want. A standardisation is missing and we do not know how to measure and procure the new kind of lighting. Another barrier is the perception that it is expensive to invest in the new lighting technology. When the new lighting technology (LED) is marketed as light sources there is a risk that they are seen as expensive in comparison to the old light sources.

Dynamic lighting in the public space can be individually adapted, but it is hard to find a solution that goes well together and works for everyone. One upcoming opportunity is to use the lighting infrastructure for surveillance, but we need to be prepared for this and be aware of the risks with a control society.

There seem to be a general idea that dynamic light is connected to the intense city lighting that many people perceive as intrusive. One woman expressed concern that the new changing lighting would trigger epileptic seizures in her friend. When light is used as a communication tool it is important that we manage to make a coordinated system that will not create any safety risks.

One concern that creates confusion regarding what installations to make is that different investigations give different result. One example is that some investigations say that more light in the public space decreases the criminality; some say that it makes it easier for the criminals to see their victim.

Intelligent Green Business Opportunities

To create room for intelligent green business opportunities we need to shift the focus from energy savings to better solutions. Energy analyses can give information about the flow of energy in order to make sure that we get the right light, at the right place at the right time.

There is a need to identify what it is that makes us feel safer. It seems to be a general belief that more light increases the safety, but this is not necessarily true. Glary light decreases the visibility and lit up valuables at night-time can attract burglars. Too much light decrease the visibility. Lighting and electric companies are promoting more light. We need a strong spokesperson that can clarify how we can sell the interest in interchanging, dynamic light.

On the roads and in the traffic it is likely that we will see a decrease in lighting in the future. A significant part of the road lighting is more disturbing (glary) than useful. Furthermore, there will be a possibility for cars to use other navigation techniques in the future.

It is possible to use luminaires as communication units. This can help us to get quick information about accidents and committed crimes. But before we make use of this opportunity we need to think about the ethical aspect. Is it ethically viable to control everyone at all times? And what might be even more important; if the system fall into the wrong hands we never know what might happen.

Health and wellbeing

Our visual system detects differences and contrasts while the main discussion among lighting designers is referring to tables with lux levels and CRI. Colder color temperatures are becoming increasingly popular in offices and the importance of ambience light for the alertness is highlighted. The lighting should facilitate the possibility to see facial expressions.

The International Agency for Research on Cancer (IARC) is going out with a warning that that electric light during night-time increases the risk of cancer. Colors are stimulating the brain and that there are no colors in January can be one explanation for why we often feel so depressed during the first month of the year.

Open innovation

One concern that was expressed during the workshop was that we in the future will be even more dependent on our cellular phones to control the light and other functionalities. There are other possibilities to control the lighting, for example with our body language, but the information needs to be provided in the same way in different places, e.g. the same color need

to say the same thing in order to avoid confusion and safety risks. In order to create a functional system we need collaboration between for example behaviourists, psychologists and technicians. It is important to try demo environments and to make sure that the systems are working separately as well as together. Lighting designers at theatres have long experience with dynamic lighting. This knowledge can be useful now that dynamic lighting will be used in a wider perspective.

Until now, lighting has been viewed upon as something that lit up objects. With the new opportunities it's becoming obvious that light is a medium that mediate contact between human beings and the world around them. This shift of perspective can help us to figure out new ways to create interactive lighting, to get away from the thinking about luminaires. One barrier is that the change to LED in many cases requires a change of the whole luminaire, but in the future (with OLED) we will not need luminaires.

Drivers

In order to create a learning spiral around the new possibilities we need to create test beds where we can analyse the risks as well as create room to find new opportunities. As human beings we know that there is a difference in light and light and we need to learn how to put science aside in some questions and try different solutions based on our "inner knowledge". The new platform LightingForPeople provides a good opportunity for storytelling and the sharing of positive examples and learnings from different attempts.

Examples and stories

Some examples in Norway show that intensive lighting in areas around pedestrian crossings has increased the rate of accidents. Two probable reasons for this is that more light increases the drivers' sense of control and the strong light attracts the eyes and create glare.

BioOffice is one example of a company that is making use of co-branding. The new Norwegian public health act is providing a good basis to spread the importance of a healthy life style in media and the companies want to follow the good example and improve their image.

Conclusion

One main barrier for the uptake of SSL is that we do not know what we want. There is lack of tools to describe and dimension the light and a need for communication between the developers and the end users.

There is a need to identify the need; what it is that makes us feel safer. It seems to be a general belief that more light increases the safety, but this is not necessarily true. When light is used as a communication tool the information needs to be provided in the same way in different places, e.g. the same color need to say the same thing in order to avoid confusion and safety risks.

One upcoming opportunity is to use the lighting infrastructure for surveillance. We need to be prepared for this and be aware of the risks with a control society. If the system falls into the wrong hands we never know what might happen.

Stavanger Application workshop
2014.04.08

Lighting for health and well-being in institutions for elderly people

Application being considered:

The aim of the workshop was to clarify how Stavanger can make better use of SSL as a tool for enhancement of the health and well-being characteristics of the living conditions in elderly institutions.

The vision of Stavanger municipality is to catch opportunities and be pioneers in the utilization of new technological and societal possibilities. They are certain that light is important for our health and wellbeing and especially in a Nordic country where there is a lack of light several months of the year.

The character of the dialogue

There was a lot of positive engagement in the dialogue about the potential development value by deployment of the evolving ICT and developments in control system technologies and SSL.

The participants were self-propelled – the dialogue was very open, in all the three work groups and also the dialogue in the complete groups was active and open. Some participants were sometimes asking for more concrete guidance regarding what to do.

Barriers

One primary barrier for the uptake of SSL is that we do not know what we want. There is lack of tools to describe and dimension the light and a need for communication between the developers and the end users.

Dynamic lighting in the public space can be individually adapted, in order to use light as a communication tool it is important that we manage to create a coordinated system e.g. that the same color need to say the same thing in order to avoid confusion and safety risks. Individually adapted lighting will give information about the users in the space which is why it is important to consider ethical concerns.

Another barrier is the perception that it is expensive to invest in the new lighting technology. When the new lighting technology (LED) is marketed as light sources there is a high risk that they are seen as expensive in comparison to the old light sources.

One concern that creates confusion regarding what installations to make is that different investigations give different result. Some investigations say that more light in the public space decreases the criminality; some say that it makes it easier for the criminals to see their victim.

There are many elderly people living in Stavanger and lighting can help them to a more active life. But, more activity in the elderly care facilities tends to be viewed upon as a burden. We need to look upon community benefit e.g. that elderly people can stay longer at home and take care of themselves with the help of technical means, to avoid institutionalization and immobility.

Intelligent Green Business Opportunities

To create room for intelligent green business opportunities we need to shift the focus from energy savings to better solutions. Energy analyses can give information about the flow of energy in order to make sure that we get the right light, at the right place at the right time.

Lighting and electric companies are promoting more light. We need a strong spokesperson that can clarify how we can sell the interest in interchanging, dynamic light.

Health and wellbeing

Our visual system is created to detect differences and contrasts while the main discussion among lighting designers is referring to tables with lux levels and in some cases CRI. Colder color temperatures are becoming increasingly popular in offices and the importance of the ambience light for the alertness of the human being is highlighted.

Door light reduces the risk of falling for elderly people and green light makes it easier for Parkinson patients to speed up the steps. The International Agency for Research on Cancer (IARC) is going out with a warning that that electric light during night-time increases the risk of cancer. Colors are stimulating the brain and that there are no colors in January can be one explanation for why we often feel so depressed during the first month of the year.

Open innovation

One concern that was expressed during the workshop was that we in the future will be even more dependent on our cellular phones to control the lighting and other functionalities. There are other possibilities to control the lighting, for example with our body language but we must be careful in the design in order to create a system that will work well for everyone at all times. An easily used user interface is basic to provide equal possibilities for everyone. In order to create a functional system we need collaboration between for example behaviourists, psychologists and technicians.

It is important to try demo environments and to make sure that the systems are working separately as well as together. Lighting designers at theatres have long experience with dynamic lighting and this knowledge can be useful now that dynamic lighting will be used in a wider perspective.

Until now, lighting has been viewed upon as something that lit up objects. With the new opportunities it's becoming obvious that light is a medium that mediate contact between human beings and the world around them. This shift of perspective can help us to figure out new ways

to create interactive lighting, to get away from the thinking about luminaires. One barrier is that the change to LED in many cases requires a change of the whole luminaire, but in the future (with OLED) we will not need luminaires.

Drivers

In order to create a learning spiral around the new possibilities we need to create test beds where we can analyse the risks as well as create room to find new opportunities. As human beings we know that there is a difference in light and light and we need to figure out how to measure the new kind of lighting and also in some cases put science aside and try different solutions based on our "inner knowledge".

The new platform LightingForPeople provides a good opportunity for storytelling and the sharing of positive examples and learnings from different attempts.

Examples and stories

Stavanger has a large amount of elderly and the numbers continue to increase. This has inspired to a project where they try to create possibility for the older part of the population to stay longer at home. Lyse has one of the world's most extensive fibre network with almost unlimited data capacity where the fusions of the fibre network and the power gives Lyse opportunity to deliver smart home solutions. With Smartly Welfare, elderly or people in need of care can live longer and safer in their own home. Different types of sensors communicate wirelessly with each other, including direct contact with the fire department.

BioOffice is one positive example of a company that is making use of co-branding. The new Norwegian public health act is providing a good basis to spread the importance of a healthy life style in media. This means that many companies want to be seen as companies that think about their employees. All improve their image by working together for a healthier Norway.

Conclusion

One primary barrier for the uptake of SSL is that we do not know what we want. There is lack of tools to describe and dimension the light and a need for communication between the developers and the end users.

Stavanger has a large amount of elderly, the numbers continue to increase and lighting can help them to a more active life. But, more activity in the elderly care facilities tends to be viewed upon as a burden. Therefore we need to look the upon the community benefit e.g. that elderly people can stay longer at home and take care of themselves with the help of technical means, to avoid institutionalization and immobility. With Smartly Welfare, elderly or people in need of care can live longer and safer in their own home. Different types of sensors communicate wirelessly with each other, including direct contact with the fire department.

Malmö Application workshops 2014.04.03

SSL-erate

Välkommen till workshops om grön affärsutveckling för Solid State Lighting

Rätt ljus, vid rätt plats, vid rätt tillfälle

Malmö stad är med i EU-projektet "Accelerate SSL Innovation for Europe" (SSL-erate). Projektet handlar om att påskynda införandet av förbättrad SSL-teknik i Europa genom öppen innovation. Inom ramen för projektet ingår att skapa en innovationsplattform. De båda workshopsen är till för intressenter i företag och för samhällsaktörer samt medarbetare inom Malmö stad och är en del av de aktivteter som genomförs inom ramen för projektet.

Serviceförvaltningen och LU Open Innovation Center bjuder in till två workshops för att diskutera och undersöka möjlighterna att utveckla två tillämpningsområden för smarta belysningslösningar med hjälp av IKT-baserad SSL av intresse för Malmö stad.

Tema 1: Ökad säkerhet och trygghet på allmänna platser.
Tema 2: Skapa positiva värden för hälsa och välbefinnande i förskola och skola.

Programmet kommer att innehålla:

Dynamiska belysningslösningars möjligheter att öka hälsa och välbefinnande. Energibesparing genom smarta belysningslösningar. Grön affärsutveckling inom smart belysning för både ökat användarvärde och energibesparingar. Information om finansieringsmöjligheter.
Diskussion och undersökning av möjligheterna att utveckla de två tillämpningsområdena för smart belysning med hjälp av IKT-baserade SSL-lösningar.

När: Torsdagen den 3:e april 08.30-16.00
Tema 1 behandlas kl. 08.30-11.30 och tema 2 kl. 13.00-16.00.
Var: Glasklart, Dockplatsen 1, Malmö
Förmiddags- och eftermiddagsfika ingår.

Det finns möjlighet att delta på båda workshopsen. Välkommen med din anmälan! Glöm inte ange vilket/ vilka teman du vill medverka i till sofia.traneflykt@malmo.se senast fredagen den 21 mars.

För mer information, se nästa sida.

I samarbete med:

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SEVENTH FRAMEWORK PROGRAMME

LUND UNIVERSITY LU OPEN Open Innovation Center

INSIDE light

Malmö stad

SSL-erate

Accelerate SSL Innovation for Europe (SSL-erate)

För att illustrera varför förändringen i belysning är så viktig ur ett mänskligt perspektiv, är följande tankebana intressant att följa: Under de senaste hundra åren har vi vant oss vid statiska och något rödaktiga, svagt flimrande ljusmiljöer. Målet har varit fler lumen och samma ljus överallt, hela tiden. Det mänskliga synsinnet är emellertid anpassat för det varierande ljus som finns i naturen, där färgsammansättningen, proportionerna av direkt och indirekt ljus och intensiteten varierar ganska mycket. Vi vet att vi ibland vill ha funktionellt ljus och ibland vill vi ha mysbelysning, och även mörker. Vi vet att det glittrande ljuset från vatten i rörelse och i skogen känns bra. Många uppskattar ljusspelet vid soluppgång och solnedgång och vi uppskattar middagar i skenet från stearinljus. Den nya teknologin börjar göra den här sortens ljusmiljöer möjliga.

Ambitionen för projektets satsning på grön affärsutveckling är att snabba på spridningen av SSL, som har stor potential som verktyg för hållbar utveckling. Ett syfte för projektets satsning på "grön" hållbarhet är att gynna lösningar som har en större positiv social effekt, t.ex. genom att möjliggöra bättre livsmiljöer i förskolor, skolor och för äldre. Systemlösningar som ger rätt ljus på rätt plats vid rätt tid ger bäst livsmiljöer och samtidigt optimal energieffektivitet.

Workshopen beskriver det mänskliga värdet av de nya möjligheterna som LED ger och visar var det är möjligt att finna aktuell information. Vi tar utgångspunkt i två tillämpningsområden som är intressanta för Malmö stad och hoppas du vill delta i en öppen dialog om möjligheterna och utmaningarna med teknikskiftet till LED.

Grön affärsutveckling kan användas för att sluta gapet mellan användarnas behov och önskningar (som de själva kan vara omedvetna om) och den tekniska utvecklingspotentialen.

Det finns dock en betydande osäkerhet om vilken sorts ljusdynamik som vi bör ta sikte på och också om egenskaper och kvalitet för olika produkter och systemlösningar. De tidigare belysningsteknologierna var statiska, så de flesta finner det svårt att förstå betydelsen av fördelarna med de nya typerna av funktionalitet och ljusdynamik.

Det är uppenbart att belysningsprodukterna förändras mycket hastigt. De gamla produkterna har förbjudits och allt fler LED-lampor och smarta system kommer ut på marknaden. SSL-teknologi och IKT ger nästan obegränsad flexibilitet. Det är tydligt att det är möjligt att spara stora mängder energi. Dessutom kan produktlivslängden vara mycket lång. Om vi gör kloka investeringar i bättre ljus kan vi skapa positiva värden för miljöerna i Malmös förskolor och skolor samt för ökad säkerhet och trygghet på allmänna platser.

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Något om projektet Accelerate SSL Innovation for Europe (SSL-erate)

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Workshopen beskriver det mänskliga värdet av de nya möjligheterna som LED ger och visar var det är möjligt att finna aktuell information. Vi tar utgångspunkt i två tillämpningsområden som är intressanta för Malmö stad och hoppas du vill delta i en öppen dialog om möjligheterna och utmaningarna med teknikskiftet till LED.

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SSL-erate

Workshops om grön affärsutveckling för Solid State Lighting
Malmö 3 april 2014

Program

Tema 1: Ökad säkerhet och trygghet på allmänna platser.

8.30	Välkomna och introduktion Sofia Traneflykt, Service förvaltningen Malmö stad
8.50	Presentation: The framing for Green Business Development Jessika Luth Richter, IIIEE, Lunds universitet
9.10	Presentation: Grön affärsutveckling inom smart belysning kopplat till säkerhet och trygghet Professor Reine Karlsson, LU Open Innovation Center, Lunds Universitet
9.50	Gruppdiskussioner
11.15	Summering av förmiddagen
11.30	Lunch på egen hand

Tema 2: Skapa positiva värden för hälsa och välbefinnande i förskola och skola.

13.00	Välkomna och introduktion Sofia Traneflykt, Service förvaltningen Malmö stad
13.20	Presentation: Green Business and Sustainability Aspects Jessika Luth Richter, IIIEE, Lunds universitet
13.40	Presentation: Grön affärsutveckling inom smart belysning kopplat till hälsa och välbefinnande, Professor Reine Karlsson, LU Open Innovation Center, Lunds Universitet
14.20	Gruppdiskussioner
15.45	Summering av dagen

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Drivkrafter

- Vad kan man vinna med intelligenta belysningssystem?

Hinder och utmaningar

- Vad är det som gör att man inte sätter igång?
- Vad krävs för att komma igång?

Intelligenta gröna affärsmöjligheter

- Hur kan vi använda energisparpengar för att skapa bättre ljus?

Hälsa och välbefinnande

- Håller ni med om att naturljuset är mycket bättre än glödlampsljuset?

Öppen innovation

- Hur kan vi utveckla samarbetet i sydsverige?

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Kontaktuppgifter till personer att bjuda in till Malmö AW mars 2014

Namn	Organisation	Fokusområde	Mobil	Telefon arbete	Email	Hemsida
Application specific business actors (Reines Tips) för TEMA Hälsa och välbefinnande skolmiljö & TEMA Säkerhet och trygghet allmän plats						
Alexander Weiland	aaxsus	aaxsus arbetar med utveckling och försäljning av LED-produkter. Företaget är en importör och utvecklare av LED-ljuskällor och dess drivelektronik.	070- 8383662	0451-42040	alexander.weiland@aaxsus.se	http://aaxsus.se/
Ulf Kröner	Greinon Engineering AB	Greinon is an innovative company that develops intelligent engineering solutions with the mission to optimize the use of resources and provide environmentally friendly system. Our expertise comprises communication systems (focusing on wireless systems), network design and implementation, software and hardware development, and resource optimization.			ulf.korner@greinon.se	http://greinon.se/About%20Us.html
Magnus Rosberg	Grontmij				**Magnus.Rosberg@grontmij.com**	http://www.grontmij.se/Pages/default.aspx
Application specific business actors (Olle Strandbergs tips) för TEMA Hälsa och välbefinnande skolmiljö						
Marcus Paulsson	MPel AB	Elfirma. Tjänster inom: Belysning inne och ute – Ljussättning är nyckeln till lyckad miljö Privat: Ljussättning och ljusstyrning i hem och trädgård. Företag/offentlig miljö: Ljussättning på arbetsplatsen, skyltbelysning, fasadbelysning, nödbelysning. Säkerhet – En bra investering. Jordfelsbrytare, kameraövervakning via webben, larm, teleskydd, åskskydd, överspänningsskydd.	0708-76 55 66		info@mpel.se	http://www.mpel.se/?page_id=251
Hans Walltin (owner	Walltin Building control	Vi arbetar med både trådlös och trådbunden teknik från de ledande tillverkarna inom det spännande och expansiva området fastighetsautomation – Smarta Hus. Företaget har specialiserat sig inom KNX, radio och PLC-teknik. Vi levererar allt från konsultation, projektering och utbildning till programmering, driftsättning och leveranser av komponenter eller hela anläggningar. För oss är funktion och design centrala begrepp. En elanläggning skall så klart vara energisnål, fungera på ett enkelt och tillförlitligt sätt, men även vara väl designad! Låt oss hjälpa dig att få alla de funktioner som du behöver, belysning, kraft, datakommunikation, ljud och bild. Kontakta oss när ni behöver en leverantör som tar hand om hela ert projekt, i bostäder, skolor, kontor eller kommersiella fastigheter!	070-815 53 83		hans.walltin@walltin.se	http://www.walltin.se/
Johan Larsson	Specialelektronik	Erbjuder olika tjänster inom konsultation och systemdesign, Vi har lång erfarenhet av att projektera, utveckla och designa olika projekt. Hemautomation (intelligent belysningsstyrning), AV-teknik (ljud, blid, belysning arbetar ihop) och CATV/Fiber	070-693 77 17		johan.larsson@specialelektronik.se	
Application specific business actors (Olle Strandbergs tips) för TEMA Säkerhet och trygghet allmän plats						
Mathias fredriksson	Schneider Electric	Schneider Electric har ett starkt fokus på energieffektivisering och erbjuder integrerade lösningar inom automation, avbrottsfri kraft, eldistribution och elinstallation.	08-775 27 00		info.se@buildings.schneider-electric.com	
Aaxsus - (kolla Reines förslag)						
Application specific business actors för TEMA Säkerhet och trygghet allmän plats						
Rickard Sjöqvist	Midroc					
Jim Collin	ÅF Lighting					
Ulrika Hammargren	**IKANO**					
Katarina Hennig	**WSP Ljusdesigner**					
?	Securitas Säkerthetsföretag	Säkerhetsföretag. Utbud av tjänster av specialiserad bevakning, tekniska lösningar och konsult- och utredningstjänster	växel 010-470 10 00			
Application specific business actors för TEMA Hälsa och välbefinnande skolmiljö						
Jonas Kjellander	Sweco		019-16 81 46		jonas.kjellander@sweco.se	
Rickard Sjöqvist	Midroc	Energi, teknik och miljöansvarig	010-470 71 72		Rikard Sjöqvist	

Ulrika Hammargren	IKANO	Environmental Coordinator	+46 46 286 47 82		ulrika.hammargren@ikano.se
Katarina Hennig	**WSP Ljusdesigner**		010-722 63 61		katarina.hennig@wspgroup.se
Jim Collin	Manager ÅF Lighting		010-505 51 98		jim.collin@afconsult.com

Application specific societal actors för TEMA 1 Hälsa och välbefinnande skolmiljö

Peter Kirsch	Lund innovationsplattform	belsning skolor miljöinst lunds kommun projekledare lunds innivationsplatt där belysning ett arbetsområde framförallt skola	0733-949224	peter.kisch@lund.se
?	Pedagog/lärare			
Olle Strandberg	Malmö stad			
Lars Kristensson	Malmö stad			
Lars Holmström	Malmö, fysisk miljö			
Fredrik Sörling	Malmö stad, fysisk miljö			
Jonna Myrebris	Malmö stad Stadsfastigheter Malmö stad (avdelsnigschef skola) em			
Peter Werholt	Malmö stad, Byggprojektledare för Hyllievångsskolan			
Bodil Johansson	Malmö stad, miljöstrateg			

Application specific societal actors för TEMA 2 Säkerhet och trygghet allmän plats

?	**Polisen**	114 14	
Löfgren Ingeborg	Synskadades riksförbund		Ingeborg.Lofgren@skane.se
Olle Strandberg	Malmö stad, Utvecklingsdirektör		
Lars Kristensson	Malmö stad		
Peter Werholt	Malmö stad, byggprojektledare för Hyllievångsskolan		
Henrik Sjöstrand	Malmö stad, säkerhetssamordnare på Stadsfastigheter Malmö stad		
Bodil Johansson	Malmö stad, miljöstrateg		

SSL-erate cluser partners and associates TEMA 1 Hälsa och välbefinnande skolmiljö & TEMA 2 Säkerhet och trygghet allmän plats

Reine Karlsson	**Inside Light (LLI) Lund**		
Lene H. Hartmeyer	**Danish Lighting Innovation Network, DTU**	**0045-47 19 29 33**	**lhh@centerforlys.dk**
Anne ay	**Dansich Lighting Innovation Network, DTU**	**0045-47 19 29 31**	ab@centerforlys.dk

KPI contact making and intensive interactions with cities will be established
Lunds kommun Peter Kisch

Workshops organized together with the regional lighting cluster partner
Reine Karissson **Inside Light (LLI) Lund**

Lund Univeristy TEMA 1 Hälsa och välbefinnande skolmiljö & TEMA 2 Säkerhet och trygghet allmän plats

Maria Johansson	Docent, Miljöpsykologi Professor	046-2227169	Maria.Johansson@arkitektur.lth.se
Thorbjörn Laike	Docent, Fil Dr	046 222 70 78	Thorbjorn.Laike@arkitektur.lth.se
Reine Karlsson			reine.karlsson@luopen.lu.se
Håkan Laqerqusit			hakan.lagerquist@fek.lu.se
Boel Kjellsdotter			boel.kjellsdotter@luopen.lu.se
Jessika			jessika.luth_richter@iiiee.lu.se
Tove Karlsson			hek09tka@student.lu.se

Eventuellt också bjuda in följande

Pernilla Alfredsson	LightAB Hälsa			
Morgan Andersson	CTH & Göteborg Hälsa			
Catharina Flink	Aura Light	växel 08-564 881 40	catharina.flink@auralight.com	
Per Nylén	KTH, Ergonomi Hälsa	0706236942	per.nylen@sth.kth.se	
Håkan Sandin	SLU Hälsa	Telefon +46 40 41 50 54 Mobil +46 703 16 89 20	hakan.sandin@slu.se	http://tillvaxttradgard.slu.se/gem/default.aspx?p=83
Jörgen Thaung	GU, Oftamologi, Göteborg, MSc EE, PhD	tel. +46 31 786 2025	e-mail: jorgen.thaung@oft.gu.se	http://www.oft.gu.se/hp/staff/jorgen_thaung.html
Karin Wedin	SP Åldarande			

Green business application workshop City of Malmö, 3 April 2014

Deltagare	Organisation	tema 1	tema 2	
Alexander Weiland	aaxsus	X	X	alexander.weiland@aaxsus.se
Magnus Rosberg	Grontmij	X	X	Magnus.Rosberg@grontmij.com
Stina Wulff	Mpel AB	X		info@mpel.se
Johan Nantin	Specialelektronik	X	X	Johan.Nantin@specialelektronik.se
Peter Dahl	Specialelektronik	X	X	Peter.Dahl@specialelektronik.se
Rikard Sjöqvist	Midroc	X	X	rikard.sjoqvist@midroc.se
Peter Rosenqvist	ÅF	X	X	peter.rosenqvist@afconsult.com
Anders Hinn	Hoab		X	anders.hinn@hoab.com
Peter Kisch	Lund stad	X	X	peter.kisch@lund.se
Jonna Myrebris	Malmö stad/Sef/Sf		X	Jonna.Myrebris@malmo.se
Olle Strandberg	Malmö stad/Sef/Sf	X	X	Olle.Strandberg@malmo.se
Bodil Johansson	Malmö stad/Fysisk miljö	X	X	bodil.johansson@malmo.se
Marie Holmgren	Schneider		X	marie.holmberg@schneider-electric.com
Demba Sanyang	Malmö stad/Fysisk miljö	X	X	demba.sanyang@malmo.se
Lars Kristensson	Malmö stad/Sef/Sf	X	X	Lars.Kristensson@malmo.se
Lennart Andersson	Malmö stad/Sef/Sf	X	X	Lennart.Andersson@malmo.se
Katarina Hennig	WSP	X		katarina.hennig@wspgroup.se
Magnus Ekelund	Malmö stad/Sef	X		magnus.ekelund@malmo.se
Anto Tomic	Malmö stad	X		anto.tomic@malmo.se
Zeljko Pavlovic	Malmö stad	X		Zeljko.Pavlovic@malmo.se
Bogdan Tudosoiu	Mobile Heights	X		bogdan@mobileheights.org
Lene H. Hartmeyer	Danske lys	X	X	lhh@centerforlys.dk
Reine Karlsson	LU Open Innovation Center, Lunds univeristet	X	X	reine.karlsson@luopen.lu.se
Tove Karlsson	LU Open Innovation Center, Lunds univeristet	X	X	hek09tka@student.lu.se
Boel Kjellsdotter	LU Open Innovation Center, Lunds univeristet	X	X	boel.kjellsdotter@luopen.lu.se
Jessika Luth Richter	IIIEE, Lunds universitet	X	X	jessika.luth_richter@iiiee.lu.se
Florian Jacques	IIIEE, Lunds universitet	X	X	florian.jacqs@gmail.com
Sofia Traneflykt	Malmö stad/Sef	X	X	sofia.traneflykt@malmo.se

Green business application workshop City of Malmö, 3 April 2014

Deltagare	Organisation	Signature
Alexander Weiland	aaxsus	
Magnus Rosberg	Grontmij	
Stina Wulff	Mpel AB	
Johan Nantin	Specialelektronik	
Peter Dahl	Specialelektronik	
Rickard Sjöqvist	Midroc	
Peter Rosenqvist	ÅF	
Anders Hinn	Hoab	
Peter Kisch	Lund stad	
Jonna Myrebris	Malmö stad/Sef/Sf	
Olle Strandberg	Malmö stad/Sef/Sf	
Bodil Johansson	Malmö stad/Fysisk miljö	
Marie Holmgren	Schneider	
Demba Sanyang	Malmö stad/Fysisk miljö	
Lars Kristensson	Malmö stad/Sef/Sf	
Lennart Andersson	Malmö stad/Sef/Sf	
Katarina Hennig	WSP	
Magnus Ekelund	Malmö stad/Sef	
Anto TOMIC	Malmö stad	
Zeljko Pavlovic	Malmö stad	
Bogdan Tudosoiu	Mobile Heights	
Lene H. Hartmeyer	Danske lys	
Reine Karlsson	LU Open Innovation Center, Lunds univeristet	
Tove Karlsson	LU Open Innovation Center, Lunds univeristet	
Boel Kjellsdotter	LU Open Innovation Center, Lunds univeristet	
Jessika Luth Richter	IIIEE, Lunds universitet	
Florian Jacques	IIIEE, Lunds universitet	
Sofia Traneflykt	Malmö stad/Sef	

SSL-erate

Malmö Application workshop 2014.04.03

SSL for safety and security in public places

Application being considered:

The aim of the workshop was to clarify how Malmö can deploy SSL as a tool for improvement of the safety and security in public places. This is a main angle of the Malmö application case in the ENIGMA project for Heleneholmsskolan, www.enigma-project.eu/en/

Malmö is making considerable investments in Sustainable Development aiming to be a lead actor as a Smart City with Smart Buildings. Malmö is very interested in the radical developments of ICT for supervision and control in outdoor applications and building automation. Furthermore, Malmö has taken a strategic decision to only use open system solutions for all kinds of supervision and control systems.

The character of the dialogue

There was a lot of positive engagement in the dialogue about the potential development value by deployment of the evolving ICT and developments in control system technologies and SSL.

The participants were self-propelled – the dialogue was very open, in all the threes work groups and also the dialogue in the complete groups was active and open. Some participants were sometimes asking for more concrete guidance regarding what to do.

Barriers

One primary barrier in the uptake of SSL is that we do not know what we want. Every lighting solution needs to be adapted to each specific situation, which requires exchange between the developers and the users. The importance of easily accessible user interfaces cannot be stressed enough when the number of technical alternatives increases.

There is a general lack of knowledge about how to describe and procure the lighting, among those who handle the procurement. What is balanced light and how can it be described? There is a need to find a way to put measurement values on the soft experience values (subjective), even if it needs to be done indirectly. We do not know how costly the new installations will be and we do not know that until we are able to dimension it.

One suggestion to why we forget to think about what we really want from the solution is that it is a male dominated industry where the focus is on technology push. Another reason can be that we forget the importance of communication between different professionals. It is significant

that we develop the skill to order the new light solutions. There are many parameters, which we need to find a way to describe.

It is important that the early adoption of the new technologies is done in such a way that it finds appreciation in order to avoid dissatisfaction and resistance in a later stage of the process. A general opinion was that it is inefficient from resource point of view to make a switch that includes a replacement of not only the light sources themselves but also the luminaires and the surrounding structure. This creates a certain resistance to the new technology.

One obvious barrier is the economy; why are the public procurers buying the cheapest lighting solutions? It was suggested that it may be suitable to develop leasing contracts, as one possible way to get professional management of the challenges of the rapid technical developments. If the changes are too comprehensive the tenant will not be able to pay. We tend to think about the new lighting as independent of the solutions that are already there, but many of the changes are done in existing properties and systems.

Most people agree on that if we knew and could specify what we want to accomplish, it is easy to create a control system for the specified functionality, i.e. control system set point. A standardisation is needed in order to be able to connect different systems together in the total public network.

It is hard to find a suitable level on the control system. Some of the participants want to create a good lighting with a system as simple as possible. There is some disagreement on the suitable level of advancement for the control systems. KNX is one example of a control system that is described as very advanced by the sellers while the users (the participants in the workshop) find it more limited.

Regarding the science investigations there is some mistrust in the reliability; especially investigations regarding improvements in test results. It is almost impossible to prove which specific arrangement that is responsible for a certain improvement. It is easier to prove a raise in the level of concentration.

Regulations are good but they can be a barrier when one changes the way to work. The legislation is not adapted to the new lighting. The lux levels that need to be fulfilled can be one reason that the clients choose the old way because they then know that they have fulfilled the requirements. It is not easy to find a lighting solution that fulfils all the requirements and is flexible. We need to put in more time in the projection; the area of lighting is the most neglected one.

Intelligent Green Business Opportunities

To create room for intelligent green business opportunities we need to shift the focus from energy savings to better solutions. One main aspect is to provide the right light, at the right place at the right time. Intelligent supervision and control systems also provide a greater

potential for synergies with the infrastructure systems for other societal functions that are related to safety.

There is a huge need for reference facilities and to develop demonstrations, and to clarify how intelligent deployment of SSL can raise the number of green jobs.

Sometimes we make it too complicated to get something done. We need to start with the basics to get going with the new. There is a need for a clear vision.

Health and wellbeing

Safety is not only related to lighting. In public areas we need areas with a suitable amount of people for people to be able to feel safe. Control systems can be used to keep track of the movement of people in different parts of the city that can also be used to create suitable meeting places and also to keep track of if something is happening (an accident, an assault etc.). In Malmö city there are examples that the right light can be used to reduce vandalism. Sometimes there is a lack of light in the public space but it is important to remember that more light is not always equivalent to a higher amount of safety.

It is not easy to know which values that are good to measure in connection to the new lighting technology. Some examples are heart frequency, cortisol and component of blue light. It is important not to forget the soft values that are related to health. But in order to be able to measure the soft values we need to find the hard parameters, which correlate with the soft values.

Open innovation

It is important that we show the possible advantages that can be accomplished by intelligent system solutions. It is vital to make demo and test installations as well as to create more illustrative examples.

It is considerable to improve the value chain collaboration. Furthermore there are great opportunities for synergy between different infrastructural systems. To be able to work with this in a renewal oriented way there is a need for open innovation oriented collaboration.

Drivers

It is important that the tax payers receive a better knowledge about the new light because they have a big influence on the realisation of the new light solutions. In order to attract the bigger mass it is important to develop our ability to describe and measure the soft values. A property owner needs to develop leasing contracts and when there are changes it will cost. Many times the tax payer does not have the money to get there. When the school vouchers and the tax money are not enough there will be no changes which make it a political question. We like to believe that it is the big mass that makes the right decisions but this is not necessarily true.

Examples and stories

One example is schoolgirls that do not feel safe outside sport halls and similar places. A lot can be done with lighting to improve the situation.

One interesting example is that school children have suggested that there should be light when someone is using the bathroom in order to make sure that no one is pulling the handle, which is stressful for the person using the bathroom. It is a simple but important solution.

The effect of blue lighting on teenagers can be harmful. When they get a message and pick up the phone during the night they are exposed to the light, which is activating and prevents them from falling asleep again.

Conclusion

One primary barrier fort he uptake of SSL is that we do not know what we want. There is lack of tools to describe and dimension the light and a need for communication between the developers and the end users. Intelligent supervision and control systems provide a great potential for synergies with the infrastructure systems for societal functions that are related to safety.

SSL-erate

Malmö Application workshop 2014.04.03

Lighting for health and well-being in preschools and schools

Application being considered:

The aim of the workshop was to clarify how Malmö can make better use of SSL as a tool for enhancement of the health and well-being characteristics of the living and working conditions in the preschools and schools.

Malmö is a multicultural city and is making considerable investments to enhance the value of this diversity and to handle the related challenges. It is a main priority to improve educational results in the schools in Malmö. One part is that Malmö has taken a strategic decision to improve the lighting in the schools and to make the deployment of SSL by means of open system solutions for all kinds of supervision and control systems.

The character of the dialogue

There was a lot of positive engagement in the health and wellbeing value of better lighting. The only direct school representative used to be head master for the school of Rosengard. She was very engaged in the dialogue, but still most of the dialogue about the potential health and wellbeing value was rather generic.

There was a fair bit of interest in the potential development value by deployment of the evolving ICT and developments in control system technologies and SSL.

The participants were self-propelled – the dialogue was very open, in all the three work groups and also the dialogue in the complete group was active and open. Some participants were sometimes asking for more concrete guidance regarding what to do.

Barriers

One primary barrier in the uptake of SSL is that we do not know what we want. Every lighting solution needs to be adapted to each specific situation, which requires exchange between the developers and the users. There is a lack of communication between the end users and the developers of the user interface. The importance of readily useable user interfaces cannot be stressed enough when the technical freedom of action and flexibility increases. To create a simple user interface there is a need deep knowledge.

It is hard for the user, e.g. the teacher or the doctor, to take time to familiarize themselves with the new opportunities on top of the work tasks that they already have. A united organisation is needed to operate and show the way for the municipalities deployment of SSL.

It is important to educate and train both the actors that are procuring and installing the lighting and the users. When we build more advanced systems, we need to learn how to handle and make use of them. To become appreciated it is important to make the new lighting system is as easy as possible to use. The focus on the technological part might be too strong. We need to focus on the experience in order to be able to make the new technology attractive.

There is a lack of tools to describe and dimension the wanted light. What is the right balanced, user adapted light and how can it be described? There are many parameters, which we need to find a way to describe. It is important to enable smooth communication between different professionals.

It is vital that the early adoption of the new technologies is done in such a way that it finds appreciation in order to avoid dissatisfaction and resistance in a later stage of the process. There is a great need for clear lighting priorities, otherwise nothing significant will happen. In this sense the question of the new lighting is a political issue. It is a question of who will pay. And even more, why should we pay more for the new lighting?

The incandescent light bulb is generally presented as the best alternative and the goal not only for all fluorescent lighting but also for the coming SSL technology. In order to really invest in SSL we need to shift the focus from energy savings to the new possibilities to get the right light in the right place at the right time. We also need to put the conversation about the risks a bit aside so that so that they do not become too limiting.

In order for the users (e.g. the teacher, the doctor etc.) to be involved in the decisions regarding the lighting installations their knowledge needs to be improved. As it is now most of those people have limited interest in better lighting, because they lack the knowledge about how important it is. Their involvement is central because they have place and user specific knowledge and they also need to be able to handle the user interfaces. One key for those users is to see the light as a tool to improve for example the education.

Regarding the scientific dimension there is some mistrust in the actual added value of the lighting that the presented technology enables; especially investigations regarding improvements in pedagogic results. It is almost impossible to prove which specific arrangement that crate a certain improvement of the pedagogical result. The general opinion in the meeting was that it is easier to show that the lighting stimulates a raise in the level of concentration.

Regulations are good, but they risk becoming a barrier when we ought to change our way of working. The legislation is not adapted to the new lighting. The lux levels that need to be fulfilled can be one reason that the clients choose the old way because they then know that they have fulfilled the requirements. There tend to be a conflict of interest between the old requirements and flexibility and user values that SSL enable.

We need to put in more time in the design and projection; the area of lighting is the most neglected part of the building process.

Intelligent Green Business Opportunities

To create room for intelligent green business opportunities we need to shift the focus from energy savings to better solutions. The right light, at the right place at the right time is central. The solution needs to be optimal both for the people and the environment. The simplicity in the design of the user interface is important.

There is a huge need for reference facilities and to develop demonstrations, and to clarify how intelligent deployment of SSL can raise the number of green jobs.

Sometimes we make it too complicated to get something done. We need to start with the basics to get going with the new. There is a need for a clear vision.

Health and wellbeing

The general belief is that it is possible for us to feel a lot better if we invest in a better light environment. One proposal is to let the scientists prove this and more specifically what a better light environment is. It is important to find and develop reference facilities with good user values and possibility to make measurements in order to get started. It is not easy to know which values that are good to measure in connection to the new lighting technology. Some examples are heart frequency, cortisol and component of blue light. It is important not to forget the soft values that are related to health. But in order to be able to measure the soft values we need to find the hard parameters, which correlate with the soft values.

One good example of a light related arrangement is from Lunds hospital where they have forbidden fluorescent lighting in the evening and invested in spotlights. The sick leave has decreased and the staffs feel better.

One concrete aspect regarding lighting in schools is that the existing lighting situation is adapted to the old work situation with paper and pen whilst the current situation is more dealing with screens. Glare and reflections in the screens has become a common but unwanted scenario. In the classrooms of today it is hard for the children to find their own space. Many children need their own space and the new lighting technology provides a possibility to create smaller rooms in the big room. But the school culture is rock-hard and not easy to change.

In the 1960:s John Ott described the impact of light as similar to the impact from food – something that can make us sick, or more healthy depending on how we use it. This might be a useful description when speaking to the public and especially for teachers in schools. The effect of the light can be described in similar terms as the food that we get in our schools. This description can also be useful when speaking to the parents. It is important to enable the teachers see the light as a tool for the education.

One potential use of the new possibility to choose wavelengths is to use it to grow vegetables in containers in wintertime. In this way it is possible to provide organic salad in winter-time which is hard to get a hold of otherwise.

In the perspective of health and wellbeing indoor lighting is important.

Open innovation

In order to be able to provide user adapted solutions that people are interested in, it is important that we work with mixed groups with technicians as well as teachers and doctors. One suggestion during the workshop was to get a better articulation and integration of soft value consideration by involving more women in the dialogue.

It is important that we show the possible advantages that can be accomplished for health and wellbeing with the new lighting. In this respect it is important to make demo installations as well as to create more illustrative examples.

Drivers

Today there are advanced 3d tools to visualise what a building will look like and maybe they can be used as a communication tool. Visualisations make it easier for people to understand each other and to speak the same language. When the computer game world will enter the CAD-world a lot will happen.

Examples and stories

In some of the auditoriums at Lund university a possibility to use different lighting scenes has been provided: One for video, one for cleaning etc. But this does not work. The people who use the facilities cannot handle the user interface and therefore a pushbutton for full lighting has been provided. This illustrates how important it is to formulate the user interface in a pedagogic way.

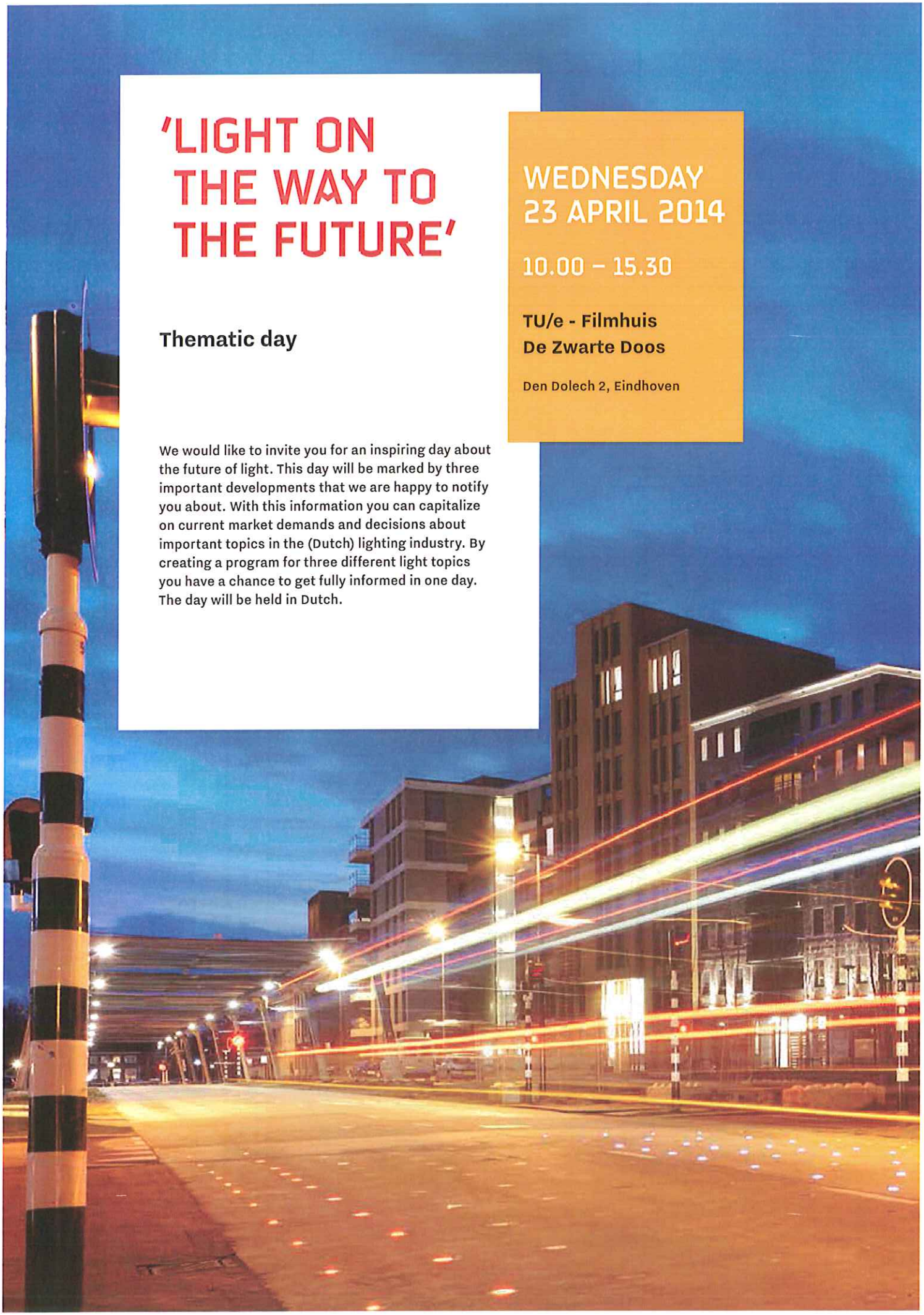
One interesting example is that school children have suggested that there should be light when someone is using the bathroom in order to make sure that no one is pulling the handle, which is stressful for the person using the bathroom. It is a simple but important solution.

The effect of blue lighting on teenagers can be harmful. When they get a message and pick up the phone during the night they are exposed to the light which is activating and prevents them from falling asleep again.

Conclusion

One primary barrier fort he uptake of SSL is that we do not know what we want. There is lack of tools to describe and dimension the light and a need for communication between the developers and the end users. In order to find solutions that improve our helath and well being we need to find a way to put measurement values on the soft (subjective) experience values.

Eindhoven Application Workshop 2014.04.23



'LIGHT ON THE WAY TO THE FUTURE'

Thematic day

We would like to invite you for an inspiring day about the future of light. This day will be marked by three important developments that we are happy to notify you about. With this information you can capitalize on current market demands and decisions about important topics in the (Dutch) lighting industry. By creating a program for three different light topics you have a chance to get fully informed in one day. The day will be held in Dutch.

WEDNESDAY 23 APRIL 2014

10.00 – 15.30

TU/e - Filmhuis De Zwarte Doos

Den Dolech 2, Eindhoven

ROADMAP LIGHTING

First, there is an update of the roadmap Lighting, part of the Dutch Topsector High- Tech Systems and Materials. In 2014, an update of this roadmap is foreseen in which you can influence the research and development priorities. You can help make choices that will make the lighting industry stakeholders better prepared for the future.

For more information:
www.htsm.nl/Roadmaps/Lighting

MARKET CONSULTATION EUROPEAN PROJECT ENIGMA

Eindhoven municipal council uses the meeting on this day for the consultation of the European market on the light project ENIGMA. This market consultation precedes the tender later this year. In ENIGMA, five European cities supported by knowledge provides aim to implement an innovative, smart ICT-based lighting project.

Eindhoven uses the area between TU/e and Strijp-S as a pilot area for this light project. The ambition is to create a lighting solution that contributes to a more enjoyable, better accessible public space for this complex, urban area. The project encourages research and development, by asking for designs that give substance to this ambition. During the market consultation Eindhoven will give more information about the background of this development challenge, the method of procurement (PCP) and tell you how you can make your interest known.

For more information:
www.enigma-project.eu

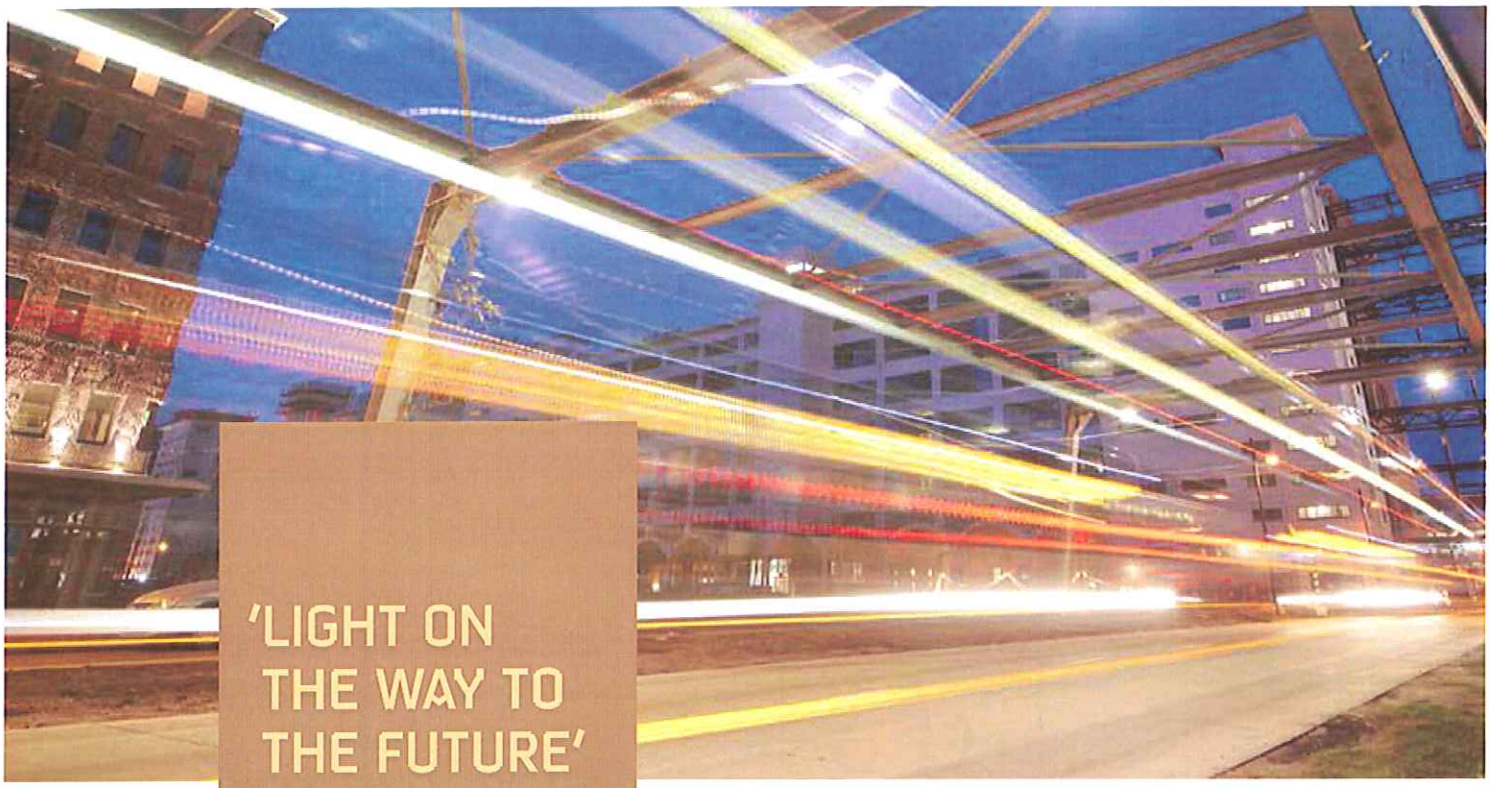
SSL-ERATE PROJECT

As final part of the day there is a session on how these open innovation projects, like Eindhoven municipal council is starting, could be of benefit for the supply chain and industry. Specifically, as open innovation projects aim to accelerate the innovation potential of all players in the lighting value chain. Through various business experiments procurers, supply chain partners and public parties work together to come to a development that is for an individual party difficult to create.

This form of cooperation can go beyond outdoor lighting, i.e. light for 'health & well-being ' in offices or schools. This topics are part of the SSL-erate project, which is aimed at the acceleration of development and application of Solid State Lighting (SSL), to accelerate open innovation and facilitating collaboration across the value chain in the lighting industry. Also, the communication and innovation channel, Lighting For People is announced. This information platform contains validated information on aspects of SSL that is now publicly available.

For more information: www.ssl-erate.eu and www.lightingforpeople.eu

This day is promising to be interesting for anyone with an interest in the light of the future.



'LIGHT ON THE WAY TO THE FUTURE'

SHORT PROGRAM:

1. Roadmap Lighting – 'Speak out!'
10.00 - 10.30
- Nils Erkamp (TNO, top team member Lighting)

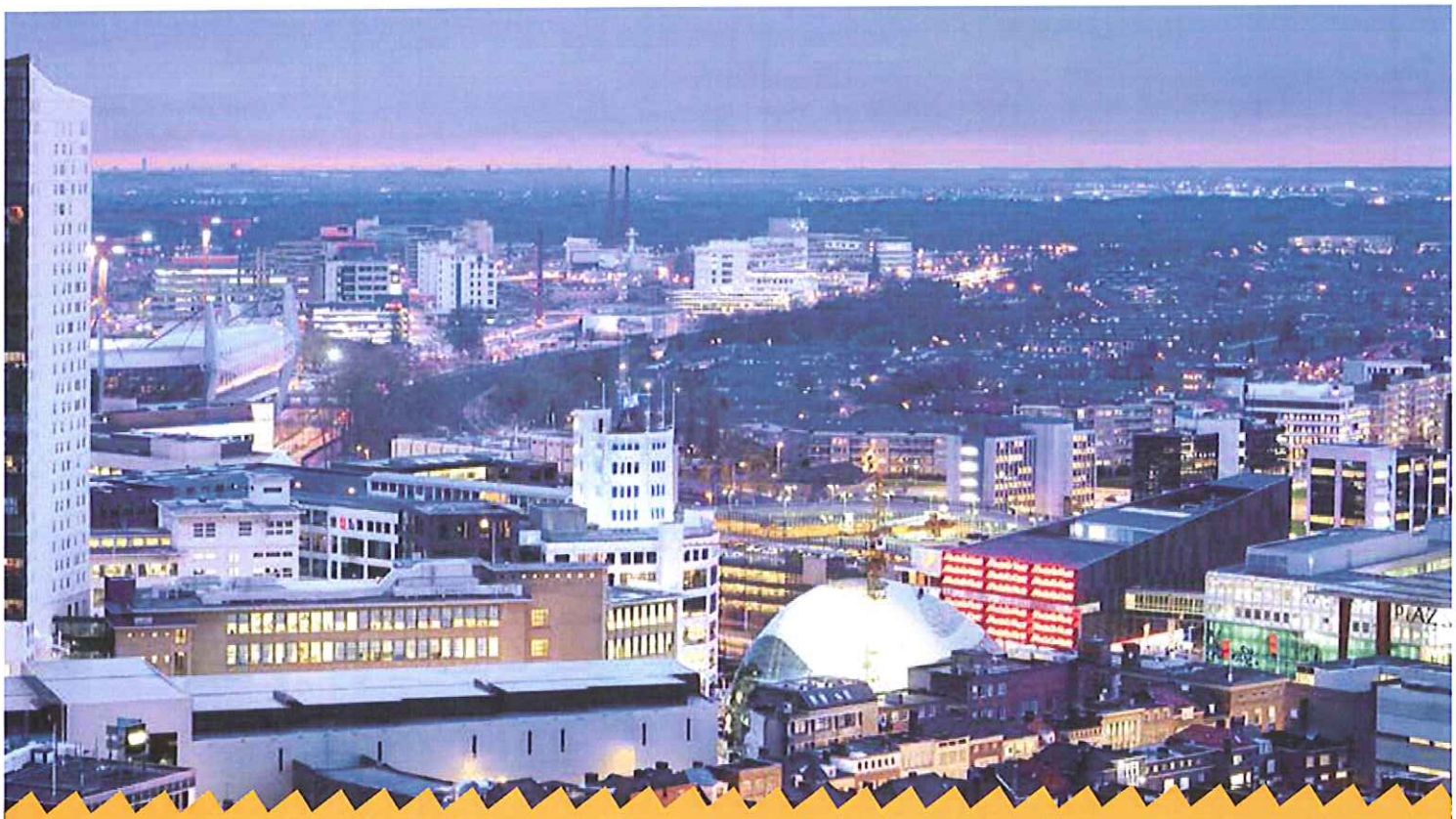
2. Market consultation European project ENIGMA – 'Eindhoven challenges you!'
10:30 - 12:00
- Mary-Ann Schreurs (alderman for Innovation, Design, Culture and Public Space): Information about the challenge and ambitions of the municipality of Eindhoven
- Joram Nauta (TNO): Specific development challenge to the industry; beyond state-of-the-art

Lunch
12:00 - 13:00

Continued: market consultation European project ENIGMA
13:00 - 14:00
- Jaap Strating (municipality of Eindhoven): What does the tender look like?

3. SSL-erate – 'Open Innovation & Business Experiments'
14:00 - 15:30
- Nils Erkamp (TNO): Introduction SSL-erate project & platform Lighting For People
- Joyce Zwartkruis (TNO): Open Innovation
- Karin Smolders (University of Groningen): Lighting for health & well-being
- Arthur Noordhoek (municipality of Eindhoven): Cities and Green Business Development for SSL

Afterwards there is an opportunity to discuss, or you can attend the subsequent meeting of LEDtalks.
For more information: www.ledtalks.nl



How to attend

Attending is easy and free of charge. Please write an e-mail to: toekomstlicht@tno.nl
Please state in your mail whether you attend all day, or parts of the day (and which parts).
If you would like to attend with more than one person, please send us their names as well.

Be aware that the full day is in Dutch.

Venue

TU/e - Filmhuis De Zwarte Doos
Den Dolech 2, Eindhoven
Go to www.dezwartedoos.nl for the itinerary

This day is sponsored by:

SEVENTH FRAMEWORK PROGRAMME

TNO innovation for life

EINDHOVEN

ATTENDANCE LIST MEETING "LIGHT ON THE WAY TO THE FUTURE", APRIL 23rd, 2014
PRESENTIELIJST BIJEENKOMST "LICHT OP WEG NAAR DE TOEKOMST" D.D. 23 APRIL 2014

Name	Organisation	Present	Type of organisation
B. van der Linden	A. Hak Zuid B.V.	yes	contractors
W. Oijen	Anteagroup	no	
R. Koopman	Attiva Lichtprojecten	yes	architects/designers/consultants
R. Geurts	Bxseven Engineering	yes	architects/designers/consultants
R. Bloemers	Bxseven Engineering	yes	architects/designers/consultants
C. Rietbergen	Caronlightdesign	yes	architects/designers/consultants
J.A. Markus	CityTec BV	yes	contractors
M. Grotenhuis	Concepting Nu	yes	architects/designers/consultants
T. Elissen	ENIGMA	yes	city authorities
M. van Dommelen	ENIGMA	yes	city authorities
R. Toma	Entropia Digital NV	no	
I. Kaal	Gemeente Eindhoven	yes	city authorities
J. Strating	Gemeente Eindhoven	yes	city authorities
G. Henselmans	Gemeente Eindhoven	yes	city authorities
M.A. Schreurs	Gemeente Eindhoven	yes	city authorities
A. van Goch	Gemeente Zundert	no	
R. de Leeuw	Grontmij Nederland BV	no	
S. Wilgers	Haskoning/DHV Nederland	yes	architects/designers/consultants
S.E. Stuifzand	Heijmans Wegen	yes	contractors
B. Coppelmans	Heijmans Wegen	yes	contractors
E. de Vries	HET LUX LAB	yes	architects/designers/consultants
T. Ickenroth	Infra Engineering	yes	architects/designers/consultants
R. Oskam	Infra Engineering	yes	architects/designers/consultants
T. Vermeulen	Infra-Lux	yes	architects/designers/consultants
M. van Noort	Infra-Lux	yes	architects/designers/consultants
R. Kruizinga	ipv Delft Creatieve Ingenieurs	yes	architects/designers/consultants
M. Louman	JR Advies	yes	architects/designers/consultants
K. de Louw	Kaal Masten bv	yes	manufacturers
J. Smook	Kaal Masten bv	yes	manufacturers
C. Westerbaan van der Meij	Kamer van Koophandel	yes	regional authorities
R. van de Pas	Kamer van Koophandel	yes	regional authorities
D. Sturm	Lichtkunst	no	
R. van Stiphout	Light & Culture City of Eindhoven	yes	city authorities
R. Valkenburg	Lighthouse	yes	research
M. Hermans	Lightonics B.V.	yes	manufacturers
H. van Kempen	LOS Stadomland	no	
R. Driessen	OSRAM Benelux B.V.	yes	manufacturers
H. van Diem	Philips Lighting	no	
J. Rögels	Philips Lighting	yes	manufacturers
H. de Boer	Philips Lighting Benelux	yes	manufacturers
R. Alferdink	PicusLED	yes	architects/designers/consultants
K. Heijs	Roadled	yes	manufacturers
K. Roelofsen	Schréder	yes	manufacturers
T. Maanen	Schréder	yes	manufacturers
B. van de Bunt	Spectrum Advies & Design	yes	architects/designers/consultants
M. Louman	Stedelijke en Regionale Ontwikkeling		
T. Dreven	System Development & Industrialized Products	yes	manufacturers
O. Boiten	System Development & Industrialized Products	yes	manufacturers
W. Prinssen	Technolution	yes	manufacturers
J. Nauta	TNO	yes	research
H. van Meerveld	TNO	yes	research
N. Erkamp	TNO	yes	research
J. Zwartkruis	TNO	yes	research
P. Bosmans	TRILUX BENELUX	yes	manufacturers
W. Dammers	TRILUX BENELUX	yes	manufacturers
J. Bergh	Valmont Nederland B.V.	yes	manufacturers
C. Waitzman	Valmont Nederland B.V.	yes	manufacturers
A. van Wijngaarden	WSP Volker Wessels	yes	contractors
P. van Kempen		yes	architects/designers/consultants
F. Jacques		yes	research
T. Mackaay	Alexpo	yes	architects/designers/consultants

ATTENDANCE LIST MEETING "LIGHT ON THE WAY TO THE FUTURE", APRIL 23rd, 2014
PRESENTIELIJST BIJEENKOMST "LICHT OP WEG NAAR DE TOEKOMST" D.D. 23 APRIL 2014

Name	Organisation	Present	Type of organisation
J. Kip	Gemeente Eindhoven	yes	city authorities
B. Smets	Philips Lighting	yes	manufacturers
Ruben Prins	RVO	yes	regional authorities
Rob Merzen	LEDNED	yes	manufacturers
Elke den Ouden	TU/e ILI	yes	research
Mary-Ann Schreurs	Gemeente Eindhoven	yes	city authorities
Anne Schietekat	TU/e HTI	yes	research
Indre Kalinauskaite	TU/e HTI	yes	research
Alex Rosemann	TU/e Building lighting	yes	research
Ran Haase	Gemeente Eindhoven	yes	city authorities
Anastase Shyirambere	Connection Partner	yes	architects/designers/consultants
Hr. Smits	Triafaire	yes	architects/designers/consultants

Summary	19	architects/designers/consultants
	10	city authorities
	5	contractors
	18	manufacturers
	3	regional authorities
	10	research
	65	**total**

PRESENTIELIJST BIJEENKOMST "LICHT OP WEG NAAR DE TOEKOMST"D.D. 23 APRIL 2014

Naam	Organisatie	Handtekening
B. van der Linden	A. Hak Zuid B.V.	
W. Oijen	Anteagroup	afwezig.
R. Koopman	Attiva Lichtprojecten	
R. Geurts	Bxseven Engineering	
R. Bloemers	Bxseven Engineering	
C. Rietbergen	Caronlightdesign	
J.A. Markus	CityTec BV	afgemeld.
M. Grotenhuis	Concepting Nu	
T. Elissen	ENIGMA	
M. van Dommelen	ENIGMA	
R. Toma	Entropia Digital NV	afwezig.
I. Kaal	Gemeente Eindhoven	
J. Strating	Gemeente Eindhoven	aanwezig
J. Josten	Gemeente Eindhoven	
A. Noordhoek	Gemeente Eindhoven	aanwezig.
G. Henselmans	Gemeente Eindhoven	Henselmans
M.A. Schreurs	Gemeente Eindhoven	
A. van Goch	Gemeente Zundert	afwezig

PRESENTIELIJST BIJEENKOMST "LICHT OP WEG NAAR DE TOEKOMST"D.D. 23 APRIL 2014

R. de Leeuw	Grontmij Nederland BV	afgemeld - wil graag info ontvanger
S. Wilgers	HaskoningDHV Nederland B.V.	
S.E. Stuifzand	Heijmans Wegen	
B. Coppelmans	Heijmans Wegen	
E. de Vries	HET LUX LAB	
T. Ickenroth	Infra Engineering B.V.	
R. Oskam	Infra-Engineering	
T. Vermeulen	Infra-Lux	
M. van Noort	Infra-Lux	
M. van Noort	Infra-lux	
R. Kruizinga	ipv Delft Creatieve Ingenieurs	
M. Louman	JR Advies	aanwezig
K. de Louw	Kaal Masten bv	
J. Smook	Kaal Masten bv	
C. Westerbaan van der Meij	Kamer van Koophandel	aanwezig.
R. van de Pas	Kamer van Koophandel	aanwezig.
D. Sturm	Lichtkunst	afwezig.
R. van Stiphout	Light & Culture City of Eindhoven	
R. Valkenburg	Lighthouse	

PRESENTIELIJST BIJEENKOMST "LICHT OP WEG NAAR DE TOEKOMST"D.D. 23 APRIL 2014

M. Hermans	Lightronics B.V.	
H. van Kempen	LOS Stadomland	afwezig.
R. Driessen	OSRAM Benelux B.V.	
H. van Diem	Philips Lighting	afwezig.
J. Rögels	Philips Lighting	
H. de Boer	Philips Lighting Benelux	
R. Alferink	PicusLED	
K. Heijs	Roadled	
K. Roelofsen	Schréder	
T. Maanen	Schréder	
B. van de Bunt	Spectrum Advies @ Designs	
M. Louman	Stedelijke en Regionale Ontwikkeling	
T. Dreven	System Development & Industrialized Products	aanwezig.
O. Boiten	System Development & Industrialized Products	
W. Prinssen	Technolution	
J. Nauta	TNO	
H. van Meerveld	TNO	
N. Erkamp	TNO	
J. Zwartkruis	TNO	aanwezig.

PRESENTIELIJST BIJEENKOMST "LICHT OP WEG NAAR DE TOEKOMST"D.D. 23 APRIL 2014

P. Bosmans	TRILUX BENELUX	
W. Dammers	TRILUX BENELUX	
J. Bergh	Valmont Nederland B.V.	
C. Waitzman	Valmont Nederland B.V.	
A. van Wijngaarden	WSP Volker Wessels	
P. van Kempen		
F. Jacques		
T. Mackaay	Alexpo	
J. Kip	Gem Eindhoven	
B Smets	Philips Lighting	Bruno Smets
Ruben Prins	RVO.nl	
Ruben Mevissen	LEDNED	
Elke den Ouden	TU/e IA	
Wim. Ann Schrama	Gemeente EHV	
Arne Schiebaat	TU/e HTI	
Indri Kalinowski	TU/e HTI	
Alex Rosemann	TU/e building lighting	
RAN HAASE	GEM EHV	

Anastasse Shyjrambere Connection Partner

Mr. Smits Tkifaire

SSL for enhancement of safety and wellbeing in cities

Application being considered:

The aim of the workshop was to clarify how cities could benefit from SSL solutions for better public outdoor lighting.

The character of the dialogue:

In contrast with other regions in Europe there are no business clusters known in the Netherlands. Therefore participants were invited via dissemination of an invitation and brochure on the site of the Inter-municipal platform for public lighting IGOV (with 140 local authorities members and 16 regional authorities members) and the IGOV Innovation Platform, in which representatives of cities and companies are stimulating and initiating innovative developments for public lighting, both in technical and policy or regulatory sense. Furthermore the invitation and brochure were disseminated among visitors of some national professional meetings and fairs and Light & Building 2014. In total about 290 stakeholders were reached. The workshop was clustered with presentations of WP3 en WP4, the Dutch Topsector High-Tech Systems and Materials and a Market Consultation for the ENIGMA-project (Framework Program).

The 65 participants represented cities authorities (10), architects/designers/consultants (19), contractors (5), regional authorities (3), manufacturers (18) and research organisations (10)

Although the dialogue about the potential for safe and secure lighting was rather generic, the participants were very engaged and really saw the combination of SSL with ICT as a necessity for the development of the SSL sector. The participants didn't seem to have any problem regarding what they were asked to do and didn't need much guidance.
A voting wall was installed during the afternoon session to rank, in order of importance, the various business opportunities, and barriers to the uptake of SSL and the identification of the key stakeholders.

Intelligent Green Business Opportunities:

What intelligent green business opportunities are there related to this particular application? How can SSL present sustainable value for investment in this application field? Do you know any good/bad examples of this?

Rating of opportunities	
Attractiveness area results to higher value	25
Improving reachability and accessibility	25
Hotspots (Apps development)	15
More activity	2
Adapting light at external conditions (weather, traffic, flora/fauna)	31
Guiding of visitors	17
Indicating alternative routes/traffic flows	15
Adapting private and public lighting	6
Services based on data	33
Making visible that something has happened	20
Supporting emergency services	6
Use of social media	4

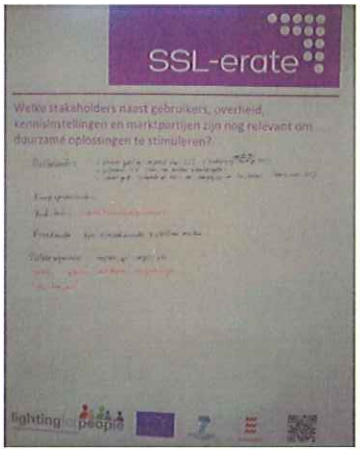
There were many green business opportunities that were named during the dialogues related to outdoor public lighting. The first one was to build smart systems with new services based on data in which lighting points operates as hot spots. For example, streetlights would not only be home to the dynamic lighting system but also to other functionalities, such as traffic lights, sensors, weather station, Wi-Fi terminals and so on. In this way the lighting grid will evaluate to a grid for other services, light-related as well as non-light related, and will be step towards a smart-cities infrastructure. Another business opportunity that was met with a lot of enthusiasm is to improve accessibility, e.g. to create an interactive tourist circuit around the city of Eindhoven. With this tourist would not miss out on all the attractions and historical buildings the city hosts.

Other business opportunities that were identified were the possibility take advantage of the advertising that could be done around SSL, namely by providing services thanks to the data retrieved from the various smart systems and to increase the appeal of the lighting sector with the purpose of activating the added value from the customer point of view.

Open Innovation:

How can open innovation help in this application field? Do you know any good/bad examples of this?
Open Innovation between businesses always starts with a first feeling of reluctance; sharing knowledge with the fear of giving business ideas to competitors. But once the ice has been broken, there is a large potential that could be taken out of open innovation. One of the ideas was co-creating; creating a product/service in collaboration with other companies and stakeholders. In the D2.2 report co-branding is mentioned, which could be seen as one example of co-creating.
With, in mind, all the benefits that open innovation can bring, there was a request to build a knowledge platform with the purpose of sharing ideas, experience and knowledge between all stakeholders in the field of SSL.
Lastly, entrepreneurship was seen as a potential driving force in the field of SSL.

Drivers:



Who are the relevant actors and how can they be motivated to take advantage of green business opportunities? Do you know any good/bad examples of this?
In the case of public outdoor lighting solutions, besides the main stakeholders (user, supplier, manufacturer...) other key stakeholders were identified. Many people agreed on the fact that owners of energy-grids are important stakeholders to take

into account, since SSL will play an increasingly important role in their business.
Next to that it was also highlighted that nature conservation organizations (i.e. WWF, Greenpeace) should be involved in the implementation process of dynamic lighting solutions.
Finally, because of the potential benefits it could have from a safety and security perspective, police and emergency services should be involved in the process. Being involved with these latter stakeholders will enable the outdoor lighting application to be user adapted to the fullest extent for it would draw on the police and emergency services possibilities and knowledge.

Other stakeholders, besides users, government, research organisations and industry, relevant to stimulate sustainable solutions?
b Objective translaters/interpretors (a kind of communication specialists) to generate solutions that really add value (user-society) -> independent producer to control open platform (customization, because each environment/city is different)
b Owners of (electricity)grids (power quality, impact van SSL on actual grids)
b Producers of energy;
b Architects and urban planners
b Emergency services (e.g. visualisation of emergency routes)
b Police: reducing of burglaries and crimes
b Citizens

Barriers:

What barriers to uptake of SSL are there (i.e. costs, quality, financing)? How can these be overcome? Do you know any good/bad examples of this?
The main barrier that was identified was to determine the added customer value that arises from the different SSL applications. In order for the business and municipalities to justify the costs of SSL solutions, there is a clear need for them to be able to value the potential increased value that these new lighting solutions can provide. The development of tools to determine the added value is recommended. This hindrance is partly related to the rather limited scientific knowledge currently available to back the LED superiority over incandescent and CFL bulbs. This leads to another barrier that was established during the conversation: the quality of the SSL. The last so-to-say business barrier that was identified was the financing part of those applications. Given the fact that there was no one from the banking sector present that day, the dialogue on that topic was only briefly discussed.

Rating of Barriers	
Determination of added value	33
Methods of finances	19
Quality of SSL	11
Cost	**5**

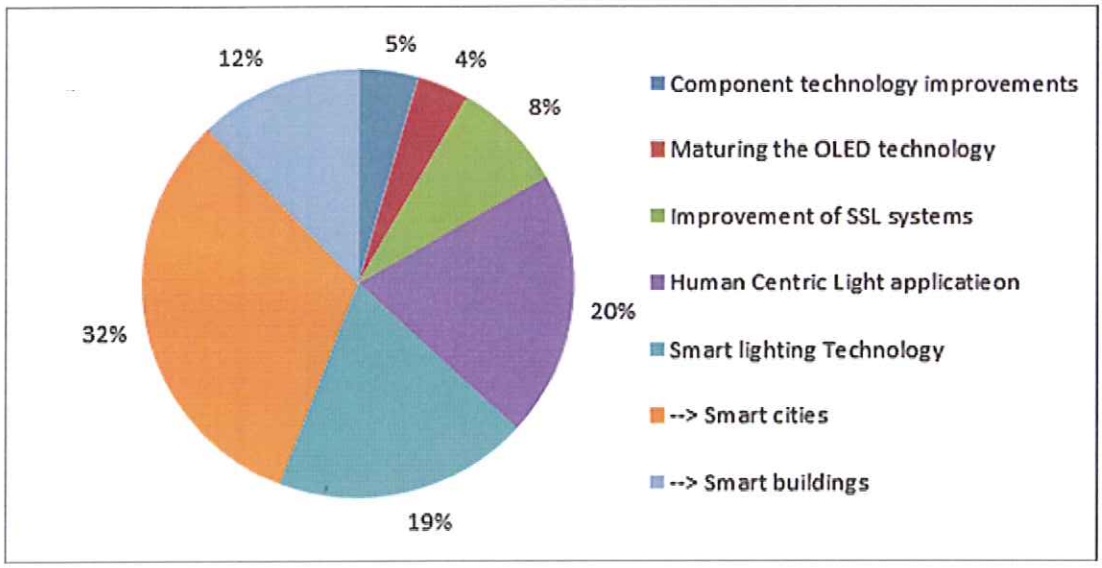
One surprising conclusion of this workshop is that costs in themselves were not really seen as problems for the uptake of SSL.

From a technological perspective one problem that needs to be solved so as to be able to build more integrated systems is the agreement on the communication media. This is the most basic requirement that should be fulfilled for smart solutions to bloom; a protocol explaining how the human-machine and machine-machine communication should occur (i.e. Bluetooth, Wi-Fi).

Some participants also agreed on the fact that there is a need to help the customer transition from the current lighting system to the smart lighting system that SSL-erate strives to achieve.

Examples and stories:

In the context of the progress of the Roadmap Lighting, part of the Dutch Topsector High-Tech Systems and Materials, the participants prioritize the different subjects (see graph).



There is a very significant interest to use lighting as a platform and enabler for Smart Cities and Smart Buildings. Over 60% of the participants valued the 'extended' smart lighting as most important topic

Richard Verhoeven, University Researcher at Eindhoven University of Technology, presented his conclusions after a one-year outdoor experiment on residential lighting. From a sheer energy consumption point of view, the study concluded that depending on the street, and thus the traffic flow, a decrease of 20% to 38% in energy consumption could be achieved.
The exact effect of the experiment on the people's well being has not been fully assessed yet, partly because this part is currently being studied by scientists from the psychology and sociology faculty, in a study being done parallel to this one. However, it can already be said that customer valued the new lighting solution. Some of them want to understand the functioning behind the dynamic street lighting system, other just want it to be easy to use.

Conclusions:

Much added value of smart SSL-solutions is recognized as green business opportunities to improve the quality of life. There is a significant interest to use smart light as a platform and an enabler for Smart Cities and Smart Buildings. Owners of existing grids should be involved. The co-creation policy, which is coming up in many cities, asks the involvement of many other stakeholders, including end-users. Open innovation makes it easier to align the interests of these different stakeholders to one another.

The need for a tool to determine the added value of SSL-solution is of great importance to accelerate the decision process.

Hamburg Application Workshops 2014.04.24

SSL-erate

Innovationspotentiale bei der Entwicklung und Anwendung von LEDs und intelligenten Lichtsystemen - Vision und Realität

Donnerstag, 24. April 2014 9:00 - 16:00 Uhr

Willkommen zu zwei Workshops über
Intelligent Green Business Development für Solid State Lighting (SSL)
Das richtige Licht, am rechten Ort und zur rechten Zeit

Die HAW Hamburg ist Teilnehmerin am EU-Projekt "Accelerate SSL Innovation for Europe" (SSL-erate). Das Projekt hat die Beschleunigung des Einsatzes verbesserter SSL-Lösungen (z.B. LED) in Europa mittels offener Innovation "Open Innovation" zum Ziel. SSL-erate beinhaltet die Entwicklung der Innovationsplattform "Lighting for People". Zielgruppe für beide Workshops sind Stakeholder aus Wirtschaft, Gesellschaft, Forschung & Entwicklung und Behörden sowie Lichtplaner, Stadtplaner und Architekten.

Die ***Hochschule für Angewandte Wissenschaften Hamburg***, der ***Landesbetrieb Straßen, Brücken und Gewässer Hamburg***, und ***Inside Light*** laden Sie zu zwei Workshops ein, in denen die Entwicklungsmöglichkeiten für zwei Anwendungsbereiche smarter Beleuchtungslösungen unter Anwendung ICT-basierter SSL in der Stadt Hamburg diskutiert und beurteilt werden sollen.

Thema 1: Anwendungsbereich Innenbeleuchtung
Thema 2: Anwendungsbereich Außenbeleuchtung

Das Programm beinhaltet: Das Potential von SSL, als ein Werkzeug zur Förderung von Gesundheit und Wohlbefinden. Energieeffektivität durch intelligente Beleuchtungslösungen. Grüne Geschäftsentwicklung intelligenter Beleuchtung für gleichzeitige Verbesserungen des Nutzens für den Verbraucher und Energieeinsparungen. Informationen zu Finanzierungsmöglichkeiten. Offener Dialog über das Potential zur Steigerung der wertschaffenden Nutzung intelligenter ICT-basierter SSL-Lösungen für beide Anwendungsbereiche.

Ziel der Veranstaltung: Ziel ist es, einen Dialog zwischen Unternehmen, Nutzern, Planern und Behörden zu fördern und herauszufinden, welche Potentiale aber auch Innovationshemmnisse für neue und vorhandene Anwendungsgebiete von SSL/LEDs existieren. Durch den Workshop sollen Beiträge für eine Landkarte mit Chancen zur Entwicklung von Green Business im Bereich SSL gesammelt werden.

Veranstaltungssprache: Deutsch

Veranstaltungsort: Landesbetrieb Straßen, Brücken und Gewässer
Raum Michel C 0.01, Sachsenfeld 3-5, 20097 Hamburg

In Zusammenarbeit mit:

LSBG
Landesbetrieb Straßen, Brücken und Gewässer Hamburg

Hochschule für Angewandte Wissenschaften Hamburg
Hamburg University of Applied Sciences

lightingforpeople
CONNECTING OPPORTUNITIES FOR INNOVATION

SEVENTH FRAMEWORK PROGRAMME

LUND UNIVERSITY

INSIDE light

SSL-erate

Programm

9:00	**Registrierung**
9:20	Begrüßung
9:30	Vorstellung der Projektes 'Accelerate SSL Innovation for Europe (SSL-erate)' Julia Gottwald, Hochschule für Angewandte Wissenschaften Hamburg
9:40	**Green Business Development: improving the user value of lighting and energy saving** Jessika Luth Richter, Lund universitet, Schweden
10:00	Potentiale von LED und dynamischen Lichtlösungen für Gesundheit und Wohlbefinden Cornelia Zolghadri, Zolghadri GmbH LICHTTechnikDesign
10:20	Finanzierungs- und Umsetzungsmodelle für innovative Lichtlösungen Ismail Cetinkaya, Aura Light GmbH
10:40	**LED**-Lichtsysteme made in Germany Daniel Hahn, Green Light Systems GmbH
11:00	Kaffeepause
11:15	Offener Dialog zum Thema Innenbeleuchtung • Ismail Cetinkaya, **Aura Light GmbH** • Daniel Hahn, Green Light Systems GmbH • Cornelia Zolghadri, Zolghadri GmbH LICHTTechnikDesign
12:30	Mittagspause
13:20	Die digitale Straßenbeleuchtung: von der Vision zur Wirklichkeit Gerd Wiesemann, Philips GmbH
13:40	LED in der modernen Lichtplanung - Chancen und Risiken Prof. Peter Andres, Beratende Ingenieure für Lichtplanung GbR Pilotprojekt
14:00	Erfahrungen mit LED Wege- und Straßenbeleuchtung in Hamburg Günther Frank, Landesbetrieb Straßen Brücken und Gewässer
14:20	Offener Dialog zum Thema Außenbeleuchtung • Prof. Peter Andres, Beratende Ingenieure für Lichtplanung GbR • Günther Frank, Landesbetrieb Straßen Brücken und Gewässer • **Gerd Wiesemann, Philips GmbH**
15:35	Zusammenfassung der Ergebnisse
15:45	Kaffee & Networking
16:00	**Ende der Veranstaltung**

Moderation: Nicole Wünsch, marketing teufel

LSBG
Landesbetrieb Straßen, Brücken und Gewässer Hamburg

Hochschule für Angewandte Wissenschaften Hamburg
Hamburg University of Applied Sciences

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SSL-erate

Anmeldung

Bitte senden Sie Ihre Anmeldung bis zum 17. April 2014

per E-Mail an: anmeldung-ssl@ls.haw-hamburg.de

oder per Fax an: 040-42875-6079

Die Teilnahme an der Veranstaltung ist kostenlos.

Vorname _____

Nachname _____

Titel _____

Organisation _____

Straße _____

PLZ/Ort _____

Tel./Fax _____

E-mail _____

Kontakt

Hochschule für Angewandte Wissenschaften Hamburg
Forschungs- und Transferzentrum "Applications of Life Sciences"
Julia Gottwald, Veronika Schulte
Ulmenliet 20
21033 Hamburg

Telefon: 040/42875-6354
Fax: 040/42875-6079
anmeldung-ssl@ls.haw-hamburg.de

LSBG Landesbetrieb Straßen, Brücken und Gewässer Hamburg

Hochschule für Angewandte Wissenschaften Hamburg
Hamburg University of Applied Sciences

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Accelerate SSL Innovation for Europe (SSL-erate)

Zur Illustration, warum die neue Beleuchtung aus humaner Perspektive so wichtig ist, kann die folgende Überlegung sehr anregend sein: in den letzten hundert Jahren haben wir uns an eine statische, rötliche und ganz leicht flackernde Beleuchtung gewöhnt. Die Ziele waren mehr Lumen, und das gleiche Licht zu jeder Zeit und überall. Das visuelle System des Menschen ist jedoch für die in der Natur vorkommenden schwankenden Lichtverhältnisse gedacht, wo die Farbzusammensetzung sowie die Anteile an direktem und indirektem Licht und auch die Intensität stark variieren. Wir wissen, dass wir manchmal funktionales Licht benötigen, und dass wir zu anderen Zeitpunkten eine weiche Innenbeleuchtung oder sogar Dunkelheit bevorzugen. Wir wissen, dass das funkelnde Licht, welches von Wasser in Bewegung zurückgeworfen wird, und dass durch Laub scheinendes Licht sich gut anfühlen. Vielen gefällt das Lichterspiel eines Sonnenauf- oder-untergangs. Ein Abendessen bei Kerzenschein wird häufig geschätzt. Die neue Technologie ist zunehmend in der Lage, diese Arten von Beleuchtung wiederzugeben.

Die SSL-erate "Green Business" -Perspektive zielt auf die Beschleunigung des Einsatzes von Solid State Lighting (SSL), was ein großes Potential für eine nachhaltige Entwicklung aufweist. Ein Grund für die Projektinvestitionen in "grüne" Nachhaltigkeit ist die Förderung von Lösungen mit positiver sozialer Wirkung, z.B. die Schaffung besserer Lebens- und Arbeitsverhältnisse in Kindergärten, Schulen und für unsere alternde Bevölkerung. Systemlösungen, die das richtige Licht zur rechten Zeit und am rechten Ort bieten, führen zu besseren Lebens- und Arbeitsbedingungen. Zur gleichen Zeit sind sie auch aus Sicht der Energieeffizienz optimale Lösungen.

Der Workshop beschreibt den potentiellen humanen Nutzen und Wert von LED- und intelligenten Systemlösungen und gibt Beispiele, wo aktuelle Informationen erhältlich sind. In den Workshops zu den spezifischen Anwendungsbereichen ist ein offener Dialog über die Möglichkeiten und Herausforderungen geplant, die sich aus der technologischen Verschiebung hin zu LEDs ergeben. Eine intelligente Entwicklung von Green Business hat ein grosses Potential zur Schliessung der Kluft zwischen einerseits (teilweise vielleicht gar nicht explizit bewussten) Bedürfnissen und Wünschen der Anwender, und andererseits dem technischen Entwicklungspotential.

Es besteht jedoch eine erhebliche Ungewissheit darüber, welche Art von Lichtdynamik wir anstreben sollten, und ebenso darüber, welche Eigenschaften und Qualität unterschiedliche Produkte und Systemlösungen aufweisen sollten. Die Beleuchtungstechnologien der Vergangenheit waren statisch. Die meisten Menschen haben daher Schwierigkeiten, die Bedeutung der Vorteile der neuen Bewegungsfreiheit, der neuen Funktionalitäten und der dynamischen Beleuchtung richtig abzuschätzen. Es ist offensichtlich, dass die Beleuchtungstechnologie sich rasend schnell verändert. Die alten Produkte wurden teilweise verboten und der Markt erlebt die Einführung immer besserer LEDs und intelligenter Systemlösungen. Die SSL-Technologie und ICT bieten eine beinahe unbegrenzte Flexibilität. Es ist klar, dass signifikante Energiemengen eingespart werden können. Darüber hinaus kann die Lebensdauer der Produkte sehr lang sein. Immer noch der größte Vorteil ist, dass die neue Technologie viel größere Handlungsfreiheit ermöglicht, um das richtige Licht am richtigen Ort zur richtigen Zeit zur Verfügung stellen.

Die SSL-erate "Green Business" Perspektive

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Teilnehmer/innen

Innovationspotentiale bei der Entwicklung und Anwendung
von LEDs und intelligenten Lichtsystemen
– Vision und Realität –

24. April 2014

Anrede/Titel	Name	Vorname	Type	Organisation	Bestätigt	in Cobra
Herr	Bastian	Niklas	Academia	HAW Hamburg (Masterstudent)	ja	ja
Frau	Özmüş	Tülay	Company	KMLS	ja	ja
Herr Dipl.-Ing.	Pohlmann	Nic	Light Planner	Pohlmann & Partner GmbH	ja	ja
Herr Dipl.-Ing.	Schaller	Dirk	Company	IWP Beratende Ingenieure	ja	ja
Abmeldung	Schäperkötter	Thorsten	Company	Netzwerk Management AKU GmbH & Co. KG/hit- Technc	ja	ja
Frau	Störtebek	Myla	Industry	Philips GmbH	ja	ja
Herr	Westphal	Andreas	Authority	Stadtreinigung Hamburg	ja	ja
Herr Prof. Dr.	Greule	Roland	Academia	HAW Hamburg		
Herr	Dietrich	William	Company	Stageled GmbH	ja	ja
Herr	von Sichert	Robert	Light planner	Licht01 - Lightening Design	ja	ja
Herr	Bichert	Alexander	Company	Working Light LED Lichtsysteme GmbH	ja	ja
Herr	Lange	Dieter	Architect	Dr. -Ing Dieter Lange	ja	ja
Frau	Penning	Sabrina	Light planner	Team Licht	ja	ja
Frau	Katerji	Julia	Light planner	Team Licht	ja	ja
Herr	Schlotfeldt	Tom	Light planner	Schlotfeldt Licht	ja	ja
Herr	Richter	Jens	Public	Lund University		
Herr	Hahn	Florian	Light planner	Schlotfeldt Licht		
Herr	Augeues	Volker	Authority	LSBG - S4		
Herr	Jokyke	Lutz	Authority	LSBG - S4		
Herr	Kobel	V.	Authority	LSBG - S4		
Frau	Winkelmann	Katja	Light Planner	Licht 01 Lighting Design		
Herr	Johnke	Lutz	Authority	LSBG Freie und Hansestadt Hamburg		
Herr	Augener	Volker	Authority	LSBG Freie und Hansestadt Hamburg		
Herr	Cetinkaya	Ismail	Industry	AURA LIGHT GmbH Hamburg	nicht nötig	ja
Frau	Zolghadri	Cornelia	Light planner	High-Tech-Center GmbH		
Herr	Hahn	Daniel	Industry	Green Light Systems GmbH		
Herr	Wiesemann	Gerd	Industry	Philips GmbH		
Herr Prof.	Andres	Peter	Light planner	BERATENDE INGENIEURE FÜR LICHTPLANUNG GbR		
Herr	Frank	Günther	Authority	Freie und Hansestadt Hamburg		
Herr	Holling	Christian	Public	oskar PR		
Herr	Liedtke	Rolf	Trade	Baumanagement		

Teilnehmer/innen

Innovationspotentiale bei der Entwicklung und Anwendung
von LEDs und intelligenten Lichtsystemen
– Vision und Realität –

24. April 2014

Herr	Bunzel	Hauke	Industry	AURA LIGHT GmbH Hamburg	ja	ja
Herr	Leiding	Jens	Industry	AURA LIGHT GmbH Hamburg	ja	ja
Frau	Luth Richter	Jessika	Academia	Lund University		
Moderation						
Frau	Wünsch	Nicole		Marketingteufel		
Projektintern						
Frau	Gottwald	Julia	Academia	FTZ-ALS, HAW Hamburg		
Frau	Schulte	Veronika	Academia	FTZ-ALS, HAW Hamburg		
Frau	Hahmann	Linda	Academia	FTZ-ALS, HAW Hamburg		
Frau	Brandt	Marlene	Academia	FTZ-ALS, HAW Hamburg		

Teilnehmer/innen

Innovationspotentiale bei der Entwicklung und Anwendung
von LEDs und intelligenten Lichtsystemen
– Vision und Realität –

24. April 2014

Schwerpunkt im Innenbereich
-
verkaufsfördernde Beleuchtung in Verkaufsräumen, Kunstlichtplanung, Tageslichtplanung, Leuchtenentwicklung, Sanierung und Wartung von Lichtanlagen, Wirtsch
Sicherheitsbeleuchtung (Tunnel-brandnotbeleuchtung/Fluchtwegkennzeichnung), OSRAM-Backlight LED – Sicherheitsleuchten Wand- und Treppenstufeneinbau
-
-
Schulbeleuchtung, Bürobeleuchtung, Shopbeleuchtung, Gesundheitswesen (Behandlungs-, Patientenzimmer etc.), Entertainment (z.B. Konzerthallen, Theater, Mus
-
-
innovative Beleuchtungslösungen
Kunstlichtplanung, Tageslichtplanung,Raumbildende Strukturen, Deckenspiegel, Lichtführung, Atmosphären
"
-
Private und öffentliche Architektur
"
-

Industrie, Büros, Retail (Supermärlte, Kaufhäuser etc.), Verkehrsflächen (Flure, Treppenhäuser, Eingangshallen, Flughäfen, Banhöfe etc.), Parkplätze, Tunnel (U-Bah
-
-
"

-
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-

Innovationspotentiale bei der Entwicklung und Anwendung von LEDs und intelligenten Lichtsystemen – Vision und Realität

„Intelligent Green Business Development für Solid State Lighting (SSL)
-Das richtige Licht, am rechten Ort und zur rechten Zeit-“

Name	Vorname	Organisation	Unterschrift
Andres	Peter	BERATENDE INGENIEURE FÜR LICHTPLANUNG GbR	
Bastian	Niklas	HAW Hamburg	
Bichert	Alexander	Working Light LED Lichtsysteme GmbH	
Brandt	Marlene	FTZ-ALS, HAW Hamburg	
Brenger	Alina	Ulrike Brandi Licht GmbH	
Bunzel	Hauke	AURA LIGHT GmbH Hamburg	kommt noch
Cetinkaya	Ismail	AURA LIGHT GmbH Hamburg	
Dietrich	William	Stageled GmbH	
Elendt	Monika	Ulrike Brandi Licht GmbH	
Frank	Günther	Freie und Hansestadt Hamburg, LSBG	
Gottwald	Julia	FTZ-ALS, HAW Hamburg	
Greule	Roland	HAW Hamburg	
Hahmann	Linda	FTZ-ALS, HAW Hamburg	
Hahn	Daniel	Green Light Systems GmbH	
Holling	Christian	oskar PR	
Katerji	Julia	Team Licht	
Krotz	Reinhard	Working Light LED Lichtsysteme GmbH	
Lange	Dieter	Dr. –Ing. Dieter Lange	
Leiding	Jens	AURA LIGHT GmbH Hamburg	
Liedtke	Rolf	Hamburg Verkehrsanlagenn GmbH	
List	Peter	Lichtforum e.V.	
Özmüş	Tülay	KMLS	

Hochschule für Angewandte Wissenschaften Hamburg
Hamburg University of Applied Sciences

SSL-erate

lightingforpeople

Landesbetrieb Straßen, Brücken und Gewässer Hamburg

LUND UNIVERSITY

SEVENTH FRAMEWORK PROGRAMME

INSIDE

Innovationspotentiale bei der Entwicklung und Anwendung von LEDs und intelligenten Lichtsystemen – Vision und Realität

„Intelligent Green Business Development für Solid State Lighting (SSL)
-Das richtige Licht, am rechten Ort und zur rechten Zeit-"

Penning	Sabrina	Team Licht	
Pohlmann	Nic	Pohlmann & Partner GmbH	
Rose	Gérard	Freie und Hansestadt Hamburg, LSBG	
Schaller	Dirk	IWP Beratende Ingenieure	
Schlotfeld	Tom	Schlotfeldt Licht	
Schulte	Veronika	FTZ-ALS, HAW Hamburg	
Störtebek	Myla	Philips GmbH	
Tollmann	Markus	Freie und Hansestadt Hamburg, LSBG	
~~von Sichert~~	~~Robert~~	~~Licht01 - Lightening Design~~	
Weber	Alexander	HAW Hamburg	
Westphal	Andreas	Stadtreinigung Hamburg	
Wiesemann	Gerd	Philips GmbH	
Wulf	Carsten	Elektro Eckstein	
Wünsch	Nicole	Marketingteufel	
Zahn	Stefan	FGL Forschungsgem. f. Logistik	
Zolghadri	Cornelia	~~High Tech Center GmbH~~ ZOLGHADRI GMBH	
✓ Luth Richter	Jessika	Lund University, Schweden	✓
Florian	Jens Hahn	Schlotfeldt Licht	
Hugener	Volker	LSBG - 54	Volker.augener@LSBG.Hamburg.de
Johnke	Lutz	-11- Lutz.Johnke@lsbg.hamburg.de	
Kob	Jörg	-11-	
WINKELMANN	KATJA	LICHT01 LIGHTING DESIGN	WINKELMANN@LICHT01.DE

Hochschule für Angewandte Wissenschaften Hamburg
Hamburg University of Applied Sciences

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LUND UNIVERSITY

SEVENTH FRAMEWORK PROGRAMME

INSIDE

Workshop Dialogue Summary
Hamburg, Germany
24th April, 2014

Potential for innovation in the development and application of LEDs and intelligent lighting systems - vision and reality

Workshop 1 Application: Indoor Lighting (workplaces)[1]

The aim of the workshop "interior lighting - workplaces" was to be introduced to the SSL project and discuss potential ways forward. The experience to date of LEDs was discussed by speakers in terms of energy efficiency, health aspects, well-being, cost savings and functionality, in order to develop ideas and approaches to how to accelerate SSL's market penetration.

The workshop incorporated presentations from key speakers including lighting designers, industry, installers and authorities who compared theory and practice. Where initially positive experiences were highlighted, also initial failures and obstacles were observed and discussed, which led to the discussion in many suggestions for improvements and green business opportunities.

Participants by group represented:

Business/Industry:	6
Trade:	1
Science/Academia:	8
Society/Public:	2
Authorities:	5
Light planners:	8
Architects:	1

Cities represented: Hamburg

Dialogue

Participants presented questions to the different groups of stakeholders represented, but also contributed a lot of interesting suggestions. However, there was also criticism of the conduct of industry and politics. They were criticized because SSL product terms and information, which have been neither uniform nor adequate to describe the experience of light for the consumer. This was the departure for a discussion comparing theory and practice to develop a variety of ideas contributed by all participants. While a range of relevant society stakeholders were invited to this workshop, it was felt further workshops and actions should involve a wider group of stakeholders too.

Opportunities for Intelligent Green Business

1) An approach for intelligent green business was seen in the combination of lighting and IT systems, since it is precisely in the interior lighting that both are directly related to jobs and increasing well-being. In the combination of multiple applications, many stakeholders saw new opportunities for Green Business.

[1] Note this text has been translated from the original workshop report in German. For any further clarifications, please consult the original documents.

2) Another possibility was seen in the development of lighting controls. LEDs are not adopted in many areas due to high initial cost, but intelligent lighting controls can achieve the desired savings potential and at the same time provide a functional improvement of the lighting situation.

3) The representatives of business and industry also discussed the possible further development of contracting, which would give major buyers and users the possibility to optimize light at neutral cost.

4) The retrofit solutions (old bulbs exchanged 1:1 with SSL lamps) have not proven optimal in practice because the systems are not always well harmonized with each other. There would be the opportunity for the industry to develop new light band systems that would allow the long-term replacement of the light sources in the future.

5) In the discussion there was the suggestion to set up (analogous to the pharmaceutical industry) a package insert for SSL bulbs, which gives a simpler description of the performance and tips for optimal use of the relevant lamp.

6) Lighting designers could create new Green business in which they were to offer seminars for consumers and offices, where knowledge about the use of light as a working and well-being medium, light source types, and their correct use, would be disseminated. This idea could also be taken up together with the utility companies that have collected preliminary, but not sufficient, experience here.

7) The bulb manufacturers and distributors could recycle old bulbs, since the value of recyclables at the moment is climbing sharply.

How SSL can be a sustainable value for investments in this field of application?

SSL technology is only able to represent sustainable value for investment if the uncertainty can be eliminated by reliable values for consumers and lighting designers. Consumers are asking for information on packaging that laypeople can better understand and that reflects consumer perceptions of light. However, the lighting designers wish for more planning security, that is, that the bulbs must first be more durable and available longer, so that calculations become more valid. For more planning security an improvement of the current standards is also necessary.

Health and Wellbeing

The lighting designers and lighting retailers recognised a strong relationship between light, health and well-being but also that the perception of light is individually very different. It is dependent on the region in which a person grew up, which is why you also make a distinction between "hot and cold" countries. So, for example, Northern Europeans preferred a warm light, while Asians preferred a cold, bright light. Therefore, especially in places where people from different countries work together, finding the optimal light control is a major challenge.

In terms of lighting in the workplace, the lighting designers saw that one of the largest discrepancies is between the functional requirements for the work light and the personal well-being of employees. The individually adjustable lighting, as often recommended by architects and office planners, is not always the ideal solution, because often the light field of the neighbouring employee is also affected. It is therefore important to develop new solutions for variable user interests in public rooms or multiple use areas.

According the lighting designers, too much value is still placed on functional light In the workplace, with the well-being of the employees neglected. In addition, LED changes the perception of light, because we have to get used to this light source first. Since light is such an important factor for the well-being of the people, it will become even more important in the future to involve light in the consideration of occupational health management.

Open innovation

The dialogue participants were quick to agree that one can establish SSL on the market faster only if all stakeholders work together and the public is involved. Participants criticized the current approach to politics, because the focus is only on the aspect of "save energy and costs" and consumers with their light needs are ignored. Even the actions of the industry were seen as capable of improvement, because the specific product data provided does not correspond to or adequately describe the reality.

Since terms like "lumens" and "lux" are not really useful to the consumer, the participants of the discussion proposed to formulate the light and colour reproduction in a way consumers could understand the light properties better. To this end, a workshop from politics, government, lighting designers, industry and science was proposed, which could develop new names which should be linked to the perception of the consumer. Therefore, the workshop should be directed by the consumer protection agency and take into account results of science about human perception of light. Such a workshop should, in the second step, also give guidelines for handling SSL / LED bulbs, since the consumer knows too little about the proper use and proper disposal of the bulbs.

In order to optimize the development of light sources and their use, it was suggested to involve the public in the subject. This could be done through projects such as SSLerate or the proposed workshops mentioned above, through a survey conducted using social media, or local events that could capture the desires of consumers in more detail.

The use of public utilities was quite encouraged. It was noted, however, that one should by no means leave the initiative alone to the sphere of politics that equates the subject of lighting design only with "energy saving", and for example in the past, recommended the use of fluorescent tubes, an antiquated technology.

Drivers

At the moment, government and industry are seen as drivers of the SSL issue. The success of SSL on the market is moderate so far partly because the current policy is "only" occupied with energy saving and the industry only emphasizes saving costs,. Market success could be further realised more quickly if you communicate wider information in a better manner to consumers (represented by the consumer protection agency) and to bring all the stakeholders such as politicians, government, lighting designers, industry and science on board.

Barriers

Lighting designers and installers complained that the product specifications provided by industry did not correspond to the reality in terms of durability and brightness of the lamps. The industry is therefore encouraged to review their product specifications so that installers and lighting designers are given better information for planning.

Since the information to the consumer is not well understood, the SSL/LED market is not tapped into as well as theoretically possible. In addition, the retrofit bulbs have not yet proven themselves in use and are perceived as too expensive. Thus, this issue must be addressed. The industry itself pointed out in the discussion that retrofit is always a crutch because old lighting systems and new bulbs were not designed to be directly compatible.

One of the most critical barriers to the rapid introduction of SSL was also the very different individual perceptions of light and well-being. As long as the industry does not succeed in representing human perception in intelligible "units" and communicating lighting information better, the consumer will only accept LED products hesitantly and continue to look for old light bulb technology on the internet.

The reason for introducing LED is justified by the cost savings for companies, but the issue of health and well-being is still not adequately taken into account in the planning by trade and architects. So we cannot yet fully benefit from the positive effects of good lighting such as increased motivation and better health. It is also possible that light will be purchased and readjusted in way that the desired cost savings are not achieved in the end and SSL becomes unpopular.

Often only the use of the new bulbs, but not the care and maintenance of old luminaires and/or reflectors, is calculated so that the final bill is either financially more than expected or there is an overall loss in light quality.

In practice, it has become clear that light sources must always be ordered and bought from the same manufacturer and system if you want the same lighting as before. This is because in practice, a certain amount of kelvins specified by one manufacturer does not necessarily corresponded to the same amount of kelvins from another manufacturer. That makes it even more difficult for the consumer.

Examples and stories

A local installer reported that if he seriously wanted to present the customer with the theoretical calculations of the cost savings, he would have to use with the manufacturer's instructions for lifetime of the bulbs, but he knows from experience that these are not correct! Factoring this into the calculation of the actual values corresponding to his experience, the investment in the majority of cases is no longer justified.

The same is true when calculating the light intensity. Given the information supplied by producers, it often computes a cost savings. But if he factored in the light sources, which the customer actually perceived as equivalent, there were no longer recognizable cost savings and the customer would have to expect higher future costs for the project.

The dilemma: his calculations are only according to the manufacturer, he therefore runs the risk of having a dis-satisfied customer and his reputation in the region damaged. If he uses data from his own experience, the chance to get the job is low because the customer cannot see any monetary benefit. According to the experience of the installation operator therefore, in practice, less benefit can be expected from the use of LED bulbs, but rather more from an optimized light control or at most, a combination of both.

Kontakt: Elektro Eckstein, Carsten Wulff (Inhaber und Geschäftsführer), wulff@elektro-eckstein.de, Tel: 040/ 72 58 68-0

Workshop Dialogue Summary
Hamburg, Germany
24th April, 2014

Potential for innovation in the development and application of LEDs and intelligent lighting systems - vision and reality

Workshop 2 Application: Outdoor Lighting (street lighting)[1]

The workshop on exterior street lighting, key speakers included public authorities and lighting designers. They shared their projects and experiences on the use of SSL/LED in outdoor lighting and exchanged ideas with the attending representatives of business and science.

Participants by group represented:

Business/Industry:	6
Trade:	1
Science/Academia:	8
Companies:	2
Authorities:	5
Light planners:	8
Architects:	1
Society	2

Cities represented: Hamburg

Dialogue

The dialog for the field of outdoor lighting was largely influenced by the experiences and product ideas of the participants regarding the functionality of the LED products. Participants also enthusiastically discussed the opportunities to bring more aspects about light (than only cost savings and energy efficiency) to the public perception. So ideas were developed and considered about whether SSL can be accelerated from top to bottom, i.e. from EU to countries and cities, or the other way around, with a focus on the subject of soft co-benefits. At the end of the dialogue, it was agreed that it would be good to continue dialogues and there was interest to develop further workshops. While a range of relevant society stakeholders were invited to this workshop, it was felt further workshops and actions should involve a wider group of stakeholders too.

Opportunities for Intelligent Green Business

1) Often financial incentives can accelerate the market the fastest, so the participants first discussed the previously determined main factors for the topic SSL/LED: cost and energy savings. However, if one wanted to consider other aspects, such as health, wellbeing, and social, these should be looked at these in economic terms too. If it were possible to measure the impact of these so-called soft co-benefits, investors in companies and authorities could be convinced faster. These calculations, in turn, would result in new opportunities for lighting and light planners. The aim must be, therefore, to identify soft co-benefits, and to quantify them to be included in calculations. Examples of soft co-

[1] Note this text has been translated from the original workshop report in German. For any further clarifications, please consult the original documents.

benefits were mentioned, for example: less police operations, higher wellbeing, more useful work, fewer sick days, etc.

2) Local authorities, business, industry, lighting designers and trade groups could launch regional projects and this approach could serve as a good example to the EU (Lyon is already represented, and for example, Hamburg could be presented as night city with interesting lighting examples and encourage tourism and business). Such examples could be used by the city planners then as recommendations to pass on to the policymakers.

3) LED installations of outdoor and street lighting, in addition to only providing light, could also take on more and more additional functions, such as traffic control, mobile phone towers, etc.

4) The business representatives presented the idea to make the LED performance programmable, so that installers could purchase large quantities of LED at a lower price and program the required LED performance themselves. In the case of changing requirements, a change in the programming of the controls in the office would obviate the need for replacing the LEDs. This would be a completely new product environment that is more oriented to the needs of the authorities and lighting designers.

5) Depending on project, lighting designers sometimes have to contend with the problem of light glare. The industry could therefore develop new lighting systems that counteract this problem with built-in mirrors.

6) The point was made that the manufacturer has often been involving the lighting designers only in the development of rough concepts, but when it came to product development, sought only the feedback of the lighting engineers. It was suggested that they integrate and develop new lighting with the lighting designers and urban planners for a better end product.

How SSL can be a sustainable value for investments in this field of application?

To make SSL a valuable long-term investment, there is a need for standardization of SSL Service Specifications and new, more reliable standards should be created. Secondly, the lighting designers (referring to the Green Paper on the future of lighting) should be involved in developing Green Papers. So far, only the manufacturers are involved, so the information cannot be guaranteed to be unbiased or reliable. The participation must, however, take place on neutral ground and free of cost for all stakeholders to ensure the independence of the results.

The entire light industry could also network better and take into account the research of science/academia, associations and urban planners. This knowledge must also be included in the courses for architects in which the subject of lighting design is rather neglected so far. Therefore the wish was expressed to convey more information about the project SSLerate and its results to the architects and interior designers as well.

It was noted also as an important aspect for sustainable investment that there is cooperation of different stakeholders. This way you could get the emergency services on board as well, who can make it clear how important is good exterior lighting is for the efficiency of their work. Also, the

regional city marketing could contribute through feedback to lighting design in the region, an important aspect to sustainable planning.

In order to address scepticism about the long life of the LEDs, more manufacturers should offer and market stronger guarantees of longer duration.

Health and Wellbeing

For people it is especially important that so-called "fear spaces", such as parking garages or dark paths, are sufficiently illuminated at night. With the LED technology it is now possible to achieve very accurate illumination. However, so far this has not been perceived by the public as sufficient lighting in practice; for example, if a path is precisely lit, but the bushes at the edge are not, then this is indeed functionally useful, but it does not satisfy the public desire for security. The question is therefore how far one deviates from the precise lighting to more diversified lighting to take this factor into account.

The decision as to how far outside the desired section is lit, versus only when needed or with movement, also affects the sleep patterns of people. Diffused light (used outside the section to create a heightened sense of security) can also shine light in the bedrooms of the people and affect the quality of sleep. If necessary, the population must be further educated here and shown that darkness also has a value.

For the wildlife that live around the illuminated paths in the bushes and shrubs, it is crucial to decide how far the light should stream into the bushes because SSL lighting technologies can also affect the bio-rhythms of the animals.

Open innovation

Expanding the use of SSL in outdoor lighting systems can also be beneficial for the public; for example, this can save public money for the lighting and data transport through the multifunctional use of lighting towers. Thus, citizens also get used to the establishment of new concepts in their neighbourhood, if initiated by urban planners or builders. Here a wide audience of interested people can be reached also be through social media.

Also in the preparation and evaluation of the soft co-benefits, the public can participate and evaluate surveys on the importance and popularity of certain factors such as light intensity or light colour. The personnel departments of companies could measure their experience with new lighting concepts and, for example, its influence on sick days which can then be included in calculation. If one includes the public early enough in the development of these calculations, you could create a label that would then also be accepted with the introduction of the product and quickly become known by the public.

It must be the aim of efforts to achieve a greater appreciation of energy. It is clear that energy is to become more expensive, and this has been used to promote the use of SSL. The revenues could also be invested in the better standardization of lighting products and lighting research, because we still do not know enough about how people perceive light.

Participants agreed that regional and local actions can be realized faster than going through proposals to the EU. In order to develop ideas about what you could do regionally to more visibly place the issue of LED use, a green forum or workshops were proposed to include all stakeholders and regional authorities and town representatives. In this green forum visions could be developed at the district level to make Hamburg attractive by light. To this end, members of the Hamburg Parliament should be invited. It was agreed that proposals that would come from such forums would be given more attention by policy than individual proposals.

Drivers

At the moment policy is seen as a driver of SSL, but it was agreed that this should actually be the operator of the lighting systems, as they have the most experience and influence in this area. The policy is in this case more of an "anti-driver", since initially only the cost factor would be considered without taking into account the impact on income and health. In addition, policy at the moment is being instrumentalised by the industry, so here stronger action by other stakeholders is urgently needed.

Barriers

The city authorities declared that the long-term safe operation of the outdoor and street lighting is the most important consideration for them, but this cannot be ensured by the LEDs currently on the market. The LED lifespan does not satisfy their requirements nor does the information provided by the manufacturer convince them. From the perspective of the authorities the most important point is the rapid innovation of LEDs; the supply of replacement LEDs is currently not guaranteed for long enough resulting in long term costs calculated to be too high. It was also mentioned that it is a problem that there are no clear standards in terms of quality or cost-effectiveness.

The credibility of the LED has also been damaged, because the public cannot understand the comparisons of the light intensity with conventional light sources. The advantages of LEDs - especially in outdoor lighting (such as the precise control of light, infinite adjustment, the better energy efficiency due to less heat dissipation, etc.) are not yet perceived by the public.

Installers and lighting designers explained that the products and their performance and service life are not stable enough or proven in practice. In addition, there are no standards and modules for easy replacement with the LEDs (i.e. Plug & Play). The fact that some manufacturers would offer longer warranties, but often only on request and requiring extra payment, though understandable, would lead to sustainably planned projects not being economically viable.

Examples and stories

Günther Frank from the Agency of Roads, Bridges and Waters, said that his agency had previously not had good experiences with LED for the Hamburg street lighting. Many LEDs already failed after a year and some ¾ of lamps were also heavily infested with insects inside (it is not yet clear how the insects find their way into the bulbs). The insect infestation was observed regardless of the LED manufacturer.

The agency outlined clearly that residents prefer the conventional diffused illumination for paths because of the fear of dark spaces, such as hedges, which require lighting the side of the paths as well. Specific studies with measurable results have not been done, however. Information from other cities also show that residents sometimes retrofitted with LED light resulting in more illumination in their front yards. This is counter-productive in terms of ecological aspects.

The street lighting with LEDs is still suboptimal for reasons of cost. At the moment luminescent characteristics from LEDs could only be used with a max spacing of 25m, which is generally not the case in Hamburg. Additional light poles would need to be added, which would not be cost effective. Due to the selective lighting (downlight character) the simple exchange of existing light poles from conventional lights to LED lights poles without any additional light points was perceived to be insufficient and is therefore much too expensive when considering the need for additional poles. Therefore, LEDs would not be used to cover surfaces in Hamburg at the moment.

For optimum operation, the agency would want a plug and play system, which would enable the use of bulbs from any manufacturer. At the moment, due to the rapid rate of innovation, there are no spare parts for some equipment after only a few years. Usually light fixtures would operate for 25 years and lamps/bulbs would operate for at least 8 years, so replacing fixtures is too high a cost when actually only the lamp/bulb should be replaced.

Contact: Agency of Roads, Bridges and Water - Hamburg; Günther Frank,
gunther.frank@lsbg.hamburg.de

Bassano Application workshops 2014.04.29

PROGRAMMA

SSL-ERATE

ESPERIMENTI DI BUSINESS DEVELOPMENT & OPEN INNOVATION:
CREARE VALORE AGGIUNTO NELL'ILLUMINAZIONE ALLO STATO SOLIDO.

09:30 – 13:30

9:30 **Registrazione dei partecipanti.**

9:45 **Saluti delle Autorità.**

10:00 **Presentazione del progetto SSL-erate.**
Alberto Sozza - Vice presidente Luce in Veneto Scarl.

10:10 **Presentazione modalità operative.**
- Håkan Lagerquist - Lund University.
- Marc Fontoynont. Vice presidente ELCA European Lighting Cluster Association.
- Maurizio Scabbia - Open Innovation Sas.

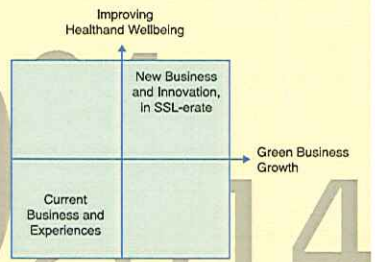
10:45 *Coffee break.*

11:00 **Svolgimento esperimenti di Business Development & Open Innovation.**

13:30 *Lunch break.*

ESPERIMENTI DI BUSINESS DEVELOPMENT

Gli esperimenti di Business Development sono finalizzati a creare innovazione in ambiti quali: l'incremento del green business o la promozione della salute e del benessere. Tali esperimenti mirano a **sviluppare nuovi prodotti o servizi, nuove collaborazioni strategiche, nuovi modelli di business o un nuovo sistema di finanziamento in un approccio di Open Innovation,** con dialogo aperto, condivisione delle conoscenze, collaborazione e apprendimento. In questi esperimenti vengono coinvolte organizzazioni e aziende sia dal lato della domanda che dell'offerta, (es: produttori, Comuni, edilizia e fornitori di servizi pubblici come scuole o ospedali). Vantaggi della partecipazione agli esperimenti: opportunità di co-creazione di valore commerciale e profitto; interazione con clienti chiave in diverse città europee; accesso alle conoscenze sugli effetti della SSL sulla salute e sul benessere; accesso alle conoscenze sull'incremento del green business mediante la tecnologia SSL; sinergia tra membri dei cluster dell'illuminazione europei. Nel corso del 2014 e del 2015 saranno organizzati seminari di follow-up con le aziende che scelgono di partecipare attivamente agli esperimenti di Business Development, in collaborazione con esperti del progetto SSL-erate.



ENIGMA

APPALTI PRE-COMMERCIALI E CONSULTAZIONE DI MERCATO.

14:30 – 19:00

14:30 **Benvenuto da parte del Comune di Bassano del Grappa e presentazione dell'area pilota di Bassano in ENIGMA.**
Sindaco Stefano Cimatti e Assessore alla sostenibilità Andrea Zonta; presentazione dell'area pilota per il Comune di Bassano del G.
Ivo Zancarli.

15:00 **Obiettivo generale e attuale stato dell'arte - presentazione del PIN (Avviso di Pre-informazione) e futuro bando d'appalto pre commerciale PCP.**
Håkan Lagerquist, Università di Lund - coordinatore della consultazione di mercato in ENIGMA.

15:45 **Raccolta del feedback dei partecipanti.**

16:00 *Coffee break.*

16:15 **Sessione di domande e risposte.**
Håkan Lagerquist, Università di Lund.

16:35 **Informazioni relative alla procedura di gara PCP (incl. sessione domande e risposte)**
Håkan Lagerquist, Un. di Lund - Roberta Michelon Comune di Bassano del G.

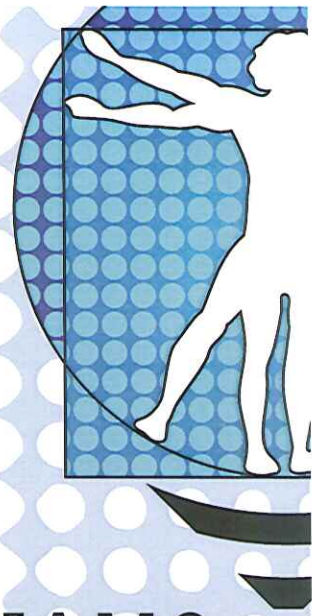
17:30 **Mix & Match Discussione interattiva tra i partecipanti.**

18:00 **Chiusura lavori.**

La città si attiva per migliorare la qualità della vita dei cittadini. Una città intelligente deve andare oltre alle considerazioni legate all'energia, attuando nel territorio processi di buon governo e innovazione tecnologica. Il Comune può e deve assumere un ruolo di guida del territorio, rendendosi parte attiva nei processi di sviluppo non più basando il concetto di crescita sul mero consumo, ma tornando a costruire in modo sostenibile. Lo stesso PAES deve trovare obbligatoriamente sinergie nella comunità per la sua realizzazione. Un dialogo tra attori diversi dello stesso territorio (e non solo) può far emergere potenzialità di sviluppo che diversamente resterebbero improduttive. La sostenibilità è fatta di visione e pianificazione, oltre che di ricerca e sviluppo, che si alimenta necessariamente dai contributi raccolti dal territorio (e non solo). La connessione con la pianificazione è pertanto fondamentale, diversamente si tratterebbe solo di una dichiarazione di intenti.

Sede/Venue

BASSANO DEL GRAPPA - MUSEO CIVICO DI BASSANO DEL GRAPPA - (VI)
SALA "CHILESOTTI" (ingresso da Piazza Garibaldi)



ILLUMINIAMO
IL NOSTRO FUTURO

L'INNOVAZIONE COME OPPORTUNITA' DI SVILUPPO
PER I TERRITORI E LE PUBBLICHE AMMINISTRAZIONI.

Il Comune di Bassano del Grappa e il Consorzio Luce in Veneto sono lieti di invitarvi a due giornate di workshop nell'ambito di due progetti europei: **ENIGMA** e **SSL-erate**, (FP7 - ICT - CSA e PCP). Sono previsti quattro momenti di lavoro che coinvolgono tutti i soggetti interessati ad confronto aperto in merito al futuro dell'illuminazione a LED nel nostro territorio e alle altre opportunità di sviluppo locale sostenibile.

29-30 APRILE 2014

Museo Civico di Bassano del Grappa - "Sala Chilesotti"

SEVENTH FRAMEWORK PROGRAMME

CITTA' DI BASSANO DEL GRAPPA

LUCEINVENETO

IL PROGETTO
ENIGMA

Il progetto ENIGMA "*Enlightenment and Innovation, ensured through pre-commercial procurement in cities*", coordinato dalla Città di Eindhoven nell'ambito del 7° Programma Quadro (7PQ), promuove l'introduzione della procedura degli appalti pre-commerciali (PCP) per lo sviluppo di investimenti pubblici nell'ambito dell'illuminazione pubblica, con l'obiettivo di sviluppare un legame strategico tra open innovation, politiche pubbliche a sostegno dell'innovazione e dell'efficienza energetica e sperimentazione di nuovi prodotti e servizi.
Attraverso il progetto ENIGMA le 5 città partner: Eindhoven, Bassano del Grappa, Stavanger, Malmö ed Espoo, hanno avviato un processo di appalto pre-commerciale congiunto che porterà allo sviluppo di soluzioni innovative e miglioramenti radicali per la sicurezza urbana e l'efficienza energetica nel contesto di impianti di illuminazione pubblica, utilizzando applicazioni ICT di nuova generazione, che saranno sperimentate nelle 5 aree pilota individuate dalle città. Il Comune di Bassano del Grappa e le altre città pilota lanceranno un appalto PCP Europeo per attività di Ricerca&Sviluppo e l'istallazione di sistemi pilota. Nella loro ricerca per un sistema di illuminazione omnicomprensivo le 5 città invitano le aziende, i professionisti e tutti i soggetti interessati (in Europa) a fornire le loro migliori idee e a prendere parte alla consultazione di mercato e al futuro processo di appalto pre-commerciale.

www.enigma-project.eu

ENIGMA

IL PROGETTO
SSL-ERATE

Il progetto SSL-erate mira ad accelerare l'adozione dell'illuminazione allo stato solido (Solid State Lighting, SSL) in Europa, sostenendo l'open innovation e fornendo informazioni convalidate a tutte le parti interessate. I partner del progetto raccolgono e condividono le conoscenze più recenti sull'incremento del green business basato sullo stato solido e sulla promozione della salute e del benessere tramite la tecnologia LED. Alla condivisione di queste conoscenze si accompagneranno opportunità di mercato in diversi cluster dell'illuminazione europei: Cluster Lumière, Cluster d'Il·Luminació de Catalunya, The Danish Lighting Innovation Network, Groen Licht Vlaanderen e Luce in Veneto. Alcune città partecipano inoltre come realtà pilota: Eindhoven (Paesi Bassi), Malmö (Svezia), Amburgo (Germania), Stavanger (Norvegia) e Bassano del Grappa.
L'obiettivo di SSL-erate è promuovere la collaborazione e l'innovazione tra le aziende e tutti i portatori di interesse, per consentire di tradurre le conoscenze del mercato in opportunità di business e innovazione.

www.ssl-erate.eu
www.lightingforpeople.eu

SSL-erate

lightingforpeople

SSL-ERATE ENIGMA

PROGRAMMA

SSL-ERATE
INNOVAZIONE E OPPORTUNITA' DI GREEN BUSINESS:
ESEMPI DI ILLUMINAZIONE PUBBLICA A LED INTEGRATA E SOSTENIBILE.
09:30 – 13:30

9:30 **Registrazione dei partecipanti.**

10.00 **Saluti delle Autorità.**
Sindaco Stefano Cimatti e Assessore alla sostenibilità Andrea Zonta.

10.10 **Introduce e coordina Marina Vio - ex prof.ssa I.U.A.V di Venezia.**

10:20 **Le opportunità dell'Open Innovation.**
Raffaele Rossi - MSc candidate in Environmental Management and Policy, Università di Lund.

10:40 **Presentazione del progetto europeo SSL-erate.**
Alberto Sozza - Vice presidente Luce in Veneto Scarl.

11:00 **L'efficienza dell'Illuminazione Pubblica quale parte integrante dello sviluppo del Paes e della programmazione delle smart cities.**
Nicoletta Gozo – Coordinatrice del "Progetto Lumiere" di ENEA.

11:20 *Coffee break.*

11:50 **Il Progetto Pilota di Roncade: gestione efficiente della luce pubblica per uno sviluppo intelligente del territorio.**
Gianluigi Gereschi - Tavolo Tecnico Lumiere.

12:10 **Le potenzialità dell'illuminazione nelle politiche di valorizzazione dei centri storici.**
Marina Vio - ex prof.ssa I.U.A.V di Venezia.

12:30 **Presentazione del Progetto Europeo "Enigma".**
L'area pilota del centro storico.
Adriano Ferraro e Roberta Michelon del Comune di Bassano del G.

12:50 **Dibattito.**

SSL-ERATE
ESPERIENZE E PERCORSI DI SOSTENIBILITA' URBANA: I PIANI DI SVILUPPO LOCALE DEL "PATTO DEI SINDACI (PAES)" E LE OPPORTUNITA' DI GREEN BUSINESS.
14:30 – 19:00

14:30 **Registrazione dei partecipanti.**

15:00 **Saluti delle Autorità.**
Sindaco Stefano Cimatti e Ass. alla sostenibilità Andrea Zonta.

15:10 **Il modello organico di sviluppo sostenibile promosso dall'UE.**
Introduce e coordina il Prof. Giuseppe Longhi dell'Univ. I.U.A.V di Venezia.

15:30 **Le opportunità dell'Unione Europea a supporto del Green Business.**
Ivan Boesso - Dip. Politiche Europee - Veneto Innovazione S.p.A.

15:50 **Le politiche per il clima del Comune di Padova.**
Daniela Luise - Settore Ambiente Comune di Padova.

16:10 **L'esperienza del Comune di Schio nell'attuazione del PAES.**
Valerio Dellai – Resp. Servizio Energia, Sicurezza e Verde Pubblico Comune di Schio.

16:30 **Le politiche energetiche sostenibili di Etra.**
Stefano Svegliado, Pres. di Etra Spa - Energia Territorio Risorse Ambientali.

16:50 *Coffee break.*

17:10 **Il Progetto Covenant Capacity - Intelligent Energy for Europe e il PAES del Comune di Bassano del Grappa.**
Andrea Rodighiero - Giovanni Franco di Sogesca S.r.l.

17:30 **Il Regolamento Edilizio Sostenibile (RES) e altri percorsi di sostenibilità urbana a Bassano del Grappa.** Massimo Vallotto.

17:50 **PIEDIBUS, piccoli passi per una città più sostenibile.**
Gianluigi Trento

18:10 **Vuoi abbassare la CO2 a Bassano del Grappa? Pedala!**
Renzo Masolo.

18:30 **Banzai – sistema di mobilità elettrica.**
Maurizio Petris - Resp. Sistema Mobilità di Confartigianato Vicenza.

18:50 **Dibattito.**

29 04 2014 29 04 2014

Associations (lighting, industrial, professional associations)

	Type / group	ORG NAME		Contact person Name / e-mail / phone
1	Installer Association	ANCE	www.ance.it	Cristiano Nordio - cristiano.nordio@ancevenezia.it - +39 041 5208988
2	Industry Association	APINDUSTRIA VENEZIA	www.apindustriavenezia.it	Stefania De Zorzi - dezorzi@apindustriavenezia.it
3	District	ASDI MANZANO	www.asdisedia.com	Carlo Piemonte (Director) - direzione@asdisedia.com - +39 0432 745611
4	Lighting Producers Association	ASSIL	www.assil.it	Fabio Pagano (Technical Manager) - pagano@assil.it - +39 0297373352
5	Industry Association / SSL Italian Association	ASSOLUCE	www.federlegnoarredo.it/it/associazioni/assoluc	Marcella Casari - arcella.casari@federlegnoarredo.it.
6	Lighting Association	AIDI Italian Illumination Association	www.aidiluce.it	Anna Busolin (President) - info@sintpro.it - +39 0432 571581
7	Public Autorithy	CENTRO ESTERO VENETO	www.centroesteroveneto.com	Silvia Semenzato (International Marketing Dept.) - marketing@centroeseteroveneto.com - +39 0412526211
8	Industry Association	CNA PADOVA	www.pd.cna.it	Matteo Rettore (CEO) - m.rettor@pd.cna.it - +39 0498062214
9	Industry Association	CNA ROVIGO	www.ro.cna.it	Franco Cestonaro - cestonaro.f@cnaro.it - +39 0425 987633
10	Industry Association	CNA VENEZIA	www.ve.cna.it	Renato Fabbro (CEO) - r.fabbro@ve.cna.it - +39 041 5387525
11	Industry Association	CONFINDUSTRIA PADOVA	www.confindustria.pd.it	Rino Dal Pos (CEO) - rdalpos@confindustria.pd.it - +39 049 8227183
12	Industry Association	CONFINDUSTRIA VENEZIA	www.confindustria.venezia.it	Paolo Politeo (Law and Economics Division) - ppoliteo@uive.it - +39 041 935601
13	Industry Association	CONFINDUSTRIA SIAV VENEZIA	http://www.siav.net/	Gabriella Bettiol - gabriella.bettiol@siav.net - +39 041 2517545
14	Industry Association	CONFINDUSTRIA SIAV VENEZIA	http://www.siav.net/	Stefano Miotti - stefano.miotto@siav.net
15	Industry Association	CONFARTIGIANATO TREVISO	www.confartigianatomarcatrevigiana.it	Luigi Gallinaro - info@trevisoimprese.it - +39 0422 433300
16	Industry Association	CONFARTIGIANATO VENEZIA	www.upavenezia.it	segreteria@upavenezia.it - +39 041 4564511
17	Industry Association	FEDERLEGNO ARREDO	www.federlegnoarredo.it	Flavio Tomaello (Coordinator) - flavio.tomaello@federlegnoarredo.it - +39 041 2517513
18	Public Autorithy	ICE	www.ice.gov.it	Paolo Pesce - p.pesce@ice.it - +39 045 8293911
19	Public Autorithy	MINISTRY OF ECONOMIC DEVELOPMENT	www.sviluppoeconomico.gov.it	Andrea Bianchi (Director) - dgpic.segreteria@sviluppoeconomico.gov.it - +39 06 47053558
20	Public Autorithy / SSL Italian Association	MINISTRY OF UNIVERSITY AND RESEARCH	http://www.istruzione.it/	Carmine Marinucci - carmine.marinucci@miur.it - +39 0697727052
21	Architects Association	ORDINE ARCHITETTI PADOVA	www.ordinearchitetti.pd.it	Giuseppe Capocchin (President) - architettipadova@archiworld.it - +39 049 662340
22	Architects Association	ORDINE ARCHITETTI TREVISO	www.ordinearchitettitreviso.it	Alfonso Mayer (President) - infotreviso@archiworld.it- +39 0422 591885
23	Architects Association	ORDINE ARCHITETTI VENEZIA	www.ordinevenezia.it	Anna Buzzacchi (President) - oappc.venezia@archiworldpec.it - +39 041 5203466
24	Public Autorithy	PROVINCE OF PADUA	www.provincia.pd.it	Barbara Degani (President) - presidente@provincia.padova.it - +39 049 8201140
25	Public Autorithy	REGION OF LOMBARDIA	www.regione.lombardia.it	Andrea Gibelli - andrea.gibelli@regione.lombardia.it - +39 0267653437
26	Public Autorithy	REGION OF VENETO	www.regione.veneto.it	Vittorio Panciera (Internationalization Department Director) - vittorio.panciera@regione.veneto.it - +39 041 2792141
27	Public Autorithy	REGION OF VENETO	www.regione.veneto.it	Antonio Bonaldo (Cluster Department Director) - antonio.bonaldo@regione.veneto.it - +39 041 2795864
28	Network of Enterprises for social innovation	R.I.P.I.S.	www.ripis.it	Domenico Galia (President) - mail@domenicogalia.it - +39 348 2201947
29	Industry Association	UNINDUSTRIA ROVIGO	www.unindustria.rovigo.it	Renzo Moro (Director) - r.moro@unindustria.rovigo.it
30	Industry Association	UNINT	www.unint.it	Bruno Carrera (Director) bcarrera@unindustriatv.it - +39 0422 294248
31	Public Autorithy	VENETO SVILUPPO	www.venetosviluppo.it	Giorgio Grosso (President) - mail: info@venetosviluppo.it - +39 041 3967211 -
32	Bio-Architects National Association	Istituto Nazionale di Bioarchitettura®	http://www.bioarchitettura.it	Erminio Redaelli (communication manager) - segreteria@bioarchitettura.it
33	Bio-Architects National Association	Istituto Nazionale di Bioarchitettura®	http://www.bioarchitettura.it	Gaia Bollini (coordinator area) - vicenza@bioarchitettura.it - +390424 219010
34	Architects Association	ORDINE ARCHITETTI VICENZA	http://www.ordinearchitetti.vi.it/	MARISA FANTIN (President) - architettivicenza@awn.it - +390444 32 57 15
35	Federation of Architects Associations - Veneto Regi	F.O.A.V	http://www.foav.veneto.it/	BOTTAZZI Marzio (President) -
36	Industrial Design Association	ADI Association for the Industrial Design	http://www.adi-design.org/homepage.html	Luisa Bocchietto (President) - a.fontaneto@adi-design.org - +39 02 33100 164/241
	Architects Association	IN/ARCH National Institute of Architecture	http://www.inarch.it/ http://www.inarchtriveneto.it/	Davide Zardo - inarch.veneto@xcube.it; inarch@inarch.it - +39 06 68802254
37				
38	Chamber of Commerce / SSL Italian Alliance	ASSOKNOLEDGE	www.assoknowledge.org	Alessandro Sciolari (Technical Manager) - a.sciolari@assoknoledge.org
39	SME Consortium	ASSODEL	www.tecnoimprese.it	Elena Baronchelli - e.baronchelli@tecnoimprese.it - +39 02 210 111 243

29 Aprile 2014

ILLUMINIAMO IL NOSTRO FUTURO:

L'INNOVAZIONE COME OPPORTUNITA' DI SVILUPPO PER I TERRITORI E LE PUBBLICHE AMMINISTRAZIONI

09:30 – 13:30
SSL- ERATE – INNOVAZIONE E OPPORTUNITA' DI GREEN BUSINESS: ESEMPI DI ILLUMINAZIONE PUBBLICA A LED INTEGRATA E SOSTENIBILE.

15:00 – 19:00
SSL-ERATE – ESPERIENZE E PERCORSI DI SOSTENIBILITA' URBANA: I PIANI DI SVILUPPO LOCALE DEL "PATTO DEI SINDACI (PAES)" E LE OPPORTUNITA' DI GREEN BUSINESS.

REGISTRATION FORM

N.	Cognome	Nome	Ente/Azienda	Città	E-Mail	TYPE ORGANISATION
1	LAZZAROTTO	GIANFRANCO ANTONIO	URBAN CENTER BASSA		gianfrancolt@alice.it	MUNICIPAL ASSOCIATION
2	MERLO	PAOLO	F.LLI CAROLLO SRL	CENTRALE DI ZUGLIANO	ufficio tecnico @ carollolimpianti.it	COMPANY
3	ZAIA	LUCA	ACEGASAPS GRUPPO HERA	PADOVA	lzaia@acegasaps.it	COMPANY (MULTIUTIL
4	GUERRIERI	ANGELO	CPL CONCORDIA	CONCORDIA SS	aguerrieri@cpl.it	COMPANY
5	BELLINI	ADAMO	ARPAV	Vicenza	abellimi@arpa.veneto.it	REGIONAL ENVIRO MENTAL AGENCY
6	BERTOLO	ANDREA	ARPAV	Padova	abertolo@arpa.veneto.it	— " —
7	DALLA CASSA	LEOPOLDO	VENETOSVILUPPO			ASTROPHYSICS ASSOCIATION
8	Facci + London		Sicurezza	THIENE	facci@facci.it	COMPANY

N.	Cognome	Nome	Ente/Azienda	Città	E-Mail	
9	TONIOLO	GIOVANNI	COMUNE DI MALO	MALO	giovanni.toniolo@comune.malo.vi.it	CITY
10	SANDRI	SILVIA	COMUNE DI MALO	MALO	silvia.sandri@comune.malo.vi.it	CITY
11	PINEZZOLA	ENRICO	COMUNE DI MALO	MALO	ENRICO.PINEZZOLA@COMUNE.MALO.VI.IT	CITY
12	LOBBATO	PAOLO	COMUNE DI POVE D/G	POVE	PAOLOEDGARDOLOBBATO@GMAIL.COM	CITY
13	VENZA	ANTONELLA	LUCE IN VENETO	PIOMBINO	info@luceinveneto.it	LIGHTING CLUSTER
14	CABOTTO	IVO	UMPI	PADOVA	ivo.cabotto@libero.it	COMPANY
15	POMERIGGIO					
16	PINEZZOLA	ENRICO	COMUNE DI MALO	MALO	ENRICO.PINEZZOLA@COMUNE.MALO.VI.IT	CITY
17	Costa	Aurelio	Industrie Lotto Possagno	Possagno	aurelio.costa@cittopossagno.com	COMPANY
18	TAGLIOLI	GIOVANNI	BAXI S.p.A.	BASSANO del GRAPPA	giovanni.taglioli@bdxi.it	COMPANY
19	BIESSO	IVAN	VENETO INNOVAZIONE SpA	VENEZIA	ivan.baero@venetoinnovazione.it	REGIONAL INNOVATION AGENCY
20	COLZATO	MATTEO	LIB. PROF – ANAB	PADOVA	colzatomatteo@libero.it m.colzato@anab.it	PROFESSIONAL ORDER - ARCHITECT
21	BASSO	MICHELE	LIB. PROF. ARCHITETTO	BASSANO	sarchmb@gmail.com	ARCHITECT
22	ZANON	ALBERTO	COMUNE BASSANO DEL GRAPPA	BASSANO		CITY
23	TOMASI	GIOVANNI	COMUNE DI MALO	MALO		CITY

N.	Cognome	Nome	Ente/Azienda	Città	E-Mail	
24	SANDRI	SILVIA	COMUNE DI MALO	MALO	silvia.sandri@comune.malo.vi.it	CITY
25	DE ROSSI	MARIA	ARCHITETTO	SAN BONIFACIO	maria.derossi@tiscali.it	ARCHITECT
26	PENNISI	ANDREA	ARCHITETTO	VENEZIA	andrea.pennisi@a-office.org	ARCHITECT
27	COMPOSTELLA	ANNABIANCA	ARCHITETTO	BASSANO	archiven@libero.it	ARCHITECT
28	SANTI	ROBERTO	ARCHITETTO	BASSANO	basarchitetti@gmail.com	ARCHITECT
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SSL-erate

Bassano Application workshop 2014.04.29

Street lighting for health and well-being

Application being considered:

This workshop has been organised to raise awareness among the public about SSL opportunities in the field of street lighting, and to facilitate communication among relevant actors in order to create a dialogue between local stakeholders and the European lighting industry. The lighting sector is experiencing a rapid change due to the development of new light technology: information and know-how will be critical success factors that cannot be achieved without networking activities. Thereby, in order to get competitive advantage, it is imperative to establish connections with local and international stakeholders to seize the opportunities given by such a rapid technologic improvement.

In this context, the city of Bassano aims to use new lighting technology to improve the quality of street lighting and lay the foundation for the development of a smart city. SSL can convey various types of information that can be used to optimise traffic, energy consumption and safety.

The character of the dialogue

Although the audience was very engaged in the discussion, the dialogue was mainly generic. However, the discussion entered into details when practical applications of SSL were examined: an Open Innovation exercise where the audience could suggest ideas, identify needs, and present existing technologies, was organised and many interesting applications were brought up.

The audience was composed of various stakeholders with different backgrounds. This has been very useful for diverse contribution to the dialogue, in which several points of view were taken into consideration. The success of the workshop showed the importance of open innovation and networking among stakeholders. The public was genuinely interested, since it was perceived that the topic was important for future development in the lighting market. The role of the moderators in involving the public was fundamental for the success of the workshop, since the audience needed to be engaged in the dialogue to participate actively in the discussion.

Barriers

People agreed that to manage a business dealing with rapidly changing technology is a challenging task. Investing in a dynamic sector can yield large economic returns, but nevertheless it entails high risks. Financing an innovative business is difficult for business and

should be planned carefully.

The public sector is the main driver of street lighting development, and needs to take the initiative for engaging private business to develop ideas regarding traffic control, monitoring and safety that could be used by the municipality.

The business actors participating in the workshop expressed their perplexity and unwillingness to develop ideas that are not suitable for the city of Bassano, arguing that they have no interest in having business abroad. They would rather focus on the needs of Bassano and be confident to sell their products to a familiar entity. Scepticism towards international networking and business opportunities abroad was recognised as a crucial barrier that needs to be addressed in the future.

Intelligent Green Business Opportunities

The Open Innovation exercise organised during the workshop allowed the audience to present their business ideas related to innovative street lighting. A fascinating idea is to install special light sources emitting modulated wavelengths on the dashboard of cars and trucks: the special light helps the driver to keep focused, preventing road accidents.

The discussion focused on the development of light systems for a smart city. Applying modern technology to lampposts could lead to many advantages for the municipality and business applications for the private sector. Firstly, use of light could be optimised by installing movement detectors, so that unnecessary illumination is avoided. The detectors might be used by police forces to prevent crime and increase safety of the citizens. Moreover, a system collecting information about traffic and weather could be implemented, and would have great business success since many weather forecast companies and traffic report agencies are striving to get accurate, real-time data.

Health and wellbeing

The first potential benefit of SSL application to street lighting to health and well-being is the increased road safety for vehicles, bikes and pedestrians. In particular, bikes can install inexpensive lights to improve safety of night cycling. In addition, improved street lighting would mean more safety at night and a better living environment. Another benefit of this field of application is the light pollution reduction, which has become a topical matter of debate.

Open innovation

The Open Innovation exercise has been a very inspiring practise. The audience had the opportunity to realise that many valuable ideas can be collected by a heterogeneous group of actors. People seemed to be intrigued by the possibility to use open innovation and to develop a

network with other stakeholders from the European lighting sector.

Drivers

There are several needs that are addressed by the development of SSL on street illumination. Firstly, national legislation is setting strict limits to light pollution. Municipalities have to find ideas to reduce lights emitted at nighttime and SSL can provide dynamic and smart lighting solutions. Secondly, municipalities aim at reducing electricity costs as well as maintenance costs for lights. Thereby, reliable and energy-efficient illumination is demanded. Thirdly, information is a main driver for technology change. Accessibility of information regarding city traffic using different means of transportation is critical for reducing commuting time and can therefore grant massive cost reduction and increased efficiency. Lastly, empowering street lighting is important in relation to viability and safety, particularly for pedestrians.

Examples and stories

In the town of Roncade, SSL lighting has been installed on streets to improve intelligent lighting and reduce costs. SSL has been used to highlight dangerous turns and buildings that could not be seen by the driver.

A centralised light control system has been already developed by local business. Through small devices installed on lamppost it is possible to adjust the light to the current needs and to monitor traffic optimising local transportation.

Conclusion

There is much interest among local stakeholders towards future development of SSL technology and its application to street lighting. Some barriers are present but they could be overcome through knowledge sharing and networking with other European actors. Many applications are directly related to the development of a smart city. Municipalities willing to establish an intelligent and energy-efficient system will have to look at innovative street lighting.

SSL-erate

Bassano Application workshop 2014.04.29

Monumental lighting for health and well-being

Application being considered:

The purpose of this workshop was to illustrate possible applications of SSL for the illumination of monuments and historic buildings in the municipality of Bassano del Grappa. Being an important tourist destination in the area, it is a main concern for the city to improve the quality of tourist sites in order to deploy their full potential. Therefore, means of enhancing the perception of monumental buildings while reducing energy consumption are a topical issue.

Challenges and opportunities related to this matter were discussed in the workshop. Particular emphasis was given to the illumination of the old town centre of Bassano, which is of critical importance for the city. The expected goals of this project were to involve relevant stakeholders in the process of transition to a dynamic, intelligent lighting, and to foster sharing of knowledge and expertise between the network of actors in Bassano and the other cities participating in the SSL-erate program.

The character of the dialogue

The workshop created significant interest among the audience, who seemed to be willing to be involved in the transition process. The audience was composed of a wide array of different stakeholders, e.g. municipality officers, private businessmen, researchers, academics. However, while the interest of the audience was perceived to be high, creating active involvement and participation in the discussion proved to be a challenge. Input from the audience was not always spontaneous, since sometimes the public needed to be asked questions in order to participate in the discussion. A take-home message for future workshop sessions is that building a stimulating environment to improve the attitude of the audience is a critical factor for success.

Nevertheless, when the audience was engaged in the debate, the discussion was rather detailed and entailed many ideas of practical applications of SSL for the illumination of monumental buildings. The presence of a heterogeneous audience guaranteed a debate that touched upon different aspects, e.g. technology, regulation, financing, and public perception.

Barriers

One primary barrier to SSL deployment is related to financing issues. Raising capital for an investment through a bank loan is very expensive and therefore reduces the returns on the investment. At the current state, and partly because of the consequences of the economic contraction, few businesses can afford to make a significant investment on a developing technology. These limitations in relation to the initial investment substantially hinders possibilities of uptaking SSL. Similarly, as many actors are struggling with their current businesses, it is challenging to plan on the long term when there are more urgent need on the

short term. A similar issue regards the lack of private funding in R&D. This aspect limits possibilities of innovative technology development; although it could be seen as a driver to participate in an open innovation dialogue with stakeholders from all Europe.

The required illumination system to be implemented in Bassano has to be open and modular. Therefore, requirements imply that it should be possible to connect the illumination system with other systems, and that it would be adaptable with potential future needs. These characteristics are perceived as challenging to be achieved.

Another issue relates to specificity of the products. Clarifications about the future use of the network were asked several times; according to the audience's opinion, local business should concentrate on solutions to local problems and would have no interest in finding solutions for other cities than Bassano. Thereby, local business would only focus on specific and practical problems in the city of Bassano rather than developing concept ideas with diverse applications.

A discussion regarding visually impaired persons was raised during the workshop. Lighting of monumental buildings should ensure proper lighting for people with visual disabilities. This issue, however, could be considered an opportunity, since current illumination system do not address visually impaired people.

Public perception of innovative lighting for monuments was, in general, positively perceived, although some participants showed scepticism towards nighttime illumination, arguing that it would bother locals and encourage night disturbance. While most of the audience disagreed with this objection, it seems to be an issue that should not be underestimated.

Intelligent Green Business Opportunities

During the workshop, the audience was engaged to identify and describe Intelligent Green Business opportunities related to the practical applications discussed; many ideas were collected.

The starting point of the discussion was the concept of smart lighting – to illuminate where it is needed, when it is needed, to the extent that is needed and in the way that is needed. Bassano is a city with two dimensions: a "public" one, when tourists visit the old town centre and the city is a dynamic, living environment; and an "intimate" one, at late hours in the night or during the weekdays, where the peaceful and relaxing side of the town is shown. Through the use of smart SSL, it would be possible to provide the right light according to the time of the day, or the week, or the season. In addition, illumination of special events that require particular lighting, such as the Carnival, could be improved.

The need of a customised, adjustable illumination system, suitable to the historic and artistic features of the old town centre, was identified. Lights could be used to lead the visitors in the discovery of the old town centre through the creation of pathways driven by different lights. Existing technology can make these pathways exchangeable according to different needs or preferences. The system would create new marketing value in the area and foster local tourist and commercial economy. Therefore, designing and organising this light system should be

done involving various stakeholders, such as local shops and businesses, as well as the municipality.

Other ideas of Intelligent Green Business opportunities that were presented ranged from developing transparent paints that could use SSL technology to illuminate monument surfaces, and to offer lighting retrofit as a financial product for business to invest on.

Health and wellbeing

The general belief is that using SSL light in public spaces will increase the citizens' quality of life, and lead to a more comforting living environment. The audience agreed on the fact that improving light quality in everyday life would bring along better life quality. A main concern is to reduce light pollution, in accordance to recent regulations to curb unnecessary lighting at night. In order to increase the light performance, it is important to hire lighting designers, who can structure the disposition of lights in an efficient and appropriate manner.

Open innovation

Opportunities given by open innovation were considered a critical factor for success of SSL-related business. The audience highlighted the importance of establishing an European platform for networking and dialogue among stakeholders. In order to increase the level of know-how, all the actors in the market need to collaborate to overcome initial fragmentation. Know-how will become a fundamental factor of competitive advantage. Clusters and municipalities, with their wide network possibilities, should cooperate to get local actors onboard.

Drivers

People described the main reason to look at SSL and its possible development as a mean to improve the attractiveness of the city in an innovative way. Enriching spatial perception and quality of light ensures a more sapient management of public heritage, which is a critical asset for the municipality of Bassano. Through the deployment of intelligent and dynamic lighting one can lay the foundation of future smart cities.

Examples and stories

Many examples were brought up in the discussion. Particularly interesting was the topic of dynamic illumination according to diverse periods of the day, week or year. Regarding the issue of various phases of illumination for different times of the night, a study concept for Gran Madre di Dio church in Rome was presented. The concept is based on the idea of using "little light, but right light" to have a dynamic progress of lighting and dimming of the building throughout the night, using various light colours and illuminating different parts of the church.

The idea of creating light pathways for tourists is already used for lighting the historic city walls in Verona, where buildings are illuminated in many different ways.

In Roncade, SSL has been used on many monumental buildings – the bell tower, the castle, a roadside shrine, etc. –to highlight architectural lines.

Conclusion

The general impression is that there is much room for development for SSL in the region. Many important features, such as network activity and sharing information, need to be empowered. Lack of knowledge and know-how are limiting SSL deployment. Financial hurdles are a significant barrier to Intelligent Green Business development that cannot be overcome without public support.

Zabrze Application workshop 2014.06.11

Inteligentne oświetlenie dla inteligentnego rozwoju Zabrza

Smart Lighting for Intelligent Development of Zabrze

Zabrze, środa, 11 czerwca 2014r.

godz. 9:30 – 14:10, Sala Historyczna budynku Urzędu Miejskiego w Zabrzu, ul. Prof. Religi 1

Prowadzenie warsztatów:

Alexander Weiland i Tove Karlsson z Uniwersytetu w Lund w Szwecji

9:30	Powitanie i wprowadzenie – Krystyna Kurowska, doradca prezydenta Zabrza	Welcome and Introduction – Krystyna Kurowska, Zabrze mayor's advisor
9:45	Inteligentne oświetlenie w modernizowanym inteligentnym mieście, przykład miasta Espoo w Finlandii (Alexander Weiland)	Smart Lighting in Smart City renewal, with a focus on Espoo (Finland)
10:45	Projekt SSL-erate (Solid State Lighting – Półprzewodnikowe źródła światła) i zainteresowanie półprzewodnikowymi źródłami światła w Unii Europejskiej. (Tove Karlsson)	The SSL-erate project and the EU interest in Solid State Lighting
11:30	Przerwa kawowa	Cofee break
11:40	Rozwój inteligentnego „zielonego biznesu" (Tove Karlsson)	Intelligent Green Business Development
12:30	Stan rozwoju SSL i inteligentnego oświetlenia (Alexander Weiland)	Development status for SSL and Smart Lighting
13:20	Dyskusja dotycząca potencjału dla inteligentnego oświetlenia w Zabrzu (po polsku + tłumaczenie wniosków z dyskusji prelegentom)	Open dialogue on the potential for Smart Lighting in Zabrze (Dialogue in Polish, summary translation)
13:50	Podsumowanie warsztatów	Workshop Conclusions
14:10	Zakończenie warsztatów – Krystyna Kurowska, doradca prezydenta Zabrza	End of the workshop – Krystyna Kurowska, Zabrze mayor's advisor

Participants' list

	First name	Surname	Position, organisation
1	Marcin	Bania	Head Specialist, Zabrze City Hall, Investors' Office
2	Walenty	Biedulski	Zabrze City Hall
3	Małgorzata	Bombelka	Zabrze City Hall, Spatial Planning Office
4	Grzegorz	Boral	Zabrze City Hall, Head of Municipal Infrastructure Department
5	Aleksandra	Dusza	Innovation Centre, Silesian University of Technology
6	Adam	Foltyn	AF Tuning
7	Katarzyna	Gawlik-Król	Municipal Roads and IT Infrastructure Authority
8	Katarzyna	Gorzałczyńska	Zabrze City Hall, Spatial Planning Office
9	Grzegorz	Janecki	Zabrze City Hall, Head City Engineer
10	Krzysztof	Joniec	Zabrze City Hall, Municipal Infrastructure Department
11	Halina	Karbowska	Zabrze City Hall, Spatial Planning Office
12	Dawid	Kasprzycki	APM Bielsko-Biała
13	Rafał	Kobos	Zabrze City Hall, Head of Investors' Office
14	Krystyna	Kurowska	Zabrze City Hall, Mayor's advisor
15	Marcin	Lesiak	Zabrze City Hall, Head of International Relations Office
16	Andrzej	Lesiak	Detal Projekt
17	Adam	Łobko	Zabrze City Hall, Spatial Planning Office
18	Jacek	Mogielnicki	Zabrze City Hall, Spatial Planning Office
19	Ewa	Pawłowska	Zabrze City Hall, International Relations Office
20	Zbigniew	Rau	Zabrze City Hall, International Relations Office
21	Mariusz	Schulz	VOX NET
22	Sylwia	Szulc	Zabrze City Hall, International Relations Office
23	Małgorzata	Juchniewicz	Zabrze City Hall, Strategy and City Development Department
24	Leszek	Królicki	Zabrze City Hall, Investments Department
25	Łukasz	Choroba	Zabrze City Hall, Municipal Infrastructure Department
26	Robert	Sierla	Zabrze City Hall, Municipal Infrastructure Department
27	Paulina	Gala	Zabrze City Hall, Press Department

Warsztaty "Inteligentne oświetlenie dla inteligentnego rozwoju Zabrza"

L.p.	Imię	Nazwisko	Instytucja, wydział	e-mail	podpis
1	Marcin	Bania	UM Zabrze, BI	mbania@um.zabrze.pl	
2	Walenty	Biedulski	UM Zabrze		
3	Małgorzata	Bombelka	UM Zabrze, BPP	mbombelka@um.zabrze.pl	
4	Grzegorz	Boral	Um Zabrze, IK	gboral@um.zabrze.pl	
5	Aleksandra	Dusza	Centrum Innowacji Politechniki Śląskiej		
6	Adam	Foltyn	AF Tuning	Bodamfoltyn@o2.pl	
7	Katarzyna	Gawlik-Król	MZDiI	kgawlikkol@mzdii.zabrze.pl	
8	Katarzyna	Gorzałczyńska	UM Zabrze, BPP	kgorzalczynska@zabrze.pl	
9	Grzegorz	Janecki	UM Zabrze, Główny Inżynier Miasta		
10	Krzysztof	Joniec	UM Zabrze, IK	kjoniec@um.zabrze.pl	
11	Halina	Karbowska	UM Zabrze, BPP		
12	Dawid	Kasprzycki	APM Bielsko		
13	Rafał	Kobos	UM Zabrze, BI		
14	Krystyna	Kurowska	UM Zabrze, Pełnomocnik Prezydenta		
15	Marcin	Lesiak	UM Zabrze, BWZ		
16	Andrzej	Lesiak	Detal Projekt	andrzej.lesiak@gmail.com	
17	Adam	Łobko	UM Zabrze, BPP		
18	Jacek	Mogielnicki	UM Zabrze, BPP	jmogielnicki@um.zabrze.pl	
19	Ewa	Pawłowska	UM Zabrze, BWZ	Vopelkowska@um.zabrze.pl	
20	Zbigniew	Rau	UM Zabrze, BWZ		
21	Mariusz	Schulz	VOX NET		
22	Sylwia	Szulc	UM Zabrze, BWZ	sszulc@um.zabrze.pl	

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Warsztaty "Inteligentne oświetlenie dla inteligentnego rozwoju Zabrza"

L.p.	Imię	Nazwisko	Instytucja, wydział	e-mail	podpis
23	MAŁGORZATA	TRUCHNIEWICZ	SR - UM	mtruchniewicz@um.zabrze.pl	
24	LESZEK	KRÓLICZEK	GZ - UM	lkrolicz@um.zabrze.pl	
25	Łukasz	Chruściel	IK - UM	lchrusciel@um.zabrze.pl	
26	Robert	Sierla	IK - UM	rsierla@um.zabrze.pl	
27	PAULINA	GALA	WKS	pgala@um.zabrze.pl	
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Zabrze, Poland 11.06.2014

Workshop Summary

Smart Lighting for Intelligent Development of Zabrze

Introduction – Mrs. Krystyna Kurowska – Mayors Advisor. The situation of regulations, planning documents and development of the energy efficient solutions in the City of Zabrze was presented.
Activities of Zabrze City in terms of energy saving and modern lighting solutions:
-common public tender for electricity purchase with neighboring cities
-testing LED installations in street lighting
-Low Emission Reduction Programme
In preparation phase:
-Local Energy Programme
-Program of Activities for Energy Efficiency Improvement
-Plan of Low Emission Economy

Mr. Alexander Weiland presentation of "Smart Lighting in Smart City renewal with a focus on Espoo (Finland)

Ms. Tove Karlsson presentation " The SSL-erate project and the EU interest in Solid State Lighting"

and presentation "Intelligent Green Business Development"

Mr. Alexander Weiland presentation "Development status for SSL and Smart Lighnting"

There were 27 participants in the workshop. Representatives of public authorities of Zabrze and private entrepreneurs.

Main thoughts of the workshop:

Examples of clusters supporting development of Intelligent Light Systems.

Attracting attitude of lighting – beautiful lighting makes city more pleasant place to live and makes it more attractive to visit.

Intelligent lighting solution make people feel more welcomed in a certain place.

Impact of the light on people's health and wellbeing. 95% of lighting is harmful for health.

Cities should become platforms of development of new technologies.

Need of mindset change regarding lighting that should be similar to sunlight spectrum to avoid health problems.

Costs of "good" light is higher but reduces alternative costs (like health problems)

Light is a great information carrier – the future will bring interactive light systems and so called internet of things.

Problems with compatibility of the systems for intelligent lighting management. It is necessary to create an open source international software system that would be a standard for Intelligent Light Systems producers.

There was a lively discussion about possibilities of implementation of Intelligent Light System in Zabrze. Participants during the discussion mentioned some positive factors that can support development of such a system and some obstacles of the development. Among positive factors there are raise of space attractiveness, better life conditions, dropping prices of SSL sources, technology already exists. Among obstacles: High investment costs, Financial limits, incompatible software systems for intelligent light management.

The workshop was summarized by Mrs. Krystyna Kurowska – Mayors Advisor.

Espoo Application workshop 2014.04.25

Workshop -
Possibilities and benefits of LED and Smart Lighting as a part of public transportation systems

Perjantaina, 25. huhtikuuta 2014 Klo 9.00 - 12.00

Tervetuloa työpajaan, aiheena
LED- ja älyvalaistuksen mahdollisuudet ja edut osana julkista liikennettä

Espoon kaupunki on osana EU:n yhteistä ENIGMA-projektia, jonka päämääränä on edistää älykkään valaistuksen roolia kaupunkikuvassa parantaen mm. asukkaiden hyvinvointia ja liikenneturvallisuutta. Kohderyhmänä työpajalle ovat alan yritysten edustajat, tutkijat ja kaupunkisuunnittelijat.

Espoon kaupunki yhteistyössä Lundin yliopiston kanssa kutsuu teidät yhteiseen työpajaan kuuntelemaan ja keskustelemaan puolijohdevalaistuksen (Solid State Lighting) mahdollisuuksista julkisen liikenteen innovaatioiden alustana.

Sisältöön kuuluu keskustelua dynaamisen valaistuksen toiminnallisuudesta sekä sen vaikutuksista ihmisiin ja ympäristöön. Tarkempi ohjelma eri presentaatioista löytyy seuraavalta sivulta.

Tavoitteena on esitellä puolijohdevalaistuksen eri ominaisuuksia ja mahdollisuuksia sekä yhdistää yrityksiä, suunnittelijoita, käyttäjiä ja viranomaisia yhteiseen keskusteluun aiheesta. Työpajan vetävät professori Reine Karlsson sekä tutkija Håkan Lagerquist Lundin yliopistosta. Esitykset pidetään englanniksi.

Työpaja järjestetään Otaniemen **Urban Mill** -tiloissa perjantaina **25.4.2014** kello **9.00 - 12.00**. Ilmoittautuminen sähköpostilla osoitteeseen toni.malinen@espoo.fi, kuitenkin viimeistään 18.4.2014. Sydämellisesti tervetuloa!

Urban Mill
Betonimiehenkuja 3
02150 Espoo

Workshop -
Possibilities and benefits of LED and Smart Lighting as a part of public transportation systems

9:00	Registration & coffee
9:15	Introduction to workshop
9:40	Introducting 'Accelerate SSL Innovation for Europe (SSL-erate)' Reine Karlsson / Lund University
9:50	Green Business Development: improving the user value of lighting and energy saving Reine Karlsson / Lund University
10:10	The potential for Light for positive impacts on health and wellbeing Reine Karlsson / Lund University
10:30	Open Dialogue on the theme 1 (see workshop summary sheet for expected topics covered/outcomes of dialogue).
11:45	Wrap up & summary

SSL-Erate Workshop, Espoo

Urban Mill, 25.4.2014

List of invited persons

Mauri Haapasaari	C2 Smartlight (company)
Henri Juslén	Helvar (company)
Leo Hatjasalo	Meltron (company)
Jaana Jahkonen	Meltron (company)
Santeri Oksanen	Lumine Lighting Solutions (company)
Toivo Vilmi	Valopaa (company)
Ari Mattila	Valopaa (company)
Antti Rantakallio	Easy LED (company)
Liisa Halonen	Aalto University Lighting Unit
Leena Tähkämö	Aalto University Lighting Unit
Eino Tetri	Aalto University Lighting Unit
Iisakki Kosonen	Aalto University Department of Civil and Environmental Engineering
Jussi Lehtinen	City of Espoo
Meiri Siivola	City of Espoo
Laura Yli-Jama	City of Espoo
Pekka Sillanpää	City of Espoo
Päivi Ahlroos	City of Espoo
Annukka Larsen	City of Jyväskylä
Olli Markkanen	City of Helsinki
Juhani Sandström	City of Helsinki

Total of 20 persons

SSL-Erate Workshop, Espoo

Urban Mill, 25.4.2014

List of participants

Max Björkgren	Research & technology director, Helvar (company)
Laura Yli-Jama	Landscape architect, Technical services department, City of Espoo
Pekka Sillanpää	Electric engineer, Technical services department, City of Espoo
Olli Markkanen	Outdoor lighting manager, Helen (energy company of the City of Helsinki)
Leo Hatjasalo	Managing director, Meltron (company)
Salla Koivusalo	Procurement specialist, City of Vantaa
Liisa Halonen	Professor, Aalto University Lighting Unit
Leena Tähkämö	Researcher, Aalto University Lighting Unit
Sampo Saukkonen	Senior partner, Lumine Lighting Solutions (company)
Håkan Lagerquist	Researcher, Lund University
Reine Karlsson	Professor, Lund University
Jussi Lehtinen	Senior planning officer, City of Espoo
Päivi Ahlroos	Development director, City of Espoo

SSL-erate

LU OPEN
LUND UNIVERSITY Open Innovation Center

ESPOO
ESBO

APPLICATION WORKSHOP / CITY OF ESPOO
Friday, 25th of April 2014
Urban Mill, Espoo

Participant Name and Surname	Company / Organization	Signature
Jussi Lehtinen	City of Espoo	
Olli Markkanen	Helsinki Energy	
Leena Tähkämö	Aalto-yliopisto	
Eino Tetri	Aalto Univ.	
LAURA YLI-JAMA	CITY OF ESPOO	
Santeri Oksanen	Lumine Lighting Solutions	
Juha Haapnoja	Lumine Lighting Solutions	
Sampo Saukkonen	Lumine Lighting Solutions	
Håkan Lagerquist	Inside Light Lund University	
MAX BJÖRKLUND	HELUMM OY	
ANNA HALONEN	AALTO YLIOPISTO	
Pekka Sillanpää	Espoo	
Päivi Ahlroos	Espoo	

SEVENTH FRAMEWORK PROGRAMME

Health & Wellbeing

- Important to have the claims backed by evidence.
    - Takes time and timing is important.
    - Risk of the market going to other actors, e.g. Asian, in the meantime. Those solutions may not be so good.
- Energysaving important, but it is only 19 % of electric energy going into lighting. Larger share before => Do not start from this direction.
- Have three levels of solutions depending on how much/good eveidence there is for each one.

Luminaires & lamps

- How to not only do replacement? Problem of the socket. There should be a socket that supports LED lights. This is not easy, due to standards etc.
- When using public money, they can be a bit more expensive, but they have to last. There must be proof that they last a long time.
- Temparature control is still very poor.
- The price has to be in a reasonable range. The payback time of... 60-190 years. With high price, even eternal lifetime, would not be good. Replacement calculations are problematic. Even more so when poles are also replaced. Comparisons are difficult.
- Glare and reliability are problems.
- HPS lasts 48.000 hrs. Only need to change the bulb.
- Temperature control. Have not given the promised lumens, about 20 % lower. But have improved very quickly.
- Only a cost comparison does not allow for improvements.
- We are used to see light as "just light", like air. It is just there. We should compare for so much more than cost. The result of the project should be that we can use light in new ways.
- What kind of light should one have. 4.200 K is better for highways than 3.500 K. Could also only have car-lights. But that results in more accidents (UK study).
- We have too cheap energy in Espoo, Finland and Sweden. But the time is about here to make changes.
- Educational and cultural issue.
- Glare is really hated. Luminaires with low levels of glare are coming.
- Poor lumen of LED compared to HPS may lead to more poles, resulting in even higher energy consumption than HPS.

D2.2 Gabi's overview.

Start to talk about positive aspects.

- Both Green Business Opportunities and Health & Wellbeing.
- Feel very safe walking in a park in only moonlight, because there is no glare and we can see everything very well. It is not about how many lumens there are. Still we measure and compare lumens per euro.

- In Otaniemi Aalto changed lighting from 1 700 K to 4 000 K and students became more awake.

Reine presents on health & wellbeing

Diagrams showing the higher levels of value that are possible (sensory experience value). Human Centric Lighting etc.

Potential good things need to be understood better. There are good effects, but *how*k should the light be done to reach those without causing negative effects. Colouration. Red, green, yellow, and blue.

Agreement (silently) on there being great potential.

Cf. the Hawthorne effect.

- Very difficult to prove light effects on humans. It is easier to do on plants and animals. There is a great need to do it on humans.
- We are not using offices in the same way any longer. We need more invidual lighting, individual anything.

Presentation on Green Business Development & Opportunities

Primitive development and risks of primitive energy savings. Dialogue on energy savings and lower lifecycle costs, but not on better light. Risk of losing positive functionalities and (re-)introducing negative effects, when this happens.

Practical example by Reine on other positive effects from energy analyses in a paper mill (Stora Enso). Improvements in quality, worker engagement etc.

Intelligent Green Business Development: intelligent system solutions (enhanced user value) and intelligent ways of working (sustainability is core business).

3 level model.

Today's theme/application: guiding system

The present advantages of SSL.

How do we get the process going here in Espoo and in Finland?

- Have streets with 60 year old lamps. If we can only change the lamps. Can also build a whole new area. Have a stable situation first and then a test area maybe.
- There are already tests going on and evaluated elsewhere. Could we jump directly to step 2 (above) if we find out about those and learn from them?
- E.g. UB7 (or UV7?) (7 cities) (Lisa Hallonen)
- How can we learn from them how to make better procurement decisions?
- In Espoo. All accidents have been going down steadily. But the feeling of security is lacking somewhat, so try to improve that with better lighting. But it is already very safe. Least accidents for little kids going to school.
- You could brand Espoo as a leading place with so good figures.
- All the lighting have been dimmed for a long time, so cannot make any more energy savings that way in Espoo.
- Is it possible to make a branding issue out of it?
    - Good lighting should not concentrate on that. But what if it is an added value to something else.
    - UV7 has started to talk about these things. Heli Nikunen (Aalto, working with Lisa).
    - Discussion about Kelvin, dark zones, dynamic lighting. Just starting.
- There is funding for development work. You should try to make use of those things to really get moving.
- What is the benefit from ENIGMA? We have to continue after that. Big investments every year that will have to continue after the project.

Co-branding presentation by Reine

Example: BioOffice, Norway (Reine). The Norwegian Public Health Act. Public Health priorities with societal backing.

It is not only about technology and science, but also about spiraling interest.

- Tampere has employed a third person to work with outdoor lighting in the city centre. It needs a lot of design.
- It is good to move from lighting to a smart city perspective.
- The big money actors have not been able to make intelligent systems so far. Lots of things that cost. Temperature control. Drivers destroyed by heat. This system has been too much for most actors, since they have not sorted it out during ten years.
- There are bad examples, but a lot has also happened. We need examples where it really works.
- Bad solutions give bad PR.

- ENIGMA is trying to give visibility to good solutions and also about bad examples that should be avoided.
- Malmö is working a lot with solutions trying to stay open, e.g. KNX. It is more about the control systems than the lighting.
- Temperature control systems are really important.
- A light bulb costing € 50-60 more, and really delivering, will have a market.
- SIGBY (?) is right for outdoor lighting control. Can be challenging with different kind of weather, which is not a problem indoor. When used only for dimming this is not a problem, should it not work. DALI (?) could sometimes destroy the luminaires and then you need to send a maintenance person. GSM to street cabinets.
- IF do not need smooth dimming outdoor, the control system does not need to be so advanced. Would like to test how well it works in real life. What is the real need, and then we choose the right technology for that need, which keeps cost low.
- A third possibility is reducing the voltage (Espoo?).
- System building has a lot of potential in Finland and Sweden with experiences from Nokia and Ericsson (Reine).

Gent preparatory Application workshop 2014.03.13

Studiedag: Intelligente controlesystemen in verlichting

Gebouwautomatisering en gebouwbeheersystemen betekenen een revolutie voor de controle van de verlichting

Deze korte studiedag wordt georganiseerd door de afdeling Energietechnologie (Labo Domotica) van de HUBKAHO en het Laboratorium voor Lichttechnologie van de KU Leuven @ KAHO Sint-Lieven.

Donderdag 13 maart 2014 op Campus Gent (@ KAHO Sint-Lieven)

Programma

- 13u00 Ontvangst + koffie
- 13u30 Waarom intelligente controle voor verlichting? Wat zijn de valkuilen?

  Spreker: Koen Govers, Cenergie
- 14u05 Gebouwautomatisering protocollen

  Spreker: Rik Vereecken, AZ Sint-Lucas
- 15u00 Koffiepauze
- 15u45 KNX introductie en overzicht

  Spreker: Joachim Goeminne, HUBKAHO Energietechnologie
- 16u15 Daglicht afhankelijke regelingen met KNX

  Spreker: Daevy Vanstaen, Domotic.Lounge
- 16u50 Energiemonitoring

  Spreker: Sam Tytgat, Dtplan
- 17u25 Smart Lighting for Smart Cities, a radical leap beyond building automation

  Spreker: Reine Karlsson, director Lund Lighting Initiative
- 18u00 – 19u00 Receptie en netwerking moment

Presentaties

Download presentaties:

http://www.lichttechnologie.be/nl/algemeen/downloads/login

Slot02 – paswoord: hokapiga

Presentatie Reine Karlsson in functie van:

SSL-erate

SEVENTH FRAMEWORK PROGRAMME

Från: Catherine Lootens
Till: Peter Bracke
Ärende: FW: Groen Licht Vlaanderen - nieuwsbrief januari 2014
Datum: den 19 februari 2015 14:26:33
Bilagor: image005.png
image026.png

Van: Catherine Lootens
Verzonden: dinsdag 14 januari 2014 15:19
Aan: Catherine Lootens
Onderwerp: Groen Licht Vlaanderen - nieuwsbrief januari 2014

GROEN ingeLICHT

Januari 2014 **Jaargang 10, nummer 1**

In deze editie

Contact

www.groenlichtvlaanderen.be
www.lichttechnologie.be
info@groenlichtvlaanderen.be

Gelukkig Nieuwjaar

De nieuw(jaar)sbrief is naar het schijnt een typisch Vlaamse traditie. Graag willen we deze gewoonte in eer houden door alle betrokkenen uit de verlichtingssector en meer specifiek de partners van het consortium Groen Licht Vlaanderen 2020 het allerbeste voor een gelukkig 2014 toe te wensen.

Een nieuw jaar brengt meestal nieuwe moed mee en leidt tot inspiratie en dus nieuwe ideeën. Laten we onze krachten bundelen om tot innovatieve verlichtingsoplossingen te komen in dit uitdagend tijdperk van led en oled, digitalisatie en automatisering.

Alle uitvoerders van het project Groen Licht Vlaanderen 2020 staan opnieuw klaar om jullie te adviseren en te ondersteunen in de queeste naar beter verlichting.

Nieuwe groenlichtvlaanderen website

U heeft het ondertussen misschien al gemerkt. De website www.groenlichtvlaanderen.be kreeg een facelift. Hiermee willen we de bezoeker beter en accurater informeren rond de activiteiten van het IWT project 'Groen Licht Vlaanderen 2020, de verlichtingssector in transitie'. Ook de website www.lichttechnologie.be van het Laboratorium voor Lichttechnologie is vernieuwd en beide websites zitten net zoals vroeger in elkaar verweven. Meer hierover vindt u op onze website zelf.

Wie wil meewerken aan een Vlaams toekomstplan voor verlichting?

Er werd aan het Laboratorium voor Lichttechnologie en aan Groen Licht Vlaanderen de mogelijkheid gegeven om mee te werken aan het schrijven van een roadmap voor verlichting. **Deze roadmap wordt de toekomstige toetssteen voor IWT voor het al dan niet steunen van initiatieven.**

Het is noodzakelijk dat bij het schrijven van deze roadmap er een directe interactie plaatsvindt met de sector. De

samenkomst van de gebruikersgroep van het consortium Groen Licht Vlaanderen 2020 op 28 januari aanstaande is een perfecte gelegenheid om deze participatie concreet te organiseren d.m.v. het **voorleggen van een aantal vragen en discussiepunten**. Maar ook andere stakeholders uit de verlichtingssector zijn welkom en kunnen nadien aansluiten bij de vergadering van de gebruikersgroep vanaf 14h00. Zeer warm aanbevolen!

Er worden broodjes voorzien tijdens deze werkgroep sessie die zal doorgaan tussen 12h00 en 14h00 in de gebouwen van KU Leuven @KAHO – campus Gent. Meer informatie vindt u op onze website. Inschrijven met vermeldingen van uw naam kan door een email te sturen naar catherine.lootens[at]kahosl.be. Hierbij vindt u alvast de routebeschrijving naar de technologiecampus.

Research@lunch – Dag licht, hallo led

Het aspect licht wint meer en meer aan belang in onze gebouwontwerpen. Daar zijn twee goede redenen voor: energie en (visueel) comfort.

27/03/2014 - 11:45u - Research@Lunch | Dag licht, hallo LED

In deze researchmeeting komen verschillende innovatieve systemen aan bod die toelaten daglichttoetreding in gebouwen te verbeteren: welke zijn hun kenmerken en hoe kies ik het juiste systeem? Daarnaast krijgt ook de lichtbron 'led' als innovatief en energiezuinig product de nodige aandacht. Wat zijn de karakteristieken en hoe goed is de kwaliteit? Wat zijn de misvattingen en wat zijn de grote voordelen? Hoe verloopt het samenspel met daglicht en materialen (kleur) en hoe wordt het licht gepercipieerd?

Deze meeting gaat door in het auditorium binnen het stemmige kader van het **Gentse Muziekcentrum De Bijloke.** Deze inspirerende omgeving werd door **architect Oswald Van De Sompel** gerestaureerd en gemoderniseerd met oog voor daglicht en kunstlicht. Na de lezingen vertelt hij daarover tijdens een **rondleiding in het gebouw**.

Via deze research@lunch sessie willen de sprekers wijzen op hun activiteiten binnen het netwerk van **Laagdrempelige Expertise- en Dienstverleningscentra (LED)** in Vlaanderen. KULeuven@LUCA werkt als **LED Bouwcomfort** rond onder meer daglicht en KULeuven@KAHO heeft een **LED Elektrische energie** met daarin ook aandacht voor kunstlicht. Beide kenniscentra uit Gent delen tijdens deze research@lunch hun expertise rond licht.

Meer informatie vindt u hier

Home

Studiedag - Intelligente controlesystemen in verlichting

Donderdag 13 maart 2014

13h00-19h00

KU Leuven @ KAHO – campus Gent

Gebouwautomatisering en gebouwbeheersystemen betekenen een revolutie voor de controle van de verlichting

Heeft u plannen om controlesystemen voor verlichting te installeren of te vernieuwen? Leer op deze studiedag wat gebouwbeheersystemen en automatiseringsprotocollen kunnen en zullen brengen voor verlichtingscontrole. Detailkennis van verschillende communicatieprotocollen is hiertoe niet nodig. Maar het leren begrijpen waarover leveranciers en fabrikanten vertellen is meer dan aangeraden.

De gastsprekers zullen de technologie pragmatisch toelichten, onder andere aan de hand van reële projectvoorbeelden.

Waarom de controle over de verlichting met automatiseringsprotocollen? Wat zijn de voordelen? Leidt dit tot lagere energiekosten en beter comfort op een eenvoudige wijze? Wat zijn de valkuilen? Hoe deze vermijden? Is een integrator aangewezen? Welke zijn de actuele protocollen en standaarden en waarin verschillen deze? Hoe is ziet dit er schematisch uit in een praktische implementatie? Is een internet adressering (IP) of draadloze bediening eenvoudig mogelijk? Wat brengt de nabije toekomst? Hoe zorgt men ervoor dat een nieuw controlesysteem voldoende toekomstbestendig is?

De presentaties door experten worden gevolgd door een netwerking drink. Er is ruim tijd voorzien voor vragen en antwoorden.

Deze korte studiedag wordt georganiseerd door de afdeling Energietechnologie (Labo Domotica) van de HUBKAHO en het Laboratorium voor Lichttechnologie van de KU Leuven, Campus Gent (KAHO Sint-Lieven).

Datum en locatie: donderdag 13 maart van 13u tot 19u op de Technologiecampus in Gent (KAHO Sint - Lieven), Gebroeders De Smetstraat 1, 9000 Gent.

Binnenkort ontvangt u een uitnodiging die u ook zal kunnen vinden via http://dvo.kahosl.be (zie 'Studiegebied Industriële Wetenschappen': Studiedag Intelligente controlesystemen in verlichting). U zal daar ook online kunnen inschrijven

Opleiding – Specialisatie verlichtingstechnologie 2014-2015

De **modulaire opleiding** "specialisatie verlichtingstechniek" wordt **tweejaarlijks** ingericht. De organisatie is in handen van het Laboratorium voor Lichttechnologie en past binnen de werking van het project 'Groen Licht Vlaanderen 2020'. De sessies worden verzorgd door medewerkers van het laboratorium alsook door experten uit de verlichtingssector. De meeste sessies van de posthogeschoolopleiding "Specialisatie Verlichtingstechnologie" gaan door in de lokalen van KU Leuven @ KAHO - Campus Gent, Gebroeders De Smetstraat 1, 9000 Gent. Tevens zijn er verschillende bedrijfsbezoeken gepland en worden ook praktijksessies georganiseerd binnen het Laboratorium voor Lichttechnologie.

De 5de editie van de specialisatiecursus zal doorgaan vanaf **half september 2014**. Geïnteresseerden kunnen nu al hun gegevens elektronisch doorsturen naar info[at]groenlichtvlaanderen.be. De **nieuwe folder** zal ter beschikking zijn vanaf het voorjaar 2014.

Meer informatie vindt u later op onze website en op de website van de dienst voortgezette opleidingen http://dvo.kahosl.be/

Promotiedag Duurzame verlichting 2014

We kunnen er nog niet veel over vertellen, maar we willen wel al een tipje van de sluier oplichten. De 8ste editie van de Promotiedag Duurzame Verlichting zal plaats vinden op **8 mei 2014 in de Ghelamco arena te Gent**. Naast de lezingen en de beurs, plannen we tevens enkele begeleide bezoeken aan de Ghelamco arena zelf – al dan niet met een focus op licht. Reserveer deze datum alvast in jullie agenda's. De uitnodiging volgt later met meer informatie rond het thema en de mogelijkheid om in te schrijven.

Datum en locatie: 08/05/2014 - 9u-18u, Ghelamco stadion, Ottergemsesteenweg Zuid 808, 9000 Gent

Last name	First name	Company	Type
Acuna	Paula	KULeuven	University/College
Beeckmans	Jan	Altemp nv	Commercial company
Blocken	Jaak	GDF SUEZ CC	Commercial company
Bordau	Geert	Cebeo	Commercial company
Bourgios	Jan	Cebeo	Commercial company
Bracke	Peter	KULeuven	Commercial company
Bruynooghe	Gino	Cebeo	Commercial company
Callewaert	Geert	TAL Nv	Commercial company
Camertijn	Steven	Zonnewindt vzw	Association
Cantens	Marijn	HUBKAHO	University/College
Careel	Mattias Albert P	Universiteit Gent	University/College
De Beleyr	Tom	Tecnolec vzw	Association
De Beuckelaere	William	OCMW Brugge	Municipality
De Brandt	Dimitri	Electrabel	Government
De Craemer	Kris	Modular Lighting Instruments	Commercial company
De Cremer	Dirk	ATS Nv	Commercial company
De Cuyper	Jean	Havells-Sylvania	Commercial company
De Grande	Alexander	VDAB	Government
De Meester	Dirk	T.E.E. nv - Arch & Teco Engineering	Commercial company
De Mol	Dirk	Bislighting	Commercial company
De Nijs	Kim	TAL nv	Commercial company
De Schryver	Joachim	Harvard Engineering	Commercial company
De Taeye	Stefaan	Ministeries van Vlaamse Gemeenschap	Government
Debo	Ruben	Ingenium nv	Commercial company
Degryse	Bart	Vives/Cretecs	University/College
Delabarre	Christian	ATS Nv	Commercial company
Delvaeye	Ruben	KULeuven	University/College
Demeulenaere	Alexander	Cebeo	Commercial company
Deprey	Olivier	Antea Group	Commercial company
Depuydt	Marian	Architecten Delobelle Bvba	Commercial company
D'Herdt	Peter	WTCB	Association
Doornaert	Philip	Ceratec electrotechnics	Commercial company
Drijkoningen	Filip	Infrax	Association
Foubert	Jan	HUBKAHO	University/College
Goeminne	Joachim	HUBKAHO	University/College
Govers	Koen	Cenergie	Commercial company
Guyonnaud	Fien	TAL nv	Commercial company
Hellemans	Andy	Trilux Benelux	Commercial company
Herrebosch	Sandra	Cebeo	Commercial company
Janssens	Ronny	BNP Paribas Fortis	Commercial company
Jaspers	Gerard	KBC	Commercial company
Karlsson	Reine	Lund Lighting Initiative	University/College
Ketelaers	David	Esylux	Commercial company
Leroy	Johny	Renson nv	Commercial company
Lewyllie	Hlodwig	GDG bvba	Commercial company
Lootens	Catherine	KULeuven	University/College
Louage	Peter	Renson Ventilation nv	Commercial company
Maertens	Dominique	KSO Tielt-Ruiselede vzw	Association
Maurus	Filip	Fifthplay nv	Commercial company
Merckx	Hendrik	HUBKAHO	University/College
Michels	Dimitri	HUBKAHO	University/College
Michiels	Bert	Vanhout Nv	Commercial company
Michielsen	Jan	Eandis	Association
Moens	Elke	Bislighting	Commercial company
Mouwen	Luc	Eurostation	Commercial company
Mus	Jan	Ceratec Electrotechnics	Commercial company
Noynaert	Ronny	Beckhoff Automation	Commercial company

Nuesink	Jacob	Dekra Certification	Commercial company
Nys	Erik	Stad Turnhout	Municipality
Oorts	Gert		Commercial company
Osten	Yvan	Luxobel	Commercial company
Pardon	Ief	Eurostation	Commercial company
Pisman	Hendrik	ATS Nv	Commercial company
Poppe	Jeroen	Passiefhuis-Platform vzw	Association
Recollecte	Kevin	Cebeo	Commercial company
Ryckaert	Wouter	KULeuven	University/College
Schaffers	Alain	Luminact bvba	Commercial company
Scheerlinck	Philippe	Cofely Services	Commercial company
Schelfhout	Maarten	HUBKAHO	University/College
Segers	Pascale	TAL nv	Commercial company
Smets	Nico	Regie der gebouwen	Government
Snauwaert	Eddy	Trilux	Commercial company
Sprangers	Tim	Gevitec bvba	Commercial company
Stavrakantonaki	Marina	Studiebureau Boydens Raymond nv	Commercial company
Steynen	Dries	Eandis cvba	Association
Stiens	Pascal	Electrabel	Government
Stroobant	Ludwig	KULeuven	University/College
Taelman	Dries	ATS Nv	Commercial company
Terlaeken	Matthias	Ingenium nv	Commercial company
Thieren	Edwin	Infrax	Association
Tytgat	Sam	DTPlan	Commercial company
Uyttendaele	Freddy	Francis & Tytgat	Commercial company
Van Bael	Johan	B.E.G. Belgium	Commercial company
Van Beylen	Walter	Gevitec bvba	Commercial company
Van Boxelaere	Robbert	WDP	Commercial company
Van Brusselen	Raf	GDG bvba	Commercial company
Van de Perre	Stef	HUBKAHO	University/College
Van De Velde	Dimitri	TAL Nv	Commercial company
Van Doren	Kris	Alcatel-Lucent Bell	Commercial company
Van Eeckhout	Tol	Eandis	Association
Van Moldergem	Jürgen	B.A.S.F. Antwerpen nv	Commercial company
Van Nieuwkerke	Stefan	€co²-LED	Commercial company
Vandenabeele	Michel	B.E.G. Belgium	Commercial company
Vander Voorde	Tobias	Wago Kontakttechnik	Commercial company
Vandermeerschen	Michael	Vecolux	Commercial company
Vangeel	Johny	Beckhoff automation	Commercial company
Vanhaesbrouck	Jurgen	Esylux	Commercial company
Vannoppen	Hans	B.E.G. Belgium	Commercial company
Vansant	Stefan	KBC Group	Commercial company
Vanstaen	Daevy	Domotic.Lounge	Commercial company
Veltman	Marinus Jan	Ecosucces	Commercial company
Verbeelen	Robrecht	Luxendi	Commercial company
Verbist	Jos	Havells Sylvania	Commercial company
Vercruyssen	Luc	CDI-projects bvba	Commercial company
Vereecken	Rik	AZ Sint-Lucas	Association
Verzele	Pauline	Ceratec Electrotechnics	Commercial company
Warlop	David	Cebeo	Commercial company
Wouter	Hanssens	Encon	Commercial company

Meeting note
Report from SSL-erate preparatory Application Workshop,
in Gent March 13 2014, as a part of the KU Leuven seminar on

Intelligent Control for Lighting

Aim of event

One main ambition with this activity was to collect early feedback on a preliminary version of the WP2 Green Business Development Map from the control system experts, business people and researcher that participated in the Gent seminar, and should be considered a preparatory application workshop (AWS). The presence at the Gent conference was used as a networking / information gathering event on the future perspective for intelligent lighting (meeting of minds). Please find enclosed invitation lists (confidential), agenda and participation lists (confidential) in Annex.

Participants

The Gent energy, control and lighting network combines the Groen Licht Vlaanderen lighting cluster network, the Green Building Department daylight control network and the Energy Department home automation network. There were 112 attendees in the seminar and network event including participants from the Belgian Government Buildings Agency, Flemish Government, City of Bruges, City of Turnhout, electricity network operators (responsible for street lighting in Belgium), facility and/or technical department managers of large enterprises, school associations and hospitals; architects, engineering firms, manufacturers, distributors, and developers of Internet-of-Things applications amongst others.

Program

Workshop procedure

- I description of the mean drivers that people could consider:
  - Technology: easy to control light level and color with SSL, combination with ICT technology/connection with internet information, inclusion of sensor
  - Application domains: urban, work, care, education, home

- Smart Lighting for Smart Cities, a radical leap beyond building automation
- Networking

The presentation about *Smart Lighting for Smart Cities, a radical leap beyond building automation*, was held by Reine Karlsson, as the last point in the program. Intelligent control systems in lighting' is an important facilitator (opportunity and/or obstacle) for green business development (right light at the right place at the right time) and was a conclusion from the Lund WP2 workshop

on January 23 2014. Focus on this critical facilitator in future lighting systems was required before the workshops organized by the cities.

Directly after this presentation there was a networking mingle that Peter Bracke and Reine used to collect spontaneous feedback. Most of the feedback was collected in two-person and small group dialogues. Peter also has a continuous contact with several of the participants. One advantage of the presentation is that it has been useful as a common point of reference in the later contacts.

General outcome of event

The general atmosphere in most of the dialogues was that the SSL-erate Green Business presentation was well in line with the respondents' interpretation of the need for further development. The green business focus on the social sustainability importance of better lighting and functionality was considered to be interesting. It was also noted that is a quite unusual perspective and that it thereby is likely be difficult to explain.

The main advantage of the access to the participating group of people was that several of the persons in this network have extensive experience and leading knowledge about facility management systems and the related products that now are starting to enter the market. One important interpretation that the lack of coherence between lighting systems and building automation systems and modern ICT systems is a serious hurdle for smooth introduction of smart lighting and value enhancing utilization of the lighting communication infrastructure as a base for developments aspects of smart buildings and smart cities.

At the specific level we talked about the lack of coherence between different communication protocols and e.g. KNX and ZigBee and various proprietary systems and that the lighting products development so far hardly are integrated in the development process for modern forms of communicating devices.

A number of persons in the Gent network was interested in Energy saving and Green Business Development already before this event. After the March 13 seminar there has been a broader dialogue about the green business development perspective including the value enhancing social dimension and also more intensively about recycling of material. This dimension of dialogue was growing already before the seminar. In particular, the information gathered was used as input for the green business development opportunities/mapping and as input for the subsequent workshops organized by the cities in WP2.3, and thus created valuable synergies.

The dialogues in Gent influenced the invitations for the later events, e.g. Malmö and Stavanger. It was an additional reason to try to engage persons with a broader ICT and control systems perspective in those later dialogues.

Some of the feedback:

Move towards and preference for open protocols (internet protocols). Local wireless or wired communication to the lighting system will be able to communicate to IP with cheap interfaces thanks to the economy of scale but can be proprietary and/or extra secured (Zigbee, Zwave, DALI, gateways).
The subsystems and software for other IP and IoT applications (than lighting) move on a larger scale and thus faster, and the lighting applications will follow/use these developments.
Some big application oriented companies like Microsoft, Apple, Samsung, Google will have an impact on this development, because big data, data mining, handheld devices and the operating systems for the apps are of major interest to them.
The controls should be easy and adapted to the specific application. The intelligent control system should do exactly what is wanted and expected.