Grant agreement for: Coordination and support action*

Annex I - "Description of Work"

Project acronym: SSL-erate

Project full title: " Accelerate SSL Innovation for Europe "

Grant agreement no: 619249

Version date:

Table of Contents

Part A

A.1 Project summary 3
A.2 List of beneficiaries 4
A.3 Overall budget breakdown for the project 6

Workplan Tables

WT1 List of work packages 1
WT2 List of deliverables 2
WT3 Work package descriptions 6
Work package 1 6
Work package 2 9
Work package 3 14
Work package 4 20
Work package 5 27
WT4 List of milestones 35
WT5 Tentative schedule of project reviews 37
WT6 Project effort by beneficiaries and work package 38
WT7 Project effort by activity type per beneficiary 40
WT8 Project efforts and costs 42

A1:
Project summary

Project Number [1]	619249	Project Acronym [2]	SSL-erate

One form per project

General information			
Project title [3]	Accelerate SSL Innovation for Europe		
Starting date [4]	01/11/2013		
Duration in months [5]	36		
Call (part) identifier [6]	FP7-ICT-2013-11		
Activity code(s) most relevant to your topic [7]	:		
Free keywords [8]	Solid State Lighting, SSL, LED, Health, Well-being, Open Innovation, Green Business, Lighting Clusters		

Abstract [9]

The aim of SSL-erate is to accelerate the uptake of high-quality SSL technology in Europe by means of open innovation with and by bringing validated information to all relevant stakeholders. A coordinated European effort is required to address the European societal challenges (in particular health & quality of life in an ageing society, energy consumption and resource efficiency), to resolve the specific challenges of the Lighting industry as noted in the results of the Green Paper “Lighting the Future” consultation (notably: poor SSL quality, lack of information and awareness among citizens) and to enable lighting solutions with a societal and environmental sustainability perspective, leading to a future in which Europe evolves to the global leadership in SSL systems and solutions. The lighting industry is highly fragmented. As a consequence of this the innovation speed and success rate have been too low and the benefits that we all expect from better lighting solutions, do not sufficiently materialize. To overcome this fragmentation, a collaborative way-of-working, using open-innovation and smart specialization principles, will be taken as the guiding approach. The active involvement of various stakeholders will be realized through workshops, but also through the creation of a web-based SSL-erate Innovation platform, which is planned to continue beyond the duration of this project. Relevant (lighting and non-lighting) companies, but also other stakeholders (like e.g. public authorities, property owners, research institutes, (lead) users/citizens, entrepreneurs, architects, installers) will become active contributors to this accelerated innovation process by applying validated insights on ‘green business development’ and ‘lighting effects on health & well-being’ in SSL business experiments.

A2:
List of Beneficiaries

Project Number [1]	619249	Project Acronym [2]	SSL-erate

List of Beneficiaries

No	Name	Short name	Country	Project entry month[10]	Project exit month
1	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK - TNO	TNO	Netherlands	1	36
2	LUNDS UNIVERSITET	LU	Sweden	1	36
3	LIGHTINGEUROPE AISBL	LE	Belgium	1	36
4	FUNDACION ESADE	ESADE	Spain	1	36
5	ASSOCIATION LUCI Lighting Urban Community International	LUCI	France	1	36
6	CLUSTER LUMIERE ASSOCIATION	CL	France	1	36
7	LUCE IN VENETO SCARL	LiV	Italy	1	36
8	KATHOLIEKE UNIVERSITEIT LEUVEN	KU Leuven	Belgium	1	36
9	CLUSTER D'IL·LUMINACIO DE CATALUNYA - CICAT	CICAT	Spain	1	36
10	DANMARKS TEKNISKE UNIVERSITET	DTU	Denmark	1	36
11	STICHTING SYNTENS, INNOVATIENETWERK VOOR ONDERNEMERS	SYNTENS	Netherlands	1	36
12	UNIVERSITY COLLEGE LONDON	UCL	United Kingdom	1	36
13	VILNIAUS UNIVERSITETAS	VU	Lithuania	1	36
14	UNIVERSITAET BASEL	UNIBAS/UPK	Switzerland	1	36
15	AALTO-KORKEAKOULUSAATIO	AALTO	Finland	1	36
16	RIJKSUNIVERSITEIT GRONINGEN	RuG	Netherlands	1	36
17	MALMO STAD	Malmö	Sweden	1	36
18	COMUNE DI BASSANO DEL GRAPPA	Bassano	Italy	1	36
19	HOCHSCHULE FUER ANGEWANDTE WISSENSCHAFTEN	HAW	Germany	1	36
20	Stavanger kommune	Stavanger	Norway	1	36
21	Gemeente Eindhoven	Eindhoven	Netherlands	1	36

A2:
List of Beneficiaries

No	Name	Short name	Country	Project entry month[10]	Project exit month
22	THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF OXFORD	UOXF	United Kingdom	1	36
23	REVO MEDIA PARTNERS LIMITED	RMP	United Kingdom	1	36

A3:
Budget Breakdown

Project Number [1]	619249	Project Acronym [2]	SSL-erate

One Form per Project

Participant number in this project [11]	Participant short name	Ind. costs[13]	Estimated eligible costs (whole duration of the project)				Requested EU contribution
			Coordination / Support (A)	Management (B)	Other (C)	Total A+B+C	
1	TNO	A	698,321.00	211,731.00	0.00	910,052.00	587,708.00
2	LU	T	650,400.00	14,300.00	0.00	664,700.00	593,070.00
3	LE	A	441,500.00	11,900.00	0.00	453,400.00	405,285.00
4	ESADE	T	186,660.00	3,780.00	0.00	190,440.00	171,108.00
5	LUCI	F	59,700.00	3,300.00	0.00	63,000.00	56,174.00
6	CL	S	269,760.00	9,240.00	0.00	279,000.00	248,775.00
7	LiV	F	128,706.00	4,494.00	0.00	133,200.00	118,769.00
8	KU Leuven	T	134,700.00	4,500.00	0.00	139,200.00	124,119.00
9	CICAT	F	101,083.00	3,038.00	0.00	104,121.00	92,841.00
10	DTU	S	221,050.00	8,350.00	0.00	229,400.00	138,243.00
11	SYNTENS	A	39,075.00	4,725.00	0.00	43,800.00	36,380.00
12	UCL	T	81,788.00	6,344.00	0.00	88,132.00	78,584.00
13	VU	T	60,877.00	1,720.00	0.00	62,597.00	55,816.00
14	UNIBAS/UPK	T	129,360.00	2,640.00	0.00	132,000.00	117,700.00
15	AALTO	A	244,031.00	8,446.00	0.00	252,477.00	154,636.00
16	RuG	T	255,600.00	8,400.00	0.00	264,000.00	235,400.00
17	Malmö	T	49,200.00	3,600.00	0.00	52,800.00	47,080.00
18	Bassano	F	66,420.00	3,060.00	0.00	69,480.00	61,952.00
19	HAW	T	136,800.00	3,600.00	0.00	140,400.00	125,190.00
20	Stavanger	F	51,600.00	3,600.00	0.00	55,200.00	49,220.00
21	Eindhoven	T	27,120.00	5,280.00	0.00	32,400.00	28,890.00
22	UOXF	T	127,570.00	4,762.00	0.00	132,332.00	117,996.00

A3:
Budget Breakdown

Participant number in this project [11]	Participant short name	Ind. costs[13]	Estimated eligible costs (whole duration of the project)				Requested EU contribution
			Coordination / Support (A)	Management (B)	Other (C)	Total A+B+C	
23	RMP	T	143,400.00	4,200.00	0.00	147,600.00	134,860.00
Total			4,304,721.00	335,010.00	0.00	4,639,731.00	3,779,796.00

Note that the budget mentioned in this table is the total budget requested by the Beneficiary and associated Third Parties.

*** The following funding schemes are distinguished**

Collaborative Project (if a distinction is made in the call please state which type of Collaborative project is referred to: (i) Small of medium-scale focused research project, (ii) Large-scale integrating project, (iii) Project targeted to special groups such as SMEs and other smaller actors), Network of Excellence, Coordination Action, Support Action.

1. Project number

The project number has been assigned by the Commission as the unique identifier for your project, and it cannot be changed. The project number **should appear on each page of the grant agreement preparation documents** to prevent errors during its handling.

2. Project acronym

Use the project acronym as indicated in the submitted proposal. It cannot be changed, unless agreed during the negotiations. The same acronym **should appear on each page of the grant agreement preparation documents** to prevent errors during its handling.

3. Project title

Use the title (preferably no longer than 200 characters) as indicated in the submitted proposal. Minor corrections are possible if agreed during the preparation of the grant agreement.

4. Starting date

Unless a specific (fixed) starting date is duly justified and agreed upon during the preparation of the Grant Agreement, the project will start on the first day of the month following the entry info force of the Grant Agreement (NB : entry into force = signature by the Commission). Please note that if a fixed starting date is used, you will be required to provide a detailed justification on a separate note.

5. Duration

Insert the duration of the project in full months.

6. Call (part) identifier

The Call (part) identifier is the reference number given in the call or part of the call you were addressing, as indicated in the publication of the call in the Official Journal of the European Union. You have to use the identifier given by the Commission in the letter inviting to prepare the grant agreement.

7. Activity code

Select the activity code from the drop-down menu.

8. Free keywords

Use the free keywords from your original proposal; changes and additions are possible.

9. Abstract

10. The month at which the participant joined the consortium, month 1 marking the start date of the project, and all other start dates being relative to this start date.

11. The number allocated by the Consortium to the participant for this project.

12. Include the funding % for RTD/Innovation – either 50% or 75%

13. Indirect cost model

A: Actual Costs
S: Actual Costs Simplified Method
T: Transitional Flat rate
F :Flat Rate

Workplan Tables

Project number

619249

Project title

SSL-erate—Accelerate SSL Innovation for Europe

Call (part) identifier

FP7-ICT-2013-11

Funding scheme

Coordination and support action

WT1
List of work packages

Project Number [1]	619249	Project Acronym [2]	SSL-erate

LIST OF WORK PACKAGES (WP)

WP Number [53]	WP Title	Type of activity [54]	Lead beneficiary number [55]	Person-months [56]	Start month [57]	End month [58]
WP 1	Management	MGT	1	27.00	1	36
WP 2	Deployment of SSL: from energy saving to acceleration of 'green' business development	COORD	2	96.50	1	33
WP 3	Accelerated innovation: inventory of effects of biologically effective lighting for health and well	COORD	3	85.00	1	36
WP 4	Open innovation to accelerate value creation	COORD	1	114.50	1	36
WP 5	Ensure the uptake of SSL along the extended value chain	COORD	3	72.50	1	36
			Total	395.50		

WT2:
List of Deliverables

Project Number [1]	619249	Project Acronym [2]	SSL-erate

List of Deliverables - to be submitted for review to EC

Delive-rable Number [61]	Deliverable Title	WP number [53]	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D1.1	Periodic report 1	1	1	9.00	R	CO	12
D1.2	Periodic report 2	1	1	9.00	R	CO	24
D1.3	Final report	1	1	9.00	R	Confidentiel UE	36
D2.1	Report and website material on sustainability issues	2	1	5.00	R	PU	3
D2.2	Introductory map of green business opportunities	2	2	11.50	R	RE	3
D2.3	Workshops on building SSL use and business interst among sustainable cities actors	2	2	19.00	O	PU	6
D2.4	Compilation of examples of green SSL business and solutions	2	2	8.00	R	PU	6
D2.5	Map of green business development opportunities for SSL	2	2	12.00	O	RE	9
D2.6	Priority list of suggestions for demonstration and business experiments	2	2	4.00	R	PU	11
D2.7	Workshop on the progress of green buisness development in sustainable cities	2	2	6.00	O	PU	24
D2.8	Final report on sustainability issues	2	1	25.00	R	PU	30

WT2:
List of Deliverables

Delive-rable Number [61]	Deliverable Title	WP number [53]	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D2.9	Report on green business development in sustainable cities	2	2	6.00	R	CO	33
D3.1	Introductory report and web material on lighting for health and well-being in education, work places, nursing homes, domestic applications	3	3	9.00	O	PU	3
D3.2	Situation analysis report on Lighting for health and well-being in education, work places, nursing homes, domestic applications	3	3	32.50	R	RE	9
D3.3	Introductory report and presentation on Lighting in Smart Cities	3	15	3.00	R	PU	3
D3.4	Situation analysis report on lighting for health and well-being in Smart Cities	3	15	16.00	R	RE	9
D3.5	Report on output workshops held to support awareness raising and implementation	3	3	2.00	R	PU	12
D3.6	Recommendations to overcome potential barriers and opportunities for implementation	3	3	13.50	R	PU	22
D3.7	Report on metric to quantify	3	3	9.00	R	PU	24

WT2:
List of Deliverables

Delive-rable Number [61]	Deliverable Title	WP number [53]	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
	biological light exposure doses						
D4.1	Open Innovation Toolkit for SSL', 1st version	4	1	5.00	O	RE	4
D4.2	Open Innovation Toolkit for SSL', 2nd version	4	1	17.00	O	PU	22
D4.3	Open Innovation methodology for accelerated and effective development and deployment of SSL	4	2	24.00	R	RE	10
D4.4	List of local actors and stakeholders	4	6	2.00	R	CO	12
D4.5	Intermediate presentations of business development Experiments	4	6	20.00	R	PU	24
D4.6	Final report on business development experiments	4	6	28.00	R	RE	36
D4.7	Facilitating collaboration of regional Lighting Clusters in Europe.	4	6	7.50	R	RE	36
D4.8	Smart Lighting Forum	4	1	11.00	R	PU	6
D5.1	Dynamic stake holder inventory	5	3	11.00	R	RE	3
D5.2	Final promotion plan year 1	5	3	2.00	R	CO	2
D5.3	Performance analysis and year 2 plan of SSL promotion actions	5	3	8.00	R	CO	12
D5.4	Performance analysis and year 2 plan of	5	3	18.00	R	CO	24

WT2:
List of Deliverables

Delive-rable Number [61]	Deliverable Title	WP number [53]	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
	SSL promotion actions						
D5.5	Performance analysis of promotion actions	5	3	18.00	R	CO	36
D5.6	Basic version of the innovation platform for internal use and project and SSL information for the public	5	23	2.00	O	PU	2
D5.7	Protocols for management of the SSL-erate innovation platform	5	3	2.00	R	CO	4
D5.8	Full version of SSL-erate innovation platform	5	23	5.50	O	PU	9
D5.9	Innovation platform usage and status in year 1	5	23	1.00	R	CO	12
D5.10	Innovation platform usage and status in year 2	5	23	1.00	R	CO	24
D5.11	Innovation platform usage and status in year 3	5	23	1.00	R	CO	36
D5.12	Concept for continuation of the SSL-erate platform	5	3	3.00	R	CO	30
			Total	395.50			

WT3:
Work package description

Project Number [1]	619249	Project Acronym [2]	SSL-erate

One form per Work Package

Work package number [53]	WP1	Type of activity [54]	MGT
Work package title	Management		
Start month	1		
End month	36		
Lead beneficiary number [55]	1		

Objectives

(i) Management of the financial and administrative aspects of the project
(ii) Management of the communication between the project partners and with the European Commission

Description of work and role of partners

The project is coordinated administratively and financially by TNO. The work comprises:

Task 1.1 Administration and financial management (TNO; M1 - M36)

• To keep the contact both to the Commission and the project partners and to inform the Commission on the work status and on any administrative changes concerning the partners and persons involved, to inform the partners regarding any administrative changes and requirements of the Commission
• to submit all required documents to the Commission such as:
o Periodic Activity Reports, Management Reports, Publishable Reports
o Final reports, other reports
o Periodic Cost Statements
• to organize or initiate periodic project meetings, the kick-off meeting and the final meeting; if necessary, additional intermediate meetings will be organized
• to forward and discuss a Consortium Agreement prior to the start of project
• to receive the payments of the Commission
• to transfer the EU payments to the individual partners

Task 1.2: Project coordination (TNO; all partners, M1 - M36)
• to collect/initiate periodic progress reports
• to facilitate cross-linking activities between partners and initiate cross checks

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	TNO	14.00
2	LU	1.00
3	LE	1.00
4	ESADE	0.50
5	LUCI	0.50
6	CL	1.00
7	LiV	0.50
8	KU Leuven	0.50

WT3:
Work package description

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
9	CICAT	0.50
10	DTU	0.50
11	SYNTENS	0.50
12	UCL	0.50
13	VU	0.50
14	UNIBAS/UPK	0.50
15	AALTO	0.50
16	RuG	1.00
17	Malmö	0.50
18	Bassano	0.50
19	HAW	0.50
20	Stavanger	0.50
21	Eindhoven	0.50
22	UOXF	0.50
23	RMP	0.50
	Total	27.00

List of deliverables

Deliverable Number [61]	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature [62]	Dissemination level [63]	Delivery date [64]
D1.1	Periodic report 1	1	9.00	R	CO	12
D1.2	Periodic report 2	1	9.00	R	CO	24
D1.3	Final report	1	9.00	R	Confidentiel UE	36
		Total	27.00			

Description of deliverables

D1.1) Periodic report 1: Report describing the activities and justifying resources for period 1 (from month 1 - 12), prepared according to the FP7 Guidance Notes on Project Reporting and according to the Grant Agreement & benchmarking against the applicable KPIs for project objectives and deliverables. [month 12]

D1.2) Periodic report 2: Report describing the activities and justifying resources for period 2 (from month 13 – 24), prepared according to the FP7 Guidance Notes on Project Reporting and according to the Grant Agreement & benchmarking against the applicable KPIs for project objectives and deliverables. [month 24]

D1.3) Final report: The final report will contain the information as required by the EU and PO as mentioned in the Model Grant Agreement & benchmarking against the applicable KPIs for project objectives and deliverables. [month 36]

WT3:
Work package description

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS1	Review year 1	1	12	Successful review 1
MS2	Review year 2	1	24	Successful review 2
MS3	Final review	1	36	Successful final review

WT3:
Work package description

Project Number [1]	619249	Project Acronym [2]	SSL-erate

One form per Work Package

Work package number [53]	WP2	Type of activity [54]	COORD
Work package title	Deployment of SSL: from energy saving to acceleration of 'green' business development		
Start month	1		
End month	33		
Lead beneficiary number [55]	2		

Objectives

(i) Activation of sustainability interests as motives and tools for accelerated deployment of SSL.
(ii) To stimulate that sustainability-oriented interests, knowledge and control measures are used to enhance European investments in high quality
SSL solutions.
(iii) Stakeholder adapted maps of green business development opportunities and concerns for SSL.

KP1: 20 cities where contact making and intensive interactions will be established
KP2: 15 cities that will move to investing in green SSL solutions
KP3: 10 sustainability based opportunities defined for Task 4.3
KP4: Map of green business development opportunities and concerns

Description of work and role of partners

Aim is to involve Green Business and Open Innovation actors in the promotion of Intelligent, Adaptive and Integrated SSL solutions, i.e. moving SSL further ahead in order to realize the ambitions of the green paper 'Lighting the Future' and the report 'Lighting the Cities'.
WP2 strategy is to use dialogues 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 businesses. Commitment among new broader groups of actors is aimed for that can support SSL investments by means of Green Business development ambitions. The cluster partners will be involved in this process for accelerating their SSL business experiments.
Action-oriented stakeholder-adapted mappings of green business opportunities, which will take into account available knowledge about energy savings, biological effects of lighting, scarcity of materials and ecological footprints as well as behavioural aspects such as the landlord – tenants (principal agent) problem.
WP2 consists of four (action) tasks for respectively engaging European cities, City specific application of green business development for SSL, development of a map of Green Business development opportunities for SSL and creating demand for green SSL business and solutions. A separate (knowledge) task (Task 2.1) will run in parallel and interactively, on calculating environmental footprint, on scarcity and materials and countermeasures (recycling) and the land lord – tenants problem.

The way of working will make use of applied dynamic systems thinking. We need for several dimensions of interoperability: (i) a meeting of minds, between market actors (entrepreneurs and users) and technology experts, (ii) an incorporation of overarching societal development in the build-up of innovation and pre-commercial procurement models.

Task 2.1 Review of ecological footprints, scarcity of SSL materials and related management issues (TNO; LU, LE: M1 - M33)

Criteria will be developed for determining the environmental footprint for LED products (lamps and luminaires). I.e. creating and benchmarking with real products of product environmental footprint category rules (PEFCR) for/by conducting LCA studies (according to the JRC product environmental footprint guideline).

Also info material will be collected (review of literature & legislation) on other sustainability concerns and made available (on the SSL-erate innovation platform): potential effect of and anticipating SSL materials scarcity (recycling); ecodesign (linking with the European Community strategy on Integrated Product Policy); landlord-tenant problem (principal agent problem);

Task 2.2 Engaging European cities in green business development for SSL (LU; LE, TNO, LU, LUCI, UCL, VU, HAW, EHV, BAS, MAL, STA; M1 – M5

A (in-take) workshop for the five city partners (Stavanger, Malmo, Eindhoven, Bassano, HAW) will be held to understand their interest in and problems with SSL application as well as local green business policies. The perspective will be that of the demand and societal needs, a cooperation with FP7 Enigma project is foreseen here.
Output will be a introductory map of green business opportunities and a blue print for local workshops (organised by the city partners) with a wider variety of actors in Task 2.3.
For each of these workshops one SSL application theme (e.g. lighting for enhancement of safety in cities, residential areas; integrated light and traffic control systems; reduction of light pollution; lighting for increased well-being in homes) has to be selected. Which will be shared with the cluster partners.
The introductory green business opportunities map will take into account available knowledge about energy savings, scarcity of materials and ecological footprints as well as behavioural aspects such as the landlord – tenants (principal agent) problem. For this purpose, also concrete (existing) business cases for SSL in European cities will be collected, for different public spaces and showing the concrete benefits achieved so far (in terms of energy efficiency, maintenance and energy savings, feedback from consumers, Return on Investment) as well as concrete problems encountered.

To create in general awareness of the business potential of SSL, contacts will be made with actors who can influence agenda's and further developments. E.g. Energy Efficient Buildings Association, European Federation of Engineering Consultancy Associations (EFCA), Eurocities, hospitals, hotel chains, furniture industry (Ikea) and using platforms such as Sweden Green Building Conference (11-12 November 2013), ICT 2013 - Create, Connect, Grow (Vilnius, 6-8 November, 2013).

The planning of whom to address will be aligned with WP5 (especially Task 5.1 Dynamic Stakeholder Inventory). The SSL-erate innovation platform will be used as a tool for collaboration and activation of an ever-wider set of actors.

Task 2.3 City specific application of green business development for SSL (LU; all WP2 partners and WP4 cluster partners; M4 - M30)

Each city partner will organise two local workshops on green business development for SSL, to identify and clarify green business opportunities. Each workshop will focussing on one application, as selected in Task 2.2. Application specific business and societal actors will be invited (such hospital and homes representatives, architects and people from construction industry, public space planners) as well as SSL-erate cluster partners and associates. A number of the workshops could be organised together with the regional lighting cluster partner: in NL/BE Euregion (Eindhoven - together with TNO, Syntens, Groen Licht Vlaanderen/KUL), Veneto (Bassano, LiV), Malmo (Malmo, Lund Lighting Initiative/LU, Danish Lighting Innovation Network/DTU). Additional (single) workshops with cities are foreseen in Barcelona (organised by CICAT), Lyon (organised by CL and LUCI), depending on cooperation of local muncipalities.

Aim is that the workshops generate input for a joint map of Green Business development opportunities for SSL (Task 2.4) as well as creating demand for green SSL business and solutions, and along the way supporting setting up SSL business experiments in WP4.
Following input /tools will be used in the workshops:

- Presentations / info material on biological effects of lighting from WP3 (from SSL-erate innovation platform)
- Presentations / info material on environmental footprint of SSL solutions, countermeasures (recycling) against possible materials scarcity, legislation, land lord – tenants problem (from Task 2.1).
- Presentations/ info material on the principle advantage of green business development, which focus on the ratio between user functionalities and environmental considerations. The possibility to simultaneously improve the user value of lighting and energy saving will be explained. This material is aimed at actors which are not on the forefront of SSL uptake.

- Collaboration / role playing games (RPG), to highlight and lower social innovation barriers. This involves role playing games along the value chain. Value chain dynamics will be clarified by means of visualisation techniques.

In month 11, a brokerage event will be held, meetings, between demand (city partners) and supply side (clusters with associated members) to help turn the generated ideas for green SSL business and solutions into actions. The event will be public but also facilitate 1: 1 match making (see Task 5.2). Presented will be recommendations and business ideas from WP2, WP3 results and clusters capabilities and interests. The event, organised by LE, will be advertised at Light and Building, coinciding with the SSL-erate platform launch.

In order to increase the impact beyond the SSL-erate city partners, key sustainability actors and decision makers in at least five additional EU cities will be identified and invited to the work shops or - if feasible - host a workshop. One aim is to show positive examples and suggest directives to activate procurements and building actors, e.g. by means of the innovation platform.
In addition to the five SSL-erate city partners, we aim to engage (through SSL-erate cluster partners) and have workshops in:

France - Lyon (LUCI, CL)
Spain - Barcelona (CICAT)
Lithuania - Vilnius (VU)
Denmark - Copenhagen (DTU / Danish Lighting Innovation Network)
Cities in Finland, UK and Poland.

Task 2.4 Development of a joint map of Green Business development opportunities for SSL (TNO; LU, UCL, VU; M7 – M33)

Starting point is the green business development map of Task 2.2. An extended common map of green business development opportunities will be made by synthesizing the Task 2.3 workshops outcomes. A differentiating towards different stakeholder groups will be made.
A major challenge is that circumstances are changing very rapidly, consequently there is a need for a 'dynamic' map, which can and will be updated. To make new opportunities, risks and interrelations more readily understandable, visualization techniques will be used.

Task 2.5 Creating demand for green SSL business and solutions (LU; TNO, LE, HAW, BAS, MAL, STA; M10 – M33)

Recommendations for SSL green business deployment actions will be made, into two directions: for WP4 (supply side, selling new solutions) and for a to be formed task force with the city partners (demand site).
To realise the first, a cost-benefit analysis of options from Task 2.4 will be made, in order to develop a priority list of suggestions for demonstration and business experiments, with potential for integration with WP3 findings/recommendations, for carrying out in (second phase) business experiments in Task 4.3.
The city partners HAW, BAS, STA and MAL will form a task force on the demand site for green SSL business and solutions, in which each will work on two applications (including and beyond street lighting). In the end it is about how they can buy better lighting: which methods and criteria to use. And to invoke interest of entrepreneurs and – concerning SSL-erate – participation in the business experiments of the clusters in WP4.

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	TNO	16.00
2	LU	28.00
3	LE	9.00
5	LUCI	4.00
12	UCL	5.00
13	VU	6.00

WT3:
Work package description

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
17	Malmö	5.00
18	Bassano	6.00
19	HAW	10.00
20	Stavanger	5.50
21	Eindhoven	2.00
	Total	96.50

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D2.1	Report and website material on sustainability issues	1	5.00	R	PU	3
D2.2	Introductory map of green business opportunities	2	11.50	R	RE	3
D2.3	Workshops on building SSL use and business interst among sustainable cities actors	2	19.00	O	PU	6
D2.4	Compilation of examples of green SSL business and solutions	2	8.00	R	PU	6
D2.5	Map of green business development opportunities for SSL	2	12.00	O	RE	9
D2.6	Priority list of suggestions for demonstration and business experiments	2	4.00	R	PU	11
D2.7	Workshop on the progress of green buisness development in sustainable cities	2	6.00	O	PU	24
D2.8	Final report on sustainability issues	1	25.00	R	PU	30
D2.9	Report on green business development in sustainable cities	2	6.00	R	CO	33
		Total	96.50			

Description of deliverables

D2.1) Report and website material on sustainability issues: Sustainability information on EFP, scarcity, recycling, principle agent (tenatnt - land lord) problem, for supporting dialogues with cities, societal actors (e.g. hospitals), entrepreneurs, building/construction industry. The information will be used in WP2 and WP4 workshops as well as dessiminated through the SSL-erate innovation platform (Task 5.2) [month 3]

D2.2) Introductory map of green business opportunities: Introductory map of green business opportunities, to be used at local workshops (to be organised by the city partners) on building SSL interest among sustainable cities actors. This will include a survey of existing SSL business cases in European cities, with concrete benefits and problems encountered. [month 3]

D2.3) Workshops on building SSL use and business interst among sustainable cities actors: HAW, BAS, MAL, STA, EHV (with TNO) will each organise two local workshops on green business development for SSL, to identify and clarify green business opportunities. Each workshop will focuss on one application, as selected in Task 2.2. Application specific business and societal actors (such hospital and homes representatives, architects, representatives from building industry, public space planners) will be invited. The workshops generate input for a joint map of Green Business development opportunities for SSL (Task 2.4), creating demand for green SSL business and solutions. KPI: 20 cities where contact making and intensive interactions will be established. [month 6]

D2.4) Compilation of examples of green SSL business and solutions: This concerns new opportunities for SSL applications and green businesses in cities (for public outdoor and indoor spaces), with expected benefits and problems. [month 6]

D2.5) Map of green business development opportunities for SSL: An extended common map of green business development opportunities, based on D2.2 and Task 2.3 workshops' outcome. The map will differentiate between applications (lighting in outdoor city spaces, in education, homes and hospitale) and use visualization techniques to show opportunities, risks and interrelations. KPI: Map of green business development opportunities and concerns [month 9]

D2.6) Priority list of suggestions for demonstration and business experiments: Recommendations and business ideas for green business development, with cost-benefit analysis, based on the green buisiness development map. KPI: 10 sustainability based opportunities defined for Task 4.3 [month 11]

D2.7) Workshop on the progress of green buisness development in sustainable cities: Workshop in which the SSL-erate city task force reports on methods and criteria for procurement of lighting (including and beyond street lighting) and for invoking interest of entrepreneurs for related green SSL-business. KPI: 15 cities that will move to investing in green SSL solutions [month 24]

D2.8) Final report on sustainability issues: Final report on sustainability issues in SSL and methods for handling these, including EFP, scarcity, recycling, ecodesign, principle agent problem. [month 30]

D2.9) Report on green business development in sustainable cities: Report on status and progress in green business development in sustainable cities. [month 33]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS4	Workshops on introductory green business map, on creating demand and business opportunities	2	6	D2.2 and D2.3 achieved
MS5	Brokerage event on green business opportunities, coupling demand and supply side for business cases	2	11	Brokerage event held
MS6	Consensus abou the importance and feasibility of sustainable priorities for SSL deployment	2	33	D2.8 and D2.9 achieved

WT3:
Work package description

Project Number [1]	619249	Project Acronym [2]	SSL-erate

One form per Work Package

Work package number [53]	WP3	Type of activity [54]	COORD
Work package title	Accelerated innovation: inventory of effects of biologically effective lighting for health and well		
Start month	1		
End month	36		
Lead beneficiary number [55]	3		

Objectives

(i) Analysis of existing proof-points (scientific insights and showcases) to:
- define substantiated claims on the health, performance & well-being effects of light;
- identify the most important application opportunities of these proof-points (in collaboration with WP2 and Task 4.3) & give recommendations and guidance on a healthy/productive light exposure dose for different application domains;
- quantify the economic and social value of these application opportunities (in collaboration with WP2 and Task 4.3);
(ii) These proof-points will be put in action through open-innovation in collaboration with WP4. and broadly disseminated in collaboration with WP5 to raise the interest of citizens, municipalities and customers;
(iii) Execute a benefit analysis from collaboration with local actors for relevant application domains (workplaces, education, hospitals, elderly care homes, domestic lighting, smart cities including street lighting) to identify potential new functionalities in biologically effective lighting;
(iv) Create guidelines and nomenclature to communicate these qualities and benefits;
(v) Find agreement on innovation recommendations per application domain with stakeholder groups on European level;
(vi) Prioritize innovation actions the business experiments in Task 4.3

KPI 1: For every segment (education, healthcare, office, home, outdoor) two major application opportunities of biologically effective lighting with supporting scientific evidence on effects;
KPI 2: Definition of metric to quantify biologically effective light exposure doses;
KPI 3: Recommendations for healthy light exposure doses for various application contexts (schools, offices, care homes, hospitals,..)

Description of work and role of partners

Even well-lit typical indoor work-places often expose us to no more than 200 Lux on the eye position, totalling to an exposure dose of 1,600 Lux-hours over the course of a 8-hour workday. Outdoors, the light intensity can be up to 100,000 Lux on a sunny day, so that even a short 20-minute walk outdoors would expose us to 30,000 Lux-hours. This is at least one order of magnitude more than the exposure of that entire indoor workday.
A number of studies have been made which resulted in the notion that there is in fact a positive impact of exposure to artificial lighting to the human body which can result in creating better conditions in the surroundings of human beings, thus enhancing their well-being, alertness and performance. Especially lighting of work places, classrooms and similar surroundings is reported to have such direct impact on the human body and behaviour. Light is the most important external cue to synchronize our internal biological rhythm and body clock. The biological clock or circadian clock (“circadian”, “circa diem”, about a day) helps to time our sleep patterns, alertness, mood, physical strength, blood pressure and much more across the day. This allows to anticipate the differing demands of the 24 hour day and „fine-tune“ physiology and behaviour in advance to prepare for the various functional demands, encountered in the condition and activity changes throughout the day. Related to this, there are many scientific insights that are ready and waiting for application within the European Lighting industry, eventually creating innovative, healthy and productive, indoor environments that are economically competing. In order to capitalize on this potential, a reliable and neutral analysis on the proven facts is an

essential first step that will create awareness amongst the decision makers and general public, thus accelerating market readiness for human centric SSL lighting systems.
Alternatively, gaps in the understanding of the positive impact of light on humans and it's relevance for circadian rhythms, health, performance and (mental) well-being need to be identified. Moreover, the potential negative effects on human health of light at night during shift work will be briefly discussed and summarized. Moreover, recent research and showcases allow for the assumption that the impact of light on the human circadian sleep-wake rhythm is beneficial to disease prevention. All this will enable to establish and develop a EU research agenda, that also in future will warrant the European lighting industry to develop adequate, healthy and productive lighting solutions and maintain Europe's leading position in the global (lighting) market.
Therefore it is necessary to carry out a thorough analysis of the available scientific insights and reference projects realized so far. Results will be evaluated and reviewed, to prepare a list of top findings calling for application. Guidance will be given on appropriate metrics to express a light exposure dosis and recommendations for a healthy light exposure dose will be given for various application domains Simultaneously the most promising applications will be identified and concrete suggestions and guidelines how to bring those applications forward will be given. This will also be used as input for defining the open innovation business experiments in WP4. Moreover, dissemination of these findings to the general public will be organized, enhancing the awareness on the value of indoor light conditions for productivity, general health and well-being. In parallel the WP will develop concrete recommendations on application specific issues.
Besides the above, input for WP3 is a stakeholder inventory carried out in WP5. The stakeholder definition has been made beyond the "classical" lighting value chain and focuses predominately on the following two groups:

(i) The enhanced lighting value chain for Lighting for health and well-being;
(ii) Indirect stakeholders relevant for the future development of the issue.

As a first step, the current model of the enhanced lighting value chain has been benchmarked against specific requirements for biologically efficient lighting. The role of stakeholders along the enhanced lighting value chain (producers, installers, designers, architects, etc.) is already well understood and was complemented with additional stakeholders which can contribute to better understanding and promotion of biologically efficient lighting along the complete value chain.
Secondly, the evaluation to what extent the academic activities on biologically efficient lighting may require cross-scientific additions from other sectors was basis to adequately address the analytical part of WP 3. WP members include a scientific network that is relevant and adequate to accompany the take up of biologically efficient lighting, including the scientific basis for market development and communication.
Thirdly, analysis of indirect stakeholders (based on mapping in Task 5.1) forms the third pillar of the WP. Such stakeholders are characterized by their aptitude of contributing to gaining potential economic benefits from a broader uptake of biologically efficient lighting or trade unions. It is also to be envisaged that such indirect stakeholders may become value-adding partners in promotion activities beyond the lighting sector.
Accordingly, WP 3 will comprise the following tasks:
- Task 3.1: Stocktaking and Analysis
Including a collection of proof points for biologically efficient lighting from available field tests.
The Stocktaking and analysis results will be reported and made available for use in WP2 (green business development, creating demand) and WP4 (open innovation based business experiments, supply side) and dissemination and take-up through the SSL-erate innovation plan and SSL-erate events.
Introductory report and web material will be available after three project months, full reporting after nine months.
- Task 3.2: Lighting for health and well-being in "Smart Cities"
Including application scenario for biologically efficient lighting in the context of the "Smart Cities" initiative.
- Task 3.3: Analysis of potential barriers and opportunities for implementation of SSL

Task 3.1. Stocktaking and Analysis (LE; TNO, LU, UNIBAS/UPK, RUG, Aalto, UOXF; M1 – M24)

A thorough analysis of the available scientific insights and reference/showcase projects realized so far will be made, including the identification of suitable data comparison methods. Results will be evaluated and reviewed and an overview of possible claims for health, performance and well-being benefits will be produced. For each claim, the underlying scientific evidence and field experience with use cases will be provided and the economic and social potential (in terms of value & impact) of the claim will be discussed. The most attractive application opportunities will be identified, and a short list will be made of claim-application combinations with the highest potential and impact.

Simultaneously concrete recommendations and guidelines how to bring those applications forward will be given. Moreover, this task will provide recommendations and guidance on a healthy/productive light exposure dosis for different application domains
Finally, dissemination of these findings to stakeholders and the general public will be organized, enhancing the awareness on the value of indoor light conditions for productivity, general health and well- being.
Below four sub tasks are defined for analyzing different application fields. The methodology for each of the sub-tasks will be:
- Mapping of showcase projects realized so far, including desk research on available literature;
- Analysis of showcases collected;
- Translation of showcase analysis to data collection for future applications;
- Methodology for data comparison;
- Go from single case to general learning that can be applied;
- Identification of research gaps for each sub-task

The sub-tasks, addressing different application fields, will contribute to deliverables on:

(i) Introductory reporting and web material on the topic (M3) and sitiation analysis report (M9): the latter will contain a short list of existing scientific insights and use cases. It will identify high-impact claims options that can be substantiated from those insights and discuss the most relevant application opportunities. The paper will provide recommendations to foster implementation in Task 5.2. It will also give guidance and recommendations for a healthy/productive light exposure dose for different application domains.
(ii) Report to quantify the economic and social value of claim-application combinations (in collaboration with WP2 and Task 4.3) and to identify knowledge gaps and future research directions for application research and field studies (M9-M17)
(iii) Dissemination support: participate in workshops to support awareness raising and implementation (in Task 5.2), provide information for SSL demand development in WP2 and open innovation studies in WP4, and facilitate use on the SSL-erate innovation platform (from M3).

Guidance will be provided to third parties that already executed, or are interested in executing, studies dedicated to evidence based design of lighting conditions. Support will be given with respect to study design, data analysis and reporting.
The data collected this way will also be compared to internet based questionnaire findings (e.g. the chronotype study on the “worldwide experiment platform” www.thewep.org), expanding the databases where possible, thus facilitating big-data research. Eventually, this will result in insights on novel relations between lighting conditions and their impact on health, sleep, performance and well-being.

T 3.1.1. Lighting for health and well-being in Education (RuG: UNIBAS/UPK; M1 – M24)
The impact and potential beneficial effects of lighting in educational settings on human, health, (cognitive) performance, well-being and behavior will be assessed (from existing studies, literature, from consulting experts). The most relevant scientific insights to demonstrate those effects will be reviewed, and concrete suggestions for application, utilization and implementation of this knowledge will be given.

T3.1.2. Lighting for health and well-being in Workplaces (RUG; UNIBAS/UPK; M1 – M24)
Light conditions at the workplace have their impact on health, performance, well-being and behaviour of the personnel that is exposed to it. The most relevant scientific insights to demonstrate those effects will be reviewed, and concrete suggestions for application, utilization and implementation of this knowledge will be given. The focus will be on workplace lighting during regular working time.
Based on this analytical part promotional activities for the particular findings of this task will be prepared. Promotional activities are to be carried out and coordinated in WP5. Preparatory action for successful promotion will concentrate on the notion of “right to a healthy working environment”. This is to be distinguished between office and factory environment. In this context alliances with e.g. Trade unions for office and factory workers are important. The task members will conclude their scientific analysis with concrete and implementable recommendations which measures are to be taken to include lighting into the concept of healthier workplaces. The item of demographic changes resulting in the challenge to provide healthy working conditions for ageing employees is an integral part of this exercise.
WP 5 will elaborate a concrete promotion scheme for healthy light at workplaces.

T3.1.3. Lighting for health and well-being in Healthcare / Nursing Homes (OXF; UNIBAS/UPK, RuG; M1 – M24)
The impact and potential (preventive) beneficial effects of lighting within healthcare and elderly-care settings on (mental) health, performance, well-being and behaviour will be assessed for staff, patients and clients alike.

The most relevant scientific insights to demonstrate those effects will be reviewed, and concrete suggestions for application, utilization and implementation of this knowledge will be given.
The impact of demographic changes which will result in higher numbers of elderly people in nursing homes and hospitals is of specific concern in this task. Based on available sociological data, task members will develop different scenario to foster the application, utilization and implementation of lighting in the healthcare/nursing homes environment and will particularly evaluate the research done so far on the beneficial impact for (mental) health and to remedy certain related diseases.
On this basis WP 5 will elaborate a concrete promotion scheme for biological efficient lighting in the context of health care and hospitals.

3.1.4. Lighting for health and well-being in Domestic Applications (UB; RuG, UOXF, LE; M1-M24)
The impact and potential of lighting in domestic settings for health, cognitive performance, well-being and behaviour will be assessed, discriminating for the needs of different age groups, particularly for adolescents and aged (over 65 year) people. The most important and relevant scientific insights and use cases will be identified, and concrete suggestions for application, utilisation and implementation of this knowledge will be given.
This task will also make the link to general developments in smart and intelligent lighting in the domestic environment and will elaborate on the issue that biological efficient lighting in homes is adequately taken into account in related standardization activities.
WP 5 will elaborate a promotion scheme for biological efficient lighting in the domestic environment.

Task 3.2. Lighting for health and well-being in “Smart Cities” (AALTO; LE, VU; M1 – M24)

A thorough analysis of the available scientific findings and projects related to smart cities (especially street and other outdoor lighting applications) realized so far will be made, including the identification of suitable data comparison methods. Peoples’ needs and behaviour in outdoor spaces depend on the space itself (streets, parks, outdoor areas), and can be altered with light depending on its intensity, spectral composition, duration, direction and distribution. With the use of light we can change the whole atmosphere of the cities and the way people use outdoor spaces. The analysis will carefully study the existing findings on light-induced alertness, fatigue, mood and behaviour during the dark evening and night hours. Data will be collected on the effects of light on heart rate, reaction tests, pupil size as well as on mood and emotions in outdoor lighting applications. Subjective tests should be accompanied with objective findings, and the analysis will concern both methods. The existing data and evidence will be evaluated and reviewed and an overview of possible claims for health, performance and well-being benefits will be produced. For each claim, the underlying scientific evidence and field experience with use cases will be provided and the economic and social potential (in terms of value & impact) of the claim will be discussed.
This task will co-operate with Task 3.1 and share the same methodology.
The most relevant scientific findings to demonstrate the non-visual effects of light in smart cities will be reviewed, and suggestions for utilization of this knowledge will be given as well as guidelines for their implementation. The findings on the biologically efficient lighting will be forwarded to on-going exercises related to “smart cities”.

Task 3.3. Analysis of potential barriers and opportunities for implementation of SSL (LE; TNO, LU, UNIBAS/UPKUB, AALTO, RuG, UOXF; M11 – M22)

Recommendations for implementation of the findings of Tasks 3.1. and 3.2 will be realized on different levels, with special attention on the following potential barriers:
- public scepticism and lack of information;
- limited political attention;
- insufficient delivery capabilities;
- inadequate go-to-market setup;
- heterogeneous and conflicting customer requirements;
- health economics.

A joint study, Human Centric Lighting: Going Beyond Energy Efficiency, produced by LightingEurope, the German Electrical and Electronic Manufacturers’ Association (ZVEI) and A.T. Kearney, show that human centric lighting can become a multibillion-euro business, covering around 7 percent of the general lighting market in Europe. The European industry is well positioned to take a leading role in this sector if policy makers and industry players work hand in hand to leverage Europe’s native strengths, including its innovation capabilities, integration competence and solution-oriented understanding of customer
A successful implementation of the findings in Tasks 3.1 and 3.2 depends to a large extent on favourable market conditions. A market analysis of the economic potential of biological efficient lighting in the different

applications outlined on Task 3.1 and in the context of smart cities will be carried out in this task. Based on this analysis recommendations for necessary market stimulating measures will be developed and recommended. The potential for job creation in this context will also be evaluated.

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	TNO	4.00
2	LU	5.00
3	LE	15.00
13	VU	5.00
14	UNIBAS/UPK	11.50
15	AALTO	11.50
16	RuG	23.00
22	UOXF	10.00
	Total	85.00

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D3.1	Introductory report and web material on lighting for health and well-being in education, work places, nursing homes, domestic applications	3	9.00	O	PU	3
D3.2	Situation analysis report on Lighting for health and well-being in education, work places, nursing homes, domestic applications	3	32.50	R	RE	9
D3.3	Introductory report and presentation on Lighting in Smart Cities	15	3.00	R	PU	3
D3.4	Situation analysis report on lighting for health and well-being in Smart Cities	15	16.00	R	RE	9
D3.5	Report on output workshops held to support awareness raising and implementation	3	2.00	R	PU	12
D3.6	Recommendations to overcome potential barriers and opportunities for implementation	3	13.50	R	PU	22
D3.7	Report on metric to quantify biological light exposure doses	3	9.00	R	PU	24
		Total	85.00			

Description of deliverables

D3.1) Introductory report and web material on lighting for health and well-being in education, work places, nursing homes, domestic applications: Introductory reports and work shop material tailored to specific groups: users, buyers and specifiers, OEMs. The deliverable will be used in Task 2.3 workshops and made public on the SSL-erate innovation platform. [month 3]

D3.2) Situation analysis report on Lighting for health and well-being in education, work places, nursing homes, domestic applications: The report will provide recommendations to foster implementation (in Task 3.3, Task 4.3 and WP5), contain a priority list of scientific insights and use cases that area ready waiting for application, and guidance and recommendations for a healthy/productive light exposure dose in the targeted applications. KPI: two application opportunities for healthy/productive light exposure for each sector, i.e. education, healthcare, work place and domestic [month 9]

D3.3) Introductory report and presentation on Lighting in Smart Cities: Introductory reports and work shop material tailored to specific groups: users, buyers and specifiers, OEMs. The deliverable will be used in Task 2.3 workshops and made public on the SSL-erate innovation platform. [month 3]

D3.4) Situation analysis report on lighting for health and well-being in Smart Cities: The report will contain a priority list of scientific insights and use cases that area ready waiting for application. The paper will also provide recommendations to foster implementation in Task 3.3, Task 4.3 and WP5. KPI: two application opportunities for lighting for health and well-being in cities [month 9]

D3.5) Report on output workshops held to support awareness raising and implementation: In Task 5.2, a series of workshops on human centric lighting will be organised. Received feedback on presentations and discussion will be reported for further in Task 3.3 [month 12]

D3.6) Recommendations to overcome potential barriers and opportunities for implementation: Report on identified barriers for take up and opportunities to overcome these barriers. This includes: (i) analysis of the economic potential of biological efficient lighting in the different applications outlined in Task 3.1 and Task 3.2; (ii) recommendations for necessary market stimulating measures; (iii) potential for job creation. KPI: 10 application recommendations for biologically effective lighting [month 22]

D3.7) Report on metric to quantify biological light exposure doses: The report also provides general guidance and recommendations on healthy and safe light exposure doses, specifically for the most relevant and interesting application contexts. KP3: Metric to quantify biologically effective light exposure doses [month 24]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead beneficiary number	Delivery date from Annex I [60]	Comments
MS7	Recommendations for human lighting needs	3	10	D3.2 achieved
MS8	Recommendations to overcome potential barriers and opportinities for implementation	3	22	D3.6 achieved
MS9	Metric to quantify biological light exposure doses	3	24	D3.7 achieved

WT3:
Work package description

Project Number [1]	619249	Project Acronym [2]	SSL-erate

One form per Work Package

Work package number [53]	WP4	Type of activity [54]	COORD
Work package title	Open innovation to accelerate value creation		
Start month	1		
End month	36		
Lead beneficiary number [55]	1		

Objectives

The overall objective of WP4 is to support effective open collaboration and to accelerate deployment of value enhancing SSL solutions. We will facilitate utilization of 'open innovation' approaches and tools, and organize business development experiments for the most promising suggestions of green business development and enhancement of health and wellbeing.

(i) Develop criteria for applicability of 'open innovation' methods to SSL innovation actions;
(ii) Selection of WP2 and WP3 topics for application in WP4;
(iii) Create practical tools to support 'open innovation' approaches in SSL innovation actions;
(iv) Facilitate the implementation of new value solutions, in collaboration with local lighting cluster, identifying and attracting new strategic stakeholders, and using the results from WP2 and WP3;
(v) Translate minimum of 10 innovation topics (green business development and/or lighting for health and wellbeing) to business concepts, to be managed by the participating lighting clusters—involving clients, investors, public authorities, lighting professionals and manufacturers, architects and engineers, research institutes and other relevant stakeholders;
(vi) Coordinate and align work by clusters: share processes; document, report, evaluate, and financial management; collect results, edit and compile an 'open innovation handbook' (working title);
(vii) Also: Support the creation of new lighting clusters, to facilitate 'open innovation' approaches in at least 10 European countries.

KP1: Open innovation toolkit for SSL
KP2: 3 Workshops of open innovation for SSL
KP3: 10 business experiments on sustainability and/or health and well-being
KP4: Smart Lighting Forum

Description of work and role of partners

The ambition is to enhance the ability to make better things happen through mutual understanding and openness. One starting point is that WP2 will develop a list of potential market openings with a basis in sustainability priorities and life-cycle based investment thinking to promote entrepreneurship and green jobs. Another starting point is that WP3 will clarify the health and wellbeing values of better lighting and suggest a number of introductory market cases for better lighting.
The project partners will apply 'open innovation' tools in the field of SSL products and services. Regional lighting clusters will use these tools, and launch a coordinated campaign of Business Development Experiments. This task will require the involvement of local strategic actors throughout the lighting value chain.
WP4 comprises the following tasks:
(i) Task 4.1: To develop an Open Innovation Toolkit, to be used in the Business Development Experiments (Task 4.3); to evaluate this toolkit (usefulness, added value, limitations); and to deliver an improved version of this toolkit (based on findings from Task 4.3). This task will be coordinated by TNO, in cooperation with Lund University and ESADE.
(ii) Task 4.2: To develop presentations on 'open innovation' approaches that will accelerate deployment of value adding SSL products and services; to conduct workshops with project partners; and to select topics, from WP2 and WP3, with high feasibility for successful deployment. This task will be coordinated by Lund University, in cooperation with TNO.

(iii) Task 4.3: To organize Business Development Experiments, in which local clusters will manage an 'open innovation' approach to business development and deployment, further developing topics from WP2 and WP3, and using the Open Innovation Toolkit. Participants will share knowledge on market evolution, financial opportunities, and new markets. This task will be coordinated by Cluster Lumière, in cooperation with members of the European Lighting Clusters Alliance (ELCA, 2012). This task will also establish a road map for future cooperation on 'open innovation' in European Lighting Clusters through the ELCA organization. Outreach to other European Lighting organizations will also be addressed (in WP6).
(iv) Task 4.4: To set up and run a Smart Lighting Forum to inform and discuss with the main building and construction stakeholders about SSL applications, about legislation and roadblocks of discussion / decision making (investors-architects-building and construction industry- suppliers-regulators). While the business develop experiments focus on the content of SSL technical solutions, the forum will focus on process of SSL implementation in buildings.

Task 4.1 Develop and evaluate Open Innovation Toolkit (TNO; LU, ESADE; M1-M30)

The aim is to develop a practical Open Innovation Toolkit (checklist, issues to be aware of, handling IP; digital (for partners & open); paper/PPT versions/training material for workshops) mainly based on existing methods and tools, and tailored and modified in order to match the project's and project partners' specific needs, and the context of SSL innovation and deployment. And to and evaluate apply this toolkit in the Business Development Experiments (Task 4.3). Based on this practical application and evaluation, an improved version of the toolkit will be developed. Our practice-based, practice-oriented customizing of the existing Open Innovation tools, will take into account the following aspects:
(i) How does this Open Innovation Toolkit help organizations in the SSL value chain —and, more specifically: 'lighting clusters'—to improve their collaboration capabilities? E.g. which methods or tools are most useful and of added value? Which challenges, and which limitations?
(ii) How does the toolkit cater for different needs, of different partners, and in different phases of development, implementation and commercialization?
(iii) How does the toolkit help organizations to use their strengths capabilities productively? E.g. to align project collective goals—regarding green business development (WP2) and/or lighting for health and well-being (WP3)—with the local companies' individual ambitions and goals for business development?

Timeline:
• M1-M4: Develop first version of Open Innovation Toolkit
• M5-M18: Apply, evaluate and improve the Open Innovation Toolkit in Business Development Experiments, and regularly provide updates to lighting clusters in Task 4.3.
• M19-M22: Develop second version of Open Innovation Toolkit

Results:
• D4.1 (1st version, M4) and D4.2 (2nd version, M22) 'Open Innovation Toolkit for SSL'

The Open Innovation Toolkit will be made usable for European SSL value chain as follows:
• The first version is intended to help 20-50 organizations in the Business Development Experiments, with their 'open innovation' process; aiming for an 'above average' evaluation of its usefulness and added value (e.g. 4 or 5 on a 5-point scale, compared to current methods or toolkits, e.g. evaluated in a short survey amongst project partners), based on their actual usage of this toolkit.
• The second version is intended to be disseminated to 50 participants in 5 (open) workshops each and through a webinar (on the innovation platform); aiming for an 'above average' evaluation of its usefulness and added value (e.g. 4 or 5 on a 5-point scale, compared to current methods or toolkits, e.g. evaluated in as short survey, during a face-to-face workshop or meeting), based on their first impressions ('face validity').

Task 4.2 Workshops on 'open innovation' (LU; TNO; Esade, CL, LiV, KUL, CICAT, DTU, SYN, BAS, HAW; M1-M12)

The aim is to elucidate the usefulness of 'open innovation' approaches and tools in order to get SSL across 'the value of death'. Collaboration is needed in order to promote value enhancing utilization of SSL: collaboration between actors along the value chain as well as collaboration between the lighting industries, renewal oriented entrepreneurs and lead users.

Timeline:

• M1-M2: Develop presentation material on ‘open innovation’, its advantages and limitations, partly generic, partly specific for SSL (e.g. 20 presentation sheets, and a document of 2000 words)
• M3-M5: Workshops with project partners on ‘open innovation’, including representatives from the local lighting clusters, with the following goals:
o To identify and clarify the need for enhanced action and investment-oriented understanding.
o To identify the usefulness of ‘open innovation’ to accelerate SSL innovation and deployment.
o To develop criteria for applying ‘open innovation’ in SSL innovation and deployment
o Test workshop format for use beyond consortium
• M6-M12: To mobilize the experiences among the project participants for selection of topics from WP2 and WP3 for Business Development Experiments (Task 4.3). Workshops with focus on national/local level (using input from WP2 and WP3).

Results:
• D4.3: ‘Open Innovation for accelerated and effective deployment of SSL’

Task 4.3 Business Development Experiments (CL; TNO, LU, LE, DTU, LIV, CICAT, KUL, Syntens, BAS, HAW; M1-M36)

The aim is to accelerate the development of innovative, intelligent SSL-based solutions and services in order to address the Green Energy challenge (cf. WP2) and the Health and Well-being challenge (cf. WP3) and using the Open Innovation Toolkit developed in Task 4.1.
Additional goals are: to introduce interesting and relevant new players and new stakeholders into the lighting business; and to strengthen links between actors and stakeholders in the lighting value chain, to create opportunities, to promote quality, to identify new applications, and to benefit from exchanges between clusters.
The participating Lighting Clusters (Cluster Lumière; Luce in Veneto; Cluster d’il Luminacio de Catalunya; Groen Licht Vlaanderen/KU Leuven; Dansklys/DTU; Syntens; and Lund Lightinh Initiative/LU will identify strategic (local or national) stakeholders and involve them in Business Development Experiments. The lighting clusters bring together lighting professionals, clients (public and private, e.g. hospitals, centres for elderly people, urban lighting, indoor work places), research institutes, and companies in the lighting value chain (electricity suppliers, green business companies, IT industry, the building and construction industry, investors and developers, banks, etc.). Local lighting clusters will align the Business Development Experiments with local initiatives and strategies, e.g. by providing their know-how about local opportunities and obstacles in the market.
The actual execution of the Business Development Experiments—and the associated resources and budgets—are not part of the project; only the definition, coordination, evaluation and reporting are funded by the project.
Task 4.3 will support cooperation of photonic clusters and existing national technology platforms in order to stimulate the innovation potential of SMEs, using business cases with a clear potential for sales and job growth. In addition, Task 4.3 promotes the cooperation of lighting industry and end users (e.g. architects, designers, installers, the building and construction industry).
Each of the participating Lighting Clusters in SSL-erate will launch Business Development Experiments, in line with the specific involvement of local stakeholders, and using the recommendations on green business development and public investment (WP2) and/or use of biological effects of lighting (WP3).
The lighting clusters have identified organisations willing to participate in the business experiments (expressed by their Letters of Support). These will be the key partners to engage in setting up the experiments, the first six project months will be used to enlarge this group.
Within these Business Development Experiments, the process of ‘open innovation’ will be facilitated, monitored, evaluated and documented. Successes and results, and also challenges and difficulties, will be also shared between participants in order to promote joint learning. Results will be documented and integrated in the innovation platform, where each cluster will provide material for sharing on EU level with third parties the lessons and good practice learnt.
Targeted achievement is to bring in 20 key stakeholders to the discussion, and to successfully launch at least 10 business experiments within the time frame. Preliminary contacts are conducted by clusters for identifying participants for business experiments with SSL sulutions for hospitals, public lighting, commercial centres, office lighting, high-end luminaire design.

Time line:
• M1-M5: Cluster partners mobilize local actors from the lighting industry value chain, and public authorities and/or property owners (and in the wider European field, if necessary). They will identify, and then bring in, new local (or European) key stakeholders for SSL products and services development. This will lead to

the strengthening of local networks. The lighting clusters will also identify and select best representatives to participate in workshops organized in WP4.2, and possibly WP2 and WP3.
• M6-M11: To identify and start key business development experiments. In the first phase these could be grafted on existing, running local initiatives. At present, the lighting clusters have identified opportunities for hospitals, centres for older people, cities (urban lighting and buildings), indoor work places, green product development, banks, insurance companies, and investors. In a second phase, new business experiments will be initiated based on results from WP2 and WP3, as well as the evolving European context (Ecolabels, directives; cf. Green Public Procurement Indoor Lighting, 2011 and Green Public Procurement, Street Lighting and Traffic Lights, 2011). A minimum of 10 experiments will be launched by the participating lighting clusters, facilitated by locally organised workshops in Tasks 4.2, to introduce the Open Innovation approach.
• M12-M36: Stakeholders will act together in the Business Development Experiments. Each Business Development Experiment will try to benefit from the latest development in high performance light engines and optics, miniaturization, IT technologies, and Life Cycle Assessment optimization. Local lighting clusters will provide their know-how about opportunities and obstacles in the market, monitor the programs and progress, and provide regular reporting towards
• M25-M28 Global reporting and communication concerning the Business Development Experiments, e.g., documentation, evaluation, financial management, lessons learned, findings.
• M25-M28: To define a set of standards for open innovation SSL initiatives by local clusters, which will be adopted and promoted by the European Lighting Cluster Alliance (ELCA). The monitoring of the work of the lighting clusters will lead to recommendations for the range of activities and best role of ELCA as well as key strategic partnerships to develop The involvement (and creation) of new lighting clusters will be stimulated.

Results:
• D4.4 List of local actors and stakeholders
• D4.5 Business Development Experiments
• D4.6 Facilitating collaboration of regional Lighting Clusters in Europe.
• D4.7 Presentations of Business Development Experiments

Task 4.4 Smart Lighting Forum (TNO; LU, LE, CL, CICAT, LiV, KUL, DTU; M3-M30)

A series of half-yearly events will be set-up and coordinated, to help to establish dialogue and nurture interactions with the building industry to address in particular how lighting / construction could go hand in hand and what needs to be changed for a win-win business cooperation.
In this events lighting is seen as an important factor for enabling smart building and cities, focusing on SSL applications fields in WP3. Concrete targets are real estate operators and investors, facility managers, architects, building companies. Outcome will be increased demand of SSL in retrofit and new buildings, by informing about applications (lighting effects, WP3), about legislation (landlord – tenants, WP2). Teams will be formed to elaborate on opportunities and roadblocks. Progress will be reported in next forum session (or using SSL-erate Innovation Platform). Results may be channeled into the green business map (WP2) and business experiments (Task 4.3).
While the business development experiments (Task 4.3) focuss on the content of SSL technical solutions, this forum will focus on the process of SSL implementation in buildings.

Timeline:
• M1-M6: Set-up of Smart Lighting Forum with input of Task 2.2 and 5.1.
• M7-M30: Platform meetings with main stakeholders every 6 months.

Results:
• D4.8 Setting up and running a Smart Lighting Forum

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	TNO	15.00
2	LU	18.00
3	LE	2.00

WT3:
Work package description

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
4	ESADE	10.00
6	CL	20.00
7	LiV	10.50
8	KU Leuven	10.50
9	CICAT	10.50
10	DTU	10.50
11	SYNTENS	2.50
18	Bassano	1.50
19	HAW	3.50
	Total	114.50

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D4.1	Open Innovation Toolkit for SSL', 1st version	1	5.00	O	RE	4
D4.2	Open Innovation Toolkit for SSL', 2nd version	1	17.00	O	PU	22
D4.3	Open Innovation methodology for accelerated and effective development and deployment of SSL	2	24.00	R	RE	10
D4.4	List of local actors and stakeholders	6	2.00	R	CO	12
D4.5	Intermediate presentations of business development Experiments	6	20.00	R	PU	24
D4.6	Final report on business development experiments	6	28.00	R	RE	36
D4.7	Facilitating collaboration of regional Lighting Clusters in Europe.	6	7.50	R	RE	36
D4.8	Smart Lighting Forum	1	11.00	R	PU	6
		Total	114.50			

Description of deliverables

D4.1) Open Innovation Toolkit for SSL', 1st version: Tools for the following phases: Strategy formulation; Selection of partners; Design of collaboration; Negotiation; Management; Evaluation; ermination. Partly on paper, partly online tool. Key Performance Indicator: To help 20-50 organizations in the Business Development Experiments, with their 'open innovation' process; aiming for an 'above average' evaluation of its usefulness and added value (e.g. 4 or 5 on a 5-point scale, compared to current methods or toolkits, e.g. evaluated in a short survey amongst project partners), based on their actual usage of this toolkit. [month 4]

D4.2) Open Innovation Toolkit for SSL', 2nd version: Improved version of tools for the following phases: Strategy formulation; Selection of partners; Design of collaboration; Negotiation; Management; Evaluation; Termination. Partly on paper, partly online tool. Key Performance Indicator: To disseminate to 50 participants in 5 workshops or meetings (e.g. in WP5); aiming for an 'above average' evaluation of its usefulness and added value (e.g. 4 or 5 on a 5-point scale, compared to current methods or toolkits, e.g. evaluated in as short survey, during a face-to-face workshop or meeting), based on their first impressions and 'face value'. [month 22]

D4.3) Open Innovation methodology for accelerated and effective development and deployment of SSL: Local workshops on 'open innovation'; value enhancing potential and usefulness of 'open innovation'; identification of SSL subject and application areas, from WP2 and WP3, where 'open innovation' can provide effective business development tools. Key Performance Indicators: To increase project partners' understanding of 'open innovation' and their commitment; aiming for 'above average' intentions to practically apply an 'open innovation' methodology (e.g. 4 or 5 on a 5-point scale, e.g. evaluated in a survey during a face-toface workshop or meeting). And to disseminate the basics of 'open innovation' to larger group (European context), aiming to reach 50 people. [month 10]

D4.4) List of local actors and stakeholders: Overview of key local actors and stakeholders that are willing to participate in the Business Development Experiments, including their positions, motivations and their contributions to the development and deployment of SSL, with opportunities and barriers. [month 12]

D4.5) Intermediate presentations of business development Experiments: Description of plan and goals; Documentation of execution; Monitoring and evaluation, e.g. practical usage and added value of the 'Open Innovation Toolkit'; Financial reporting of Business Development Experiments (e.g. costs vs. benefits of solutions being investigated); Lessons learned (please note that one can learn from less-than-expected successful open innovation processes, e.g. in articulating recommendations); Key Performance Indicators: 10 or more Business Development Experiments, involving more than 30 organizations, launched by 5 or more local Lighting [month 24]

D4.6) Final report on business development experiments: Final description of plan and goals; Documentation of execution; Monitoring and evaluation, e.g. practical usage and added value of the 'Open Innovation Toolkit'; Financial reporting of Business Development Experiments (e.g. costs vs. benefits of solutions being investigated); Lessons learned (please note that one can learn from less-than-expected successful open innovation processes, e.g. in articulating recommendations); Key Performance Indicators: ten or more Business Development Experiments, involving more than 30 organizations, launched by 5 or more local lighting clusters [month 36]

D4.7) Facilitating collaboration of regional Lighting Clusters in Europe.: Overview of the benefits for local lighting clusters to collaborate within and between regions, and a roadmap for further development [month 36]

D4.8) Smart Lighting Forum: A series of half-yearly events will be set-up and coordinated, to help to establish dialogue and nurture interactions with the building industry to address in particular how lighting / construction could go hand in hand and what needs to be changed for a win-win business cooperation. [month 6]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS10	Open Innovation Toolkit (1st version) available	1	4	Toolkit available for WP4.2 workshops
MS11	Open Innovation Toolkit (2nd version) available	1	22	Improved toolkit available
MS12	Business development experiments programma running	6	13	At least 10 business development experiments started in at least 5 clusters

WT3:
Work package description

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS13	Business development experiments finshed	6	36	development experiments finshed and documented

WT3:
Work package description

Project Number [1]	619249	Project Acronym [2]	SSL-erate

One form per Work Package

Work package number [53]	WP5	Type of activity [54]	COORD
Work package title	Ensure the uptake of SSL along the extended value chain		
Start month	1		
End month	36		
Lead beneficiary number [55]	3		

Objectives

(i) Develop a holistic approach to promote the uptake of SSL to all stakeholders along the extended value chain
(ii) Define the most appropriate communication tools to foster the implementation of the results of WP 2, 3 and 4
(iii) Develop and implement a European SSL Innovation Platform as one stop shop tool for SSL in Europe
(iv) To manage and coordinate activities for the dissemination activities in the SSL-erate project.

KP1: Functional SSL Innovation Platform
KP2: Three workshops at annual DIN Experts Panel (on lighting and well-being)
KP3: Each city partner organises 2 local workshops (green business development)
KP4: Ten papers or presentations on professional lighting conferences (public awareness)

Description of work and role of partners

Task 5.1 Dynamic stakeholder inventory (LE; TNO, LU, ESADE, CL, UNIBAS/UPK, AALTO, RuG, HAW, UOXF, RMP; M1 - M5)

Existing stakeholder maps and interest studies will be used as the baseline for a stakeholder inventory. The inventory will be kept up to date, with especially an eye for stakeholders beyond the traditional lighting value chain. The result will be used to select and address stakeholders in accordance with their needs to enhance the SSL uptake, where appropriate these stakeholders can be invited for specialist workshops in WP2, 3 and 4. Tasks 2.2, 2.3, 2.5 and 4.3 will especially benefit from this inventory, as the result can be used to broaden the City workshops, with regard to range of participants as well as green business options.

Task 5.2 Promotion strategy, implementation, action alignment (LE; TNO, LU, ESADE, LUCI, CL, LiV, KUL, CICAT, DTU, Syntens, UCL, UNIBAS/UPK, AALTO, RuG, HAW, UOXF, RMP: M1 - M36)

The European lighting industry anticipates the SSL-erate project to actively and concretely aid the implementation of the Green Paper Lighting the Future Accelerating the deployment of innovative lighting technologies (COM(2011)889, report Lighting the Cities (Accelerating the Deployment of Innovative Lighting in European Cities) 2013 and their successors and further aid the uptake of SSL technology.
In this framework, and aligned with WP2, 3 and 4 actions, for each year project year an activity plan will be made to promote uptake of SSL along the value chain, for business generation and reaching out to specific end user groups and indirect stakeholders (e.g. insurance companies, health care, education).
The plans will contain programmes for determined target groups, using output from and aligned with activities in WP2, 3 and 4, and within the context of the European SSL policy strategy. Target groups will be based on the dynamic stakeholder inventory (Task 5.1) as well as (for promotion plan of year 2 and further) on feedback from dialogues/specialist workshops from WP2, 3 and 4.
The SSL uptake promotion activities will partly use (and always advocate use of) the SSL-erate innovation platform (Task 5.3). Other types of engagement channels for the project will include specific material for interacting with differing stakeholder audiences, appropriate website and news channel feeds, e-mailing announcements, utilising social networking groups, issuing press releases to newspapers and magazines, speaking at European conferences.

The action plan for the first project year contains the following elements:

(i) Workshops light and well being

- Among others, also foreseen for the second and third project year, a workshop programme will be carried out to support awareness raising and implementation of biological effects of (solid state) lighting, based on the findings (the situation analyses) in WP3. The workshops will use the innovation platform which has been created by then (D5.8). Taken into account will be the option that the workshops link to one or more larger (not necessarily) lighting events, tailored to the different stakeholder groups (e.g. trade fairs with a focus on healthcare, employers or trade union events, as well as symposia on education).
The following workshops are foreseen:
• Workshop on lighting for health and well-being in education
• Workshop on lighting for health and well-being in work places
• Workshop on lighting for health and well-being in work places in healthcare and nursing homes
• Workshop on lighting for health and well-being in domestic settings
• Workshop on Smart Cities and Lighting for health and well-being

Aim is to run these workshops at annual DIN Expert Panel on “Effect of Light on Human Beings” in Berlin.

Like the yearly Expert Panels of the past since 2007, the 8th DIN Expert Panel 2014 will provide an overview on the latest state of science, realized projects and best practices in the field of non-visual effects of light on humans. To accommodate the SSL-erate workshops, a second day will be added to the meeting, enabling to deepen the information given in the forum in the context of the applications cited above.
The DIN Expert Panel has outgrown its original goal of scientific information exchange, by giving also a platform to scientists and business for discussion with media and stakeholders in the lighting value chain for further more practical information exchange. Workshops following the presentations on the second day are giving the opportunity to intensify information exchange in direct discussion with scientists and industry representatives. The speakers (~15) come from leading universities, institutes and companies of the lighting industry. The participants (~120) come from policy, media, universities, institutes and again from companies of the lighting industry (light sources, luminaires, light management systems and specifying). Especially small and midsized companies, lighting designers, architects and other multipliers are invited and will be the main target group for 2014
Main characteristics of the Expert Panel:
- Has become since 7 years well-established, worldwide acknowledged
- Promotion of the authenticity by strict neutrality
- Communication channels established via social media and from 2014 onwards via SSL Innovation Platform

The target groups to be addressed for participation in this forum and especially the SSL-erate workshops are:
- European Hospital and Healthcare Federation (HOPE)
- Insurance Europe, with a focus on health insurers
- European Trade Union Confederation
- EUROCITIES
- Federene
- Representatives of European Municipalities via the Committee of the Regions
- European Schools Network (ES Network), European School Net (EUN)
- European Sleep Research Society (ESRS)
- European Consumers’ Organisation (BEUC)
- European Patients’ Forum
- Architects Council of Europe
- PLDA / International Association of Lighting Designers (IALD)
- IEA Task 50 Members

(ii) Green business development
- The city partners BAS, STA, MAL, HAW, EHV (with TNO) will each organise two local workshops on green business development for SSL, each focussing on one application (see Task 2.3)
Application specific business and societal actors will be invited (such hospital and homes representatives, architects and people from construction industry, public space planners) as well as SSL-erate cluster partners and associates. A number of the workshops could be organised together with or in addition by regional (lighting cluster) partners: in NL/BE Euregion (Eindhoven, Syntens, Groen Licht Vlaanderen/KUL), Veneto (Bassano, LiV), Malmo (Malmo, Lund Lighting Initiative/LU), Vilnius (VU, with the - Lithunean - Association of Advanced Lighting Developers, coordinated by VU).

-In month 11, a SSL-erate brokerage event will be held, connecting demand (city partners) and supply side (clusters with associated members) to help turn the generated ideas for green SSL business and solutions into actions. The event will be public but also facilitate 1: 1 match making (WP2).
-A series of half-yearly events will be set-up and coordinated, to help to establish dialogue and nurture interactions with the building industry to address in particular how lighting / construction could go hand in hand and what needs to be changed for a win-win business cooperation (see Task 4.4).

(iii) Public awareness
• To launch of the SSL-erate project and its website targeting professional lighting stakeholders, at the Light & Building event
• Presentation of the project to other key events. Foreseen are, but not only:
- ForumLED (France),
- Strategies in Light Europe,
- Smart Lighting Conference,
- LED Professional Symposion Bregenz and Light 2014.
• To produce a promotional video for the project which will help promote greater awareness of the topic and our initiative in particular. This will be made available both on the project website and other strategic sites.
• Production of a series of information flyers and very short videos/animations on the environmental and health benefits of SSL and biological efficient lighting
• Actions using social media to engage the general public based on 3 dissemination pillars: awareness, understanding, and action. Communicate news, updates and stories from SSL-erate partners and EC projects to gain wider international projection; organize and manage knowledge outputs for wide access and application in various forms: digital, video and audio.
The SSL-erate Innovation platform is an integral part in this exercise. The concept of three parallel and integrative dissemination pillars will be included in the set up of the platform.
• Promoting the SSL-erate success stories in LUCI communication tools (website, newsletters…) and disseminating them at some LUCI events.
• Raise the interest of young people and entrepreneurs in photonics and lighting especially through partners participating in local-level science open days for schools, the organization of workshops or visits to specific target groups. The execution of these activities is integral part of Task 5.2.
• Reaching out to cities:
LUCI will disseminate information related to SSL-erate at its annual events, among which their Annual General Meeting (attended by tens of cities) and “City under Microscope” events (Rotterdam, March 2014). The Annual General Meeting 2014 will be held in Dubrovnik (Croatia), and will a good opportunity to engage with cities from South Eastern Europe.
ESADE will connect SSL-erate with existing EU initiatives involving Smart Cities via the Smart-City Expo event (held annually in Barcelona and in which ESADE already plays a key role) and Smart City exhibition (an annual event to be held in Bologna); participate in activities organized by the Connected Smart Cities network - this network provides a forum for cities to work together and share their experience and knowledge in order to create a compelling evidence base for the role of ‘Smart Cities’ in enabling smart, inclusive and sustainable growth;

Promoting the SSL-erate success stories in LUCI communication tools (website, newsletters…) and disseminating them at some LUCI events.

• Exploit partners’ networks to secure speaking and publishing opportunities featuring SSL-erate success stories. Finally, where editorials permit, publications arising from the project will be made Open Access.

Task 5.3 Specification, building, moderating and exploitation of SSL-erate innovation platform (LE; RMP, TNO, LU, ESADE, CL; M1 – M36)

T5.3.1 Specification and building of SSL-erate innovation platform (RMP; LUX, LE, TNO, LU, ESADE, CL; M1 – M12)

The SSL innovation platform is to be the reference point for SSL related issues in Europe including the promotion of the results of SSL-erate and other SSL projects. From its public launch (at Light and Building 2014), relevant information will be made available to stakeholder groups and general public. The innovation platform will stimulate technical and scientific information exchange, including availability of information on applicable product and application standards, for research as well as business development. This will be supported by webinars.

The consortium partners' intent is that this web-based innovation platform will play a central role in a European lighting innovation eco-system, also after finalization of the SSL-erate project.

The SSL innovation platform is an interactive dialogue tool. Its concept is fourfold:
(i) Project dissemination tool.
This includes providing comprehensive information on all events, symposia, fairs and comparable activities of relevance for SSL in Europe, including local/regional workshops where SSL-erate can potentially participate and share its achievements.

(ii) Project communication tool
Interface and information board (including use of webinars) to bring the results of WP2 'green business development' and WP3 'Lighting effects on Health and Well-being' to the 'smart-specialized' lighting clusters in WP4 and vice versa for the experiences learnt in the business experiments.

(iii) A channel, dialogue tool between actors outside and inside lighting value chain. For example assisting the CEN (European Committee for Standardization) in enhancing their communication with SMEs in SSL applications and developing sector specific tools.

(iv) An information tool towards audiences that today may or may not be part of the wider stakeholder network along the lighting value chain
Concerning the latter, based on identification exercised that are part of WP 2, 3 and 4 the platform is to be designed as the tool to reach out and to enable for a streamlined access to information. The notion of the platform is to become a one-stop-shop for stakeholders interested in and affected by lighting innovation.
Today information on SSL comes through many channels, is scattered, unclear and sometimes biased. It is the innovation platform's added value to bring these different communication channels together to provide for a holistic overview. In this context, commercial information should deliberately not exempted from the scope of the innovation platform.
Examples of who are anticipated to utilize the platform include:
i. Healthy Ageing Platform
ii. Hospitals, doctors
iii. (Health) Insurance companies, especially for illness
iv. European Connected Health Alliance
v. Patients lobbying groups
vi. MEPs who are taking the lead in health and wellness and ageing issues, but also MEPs with a focus area on technical innovation, research and development (Liese, Becker and MORE)
vii. Sleep institutes, Biological Clock institutes (but not the Ergonomics Institute)
viii. Health and safety officers of big companies
ix. Subcontractors who oversee health and safety for these large industries (e.g. Premed in Belgium; Arboned in NL).
x. Unions and employers
xi. Ministries in Member States
xii. Relevant DGs in European Commission,
xiii. City networks (Energy Cite, Federene)
xiv. Regional committee 's
xv. Schools
xvi. Additional schools and or universities that are teaching on health and well-being and light
xvii. Consumer protection organizations (national and international—are usually linked)
xviii. Architectural associations, institutes, designers
xix. Professional Lighting Designer Association
xx. Universities who have lighting design curriculum and programs
xxi. Consulting companies (e.g. AT Kearney, McKinsey)
xxii. International Energy Association (e.g. project group Task 50 Advanced Lighting Solutions for Retrofitting Buildings)
xxiii. Energy companies and energy advisors

The Innovation Platform will be designed and specified using standard methodologies for architecting and specifying web-based information systems. The platform will include a set of models and templates, data base management system with the relevant information about SSL and user interfaces.
Design issues include identifying the user roles and respective workflows, mapping the information content in a structured way, defining appropriate user interfaces (such as menus, tabs, lists), specifying the integration with

other systems (if appropriate), specifying the upload process including content review and approval, specifying search mechanisms and download options, specifying the platform's collaboration spaces (such as for the open innovation business experiments in WP4), and finally defining the registration process and managing access rights.
The software development will be subcontracted by LUX (30,000€ is included in the budget to cover the costs). LE will manage the overall implementation of the platform.

A basic version of the Innovation Platform will be 'live' by M2, which will host the project website (D6.1) and enable communication along the extended value chain and towards other stakeholders. The basic version will allow registered users to engage in dialogues on 'green business development' and 'lighting for health & well-being'.
The innovation platform will be built using a cloud based CRM system, such asForce.com and conventional web hosting. The innovation platform will comprise:

(i) Internal network
So that all project team members can communicate, share documents, presentations in private and easily be informed about progress on key elements of the project. The project social network can be organised in to specific groups covering work groups and associated topics. Using social based platforms speeds communication and reduces email trails. Information which is ready for dissemination can be uploaded for conversion to the web site
(ii) Web site, external communication.
The web site will form the hub of the project communication and outreach, and will evolve to reflect the current communication requirements of the project. The material presented will be carefully authored to ensure a clear, concise communication style which is accessible to the widest possible community. The web site will also link to external social tools such as Linkedin, Twitter, Facebook, Youtube. Web site will also be used to publish dissemination events.
The web site will use HTML 5.0 to work across multiple platforms - tablets, smart phones, PC's. It will allow for the creation of tablet based Apps should that be deemed desirable.
(iii) CRM system
Users of the web site can register / subscribe to the web site or follow using social media channels. Registrations will be recorded using a cloud based CRM system, so we can manage communications across all channels. CRM system will host the email and social marketing delivery system so we can measure response and engagement inline with project communication KPIs.
Aim is to launch the portal together with the introduction to the wider public, preferably at Light & Building 2014. The full version will be operational from M9, enabling usage in the open innovation business experiments in WP4.3 as well as being an alternative for stakeholders for face-to-face participation in WP2, 3 and 4 workshops.

T5.3.2 Moderating and impact monitoring of SSL-erate innovation platform (LE; TNO, LU, ESADE, CL, RMP; M3 – M36)

This concerns updating (moderating) as well as maintenance and monitoring of the use of the platform within the project and outside. The quality of the offered content and usage will be actively monitored. A protocol will be made how to deal with conflicts and unwanted content, in which the Management Board has the final say. Statistics and analysis on the usage of the innovation portal will be summarized on a weekly basis to all partners in the SSL-erate project. Full reports on the Innovation Portal usage and status will be made available at M6, M12, M18 and M24.
Proposed performance monitoring methodology can be found at http://www.klipfolio.com/resources/kpi-examples-top-seo-metrics. The following key performance indicators (KPI) will be used to optimise the website usage:
1. Return on Investment (ROI), i.e. (Attributable Revenue - Campaign Investment) / (Campaign Investment).
2. Keyword ranking, i.e. rank keywords results for each search engine (Google, Bing, Yahoo, etc.)
3. Delta / Ranking trends over time, i.e. Daily/weekly rankings for each keyword, listed for each search engine (Google, Bing, Yahoo).
4. Highest ranked UR for each keyword.
5. Click-through rate (for each keyword: Search Volume / Actual Volume = CTR %)
6. Goal conversion rate (# of page visits / # of goals completed by visitors, e.g. filling in a form).
7. Search as a % of site traffic (Total site traffic / Organic search).
8. Keyword opportunity. This is a qualitative measure (estimated search volume, competition, and trends).
9. Search Impressions. I.e. counting the amount of times the website has appeared in search queries..

10. Backlinks. Cultivating backlinks is about producing content that other sites will want to link to using appropriate anchor text. omain's authority and cultivate high quality backlinks.

T5.3.3 Improvements and continuation of the SSL-erate innovation platform (LE; TNO, ESADE, CL, RMP; M13 – M36)

As a way to ensure the longer-term success of the platform and increase the visibility of European producers and manufacturers to the wider global audience, the site will offer limited commercial opportunities for stakeholders to promote their products and services. This could include advertising, sponsored e-communications and webinars.
During the course of the project, options to improve the Innovation Platform's user friendliness and functionalities will be looked for - in order to induce richer content and wider usage in the SSL value chain. Every six months users will be asked for their feedback and suggestions through a web- questionnaire. The results will be used by the Management Board to decide which improvements should be implemented.
A particular concern is to assure that the web-site is appealing to its users, during the second year of the project video content and/or webinars preferably with life 'chat'/Q&A will be added to innovation platform at M9. This will e.g. be used to allow stakeholders that are not able to travel to workshops of WP2, WP3 and WP4 to be actively involved.
A concept will be made on the continuation, funding and exploitation of the SSL-erate Innovation Platform after the project end.

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	TNO	6.00
2	LU	4.00
3	LE	14.00
4	ESADE	8.50
5	LUCI	2.50
6	CL	4.00
7	LiV	1.00
8	KU Leuven	1.00
9	CICAT	1.00
10	DTU	1.00
11	SYNTENS	1.00
12	UCL	0.50
13	VU	2.50
14	UNIBAS/UPK	2.00
15	AALTO	2.00
16	RuG	4.00
17	Malmö	0.50
18	Bassano	1.00
19	HAW	3.00
22	UOXF	1.50
23	RMP	11.50

WT3:
Work package description

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
	Total	72.50

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D5.1	Dynamic stake holder inventory	3	11.00	R	RE	3
D5.2	Final promotion plan year 1	3	2.00	R	CO	2
D5.3	Performance analysis and year 2 plan of SSL promotion actions	3	8.00	R	CO	12
D5.4	Performance analysis and year 2 plan of SSL promotion actions	3	18.00	R	CO	24
D5.5	Performance analysis of promotion actions	3	18.00	R	CO	36
D5.6	Basic version of the innovation platform for internal use and project and SSL information for the public	23	2.00	O	PU	2
D5.7	Protocols for management of the SSL-erate innovation platform	3	2.00	R	CO	4
D5.8	Full version of SSL-erate innovation platform	23	5.50	O	PU	9
D5.9	Innovation platform usage and status in year 1	23	1.00	R	CO	12
D5.10	Innovation platform usage and status in year 2	23	1.00	R	CO	24
D5.11	Innovation platform usage and status in year 3	23	1.00	R	CO	36
D5.12	Concept for continuation of the SSL-erate platform	3	3.00	R	CO	30
		Total	72.50			

Description of deliverables

D5.1) Dynamic stake holder inventory: Dynamic stake holder inventory [month 3]

D5.2) Final promotion plan year 1: Report with final year 1 plan of SSL promotion actions [month 2]

D5.3) Performance analysis and year 2 plan of SSL promotion actions: Periodic report with performance analysis and year 2 plan of SSL promotion actions [month 12]

D5.4) Performance analysis and year 2 plan of SSL promotion actions: Periodic report with performance analysis and year 3 plan of SSL promotion actions [month 24]

D5.5) Performance analysis of promotion actions: Final report on performance and impact of SSL-erate promotion actions [month 36]

D5.6) Basic version of the innovation platform for internal use and project and SSL information for the public: Basic version of the innovation platform for internal use and project and SSL information for the public [month 2]

D5.7) Protocols for management of the SSL-erate innovation platform: Protocols for management of the SSL-erate innovation platform [month 4]

D5.8) Full version of SSL-erate innovation platform: Full version of SSL-erate innovation platform [month 9]

D5.9) Innovation platform usage and status in year 1: Report on SSL-erate innovation platform usage and status in year 1 [month 12]

D5.10) Innovation platform usage and status in year 2: Report on SSL-erate innovation platform usage and status in year 2 [month 24]

D5.11) Innovation platform usage and status in year 3: Report on SSL-erate innovation platform usage and status in year 3 [month 36]

D5.12) Concept for continuation of the SSL-erate platform: A concept which enables the SSL-erate innovation platform to continue beyond the project end [month 30]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS14	Basic version of SSL-erate innovation platform launched	3	2	D5.6 achieved
MS15	Full version of SSL-erate platform	3	9	D5.7 achieved
MS16	Proposal on continuation of SSL-erate innovation platform beyond the project	3	30	An agreement in consortium how to continue

WT4:
List of Milestones

Project Number [1]	619249	Project Acronym [2]	SSL-erate

List and Schedule of Milestones

Milestone number [59]	Milestone name	WP number [53]	Lead beneficiary number	Delivery date from Annex I [60]	Comments
MS1	Review year 1	WP1	1	12	Successful review 1
MS2	Review year 2	WP1	1	24	Successful review 2
MS3	Final review	WP1	1	36	Successful final review
MS4	Workshops on introductory green business map, on creating demand and business opportunities	WP2	2	6	D2.2 and D2.3 achieved
MS5	Brokerage event on green business opportunities, coupling demand and supply side for business cases	WP2	2	11	Brokerage event held
MS6	Consensus abou the importance and feasibility of sustainable priorities for SSL deployment	WP2	2	33	D2.8 and D2.9 achieved
MS7	Recommendations for human lighting needs	WP3	3	10	D3.2 achieved
MS8	Recommendations to overcome potential barriers and opportinities for implementation	WP3	3	22	D3.6 achieved
MS9	Metric to quantify biological light exposure doses	WP3	3	24	D3.7 achieved
MS10	Open Innovation Toolkit (1st version) available	WP4	1	4	Toolkit available for WP4.2 workshops
MS11	Open Innovation Toolkit (2nd version) available	WP4	1	22	Improved toolkit available
MS12	Business development experiments programma running	WP4	6	13	At least 10 business development experiments started in at least 5 clusters
MS13	Business development experiments finshed	WP4	6	36	development experiments finshed and documented

WT4:
List of Milestones

Milestone number [59]	Milestone name	WP number [53]	Lead beneficiary number	Delivery date from Annex I [60]	Comments
MS14	Basic version of SSL-erate innovation platform launched	WP5	3	2	D5.6 achieved
MS15	Full version of SSL-erate platform	WP5	3	9	D5.7 achieved
MS16	Proposal on continuation of SSL-erate innovation platform beyond the project	WP5	3	30	An agreement in consortium how to continue

WT5:
Tentative schedule of Project Reviews

Project Number [1]	619249	Project Acronym [2]	SSL-erate

Tentative schedule of Project Reviews

Review number [65]	Tentative timing	Planned venue of review	Comments, if any
RV 1	12	EC, Brussels or at one of the	
RV 2	24	EC, Brussels or at one of the	
RV 3	36	EC, Brussels or at one of the	

WT6:
Project Effort by Beneficiary and Work Package

Project Number [1]	619249	Project Acronym [2]	SSL-erate

Indicative efforts (man-months) per Beneficiary per Work Package

Beneficiary number and short-name	WP 1	WP 2	WP 3	WP 4	WP 5	Total per Beneficiary
1 - TNO	14.00	16.00	4.00	15.00	6.00	55.00
2 - LU	1.00	28.00	5.00	18.00	4.00	56.00
3 - LE	1.00	9.00	15.00	2.00	14.00	41.00
4 - ESADE	0.50	0.00	0.00	10.00	8.50	19.00
5 - LUCI	0.50	4.00	0.00	0.00	2.50	7.00
6 - CL	1.00	0.00	0.00	20.00	4.00	25.00
7 - LiV	0.50	0.00	0.00	10.50	1.00	12.00
8 - KU Leuven	0.50	0.00	0.00	10.50	1.00	12.00
9 - CICAT	0.50	0.00	0.00	10.50	1.00	12.00
10 - DTU	0.50	0.00	0.00	10.50	1.00	12.00
11 - SYNTENS	0.50	0.00	0.00	2.50	1.00	4.00
12 - UCL	0.50	5.00	0.00	0.00	0.50	6.00
13 - VU	0.50	6.00	5.00	0.00	2.50	14.00
14 - UNIBAS/UPK	0.50	0.00	11.50	0.00	2.00	14.00
15 - AALTO	0.50	0.00	11.50	0.00	2.00	14.00
16 - RuG	1.00	0.00	23.00	0.00	4.00	28.00
17 - Malmö	0.50	5.00	0.00	0.00	0.50	6.00
18 - Bassano	0.50	6.00	0.00	1.50	1.00	9.00
19 - HAW	0.50	10.00	0.00	3.50	3.00	17.00
20 - Stavanger	0.50	5.50	0.00	0.00	0.00	6.00
21 - Eindhoven	0.50	2.00	0.00	0.00	0.00	2.50
22 - UOXF	0.50	0.00	10.00	0.00	1.50	12.00

WT6:
Project Effort by Beneficiary and Work Package

Beneficiary number and short-name	WP 1	WP 2	WP 3	WP 4	WP 5	Total per Beneficiary
23 - RMP	0.50	0.00	0.00	0.00	11.50	12.00
Total	27.00	96.50	85.00	114.50	72.50	395.50

WT7:
Project Effort by Activity type per Beneficiary

Project Number [1]	619249	Project Acronym [2]	SSL-erate

Indicative efforts per Activity Type per Beneficiary

Activity type	Part. 1 TNO	Part. 2 LU	Part. 3 LE	Part. 4 ESADE	Part. 5 LUCI	Part. 6 CL	Part. 7 LiV	Part. 8 KU Leuv	Part. 9 CICAT	Part. 10 DTU	Part. 11 SYNTENS	Part. 12 UCL	Part. 13 VU	Part. 14 UNIBAS/
3. Consortium Management activities														
WP 1	14.00	1.00	1.00	0.50	0.50	1.00	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Total Management	14.00	1.00	1.00	0.50	0.50	1.00	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Work Packages for Coordination activities														
WP 2	16.00	28.00	9.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	6.00	0.00
WP 3	4.00	5.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	11.50
WP 4	15.00	18.00	2.00	10.00	0.00	20.00	10.50	10.50	10.50	10.50	2.50	0.00	0.00	0.00
WP 5	6.00	4.00	14.00	8.50	2.50	4.00	1.00	1.00	1.00	1.00	1.00	0.50	2.50	2.00
Total Coordination	41.00	55.00	40.00	18.50	6.50	24.00	11.50	11.50	11.50	11.50	3.50	5.50	13.50	13.50
4. Other activities														
Total other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	55.00	56.00	41.00	19.00	7.00	25.00	12.00	12.00	12.00	12.00	4.00	6.00	14.00	14.00

WT7:
Project Effort by Activity type per Beneficiary

Activity type	Part. 15 AALTO	Part. 16 RuG	Part. 17 Malmö	Part. 18 Bassano	Part. 19 HAW	Part. 20 Stavang	Part. 21 Eindhov	Part. 22 UOXF	Part. 23 RMP	Total
3. Consortium Management activities										
WP 1	0.50	1.00	0.50	0.50	0.50	0.50	0.50	0.50	0.50	27.00
Total Management	0.50	1.00	0.50	0.50	0.50	0.50	0.50	0.50	0.50	27.00
Work Packages for Coordination activities										
WP 2	0.00	0.00	5.00	6.00	10.00	5.50	2.00	0.00	0.00	96.50
WP 3	11.50	23.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	85.00
WP 4	0.00	0.00	0.00	1.50	3.50	0.00	0.00	0.00	0.00	114.50
WP 5	2.00	4.00	0.50	1.00	3.00	0.00	0.00	1.50	11.50	72.50
Total Coordination	13.50	27.00	5.50	8.50	16.50	5.50	2.00	11.50	11.50	368.50
4. Other activities										
Total other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	14.00	28.00	6.00	9.00	17.00	6.00	2.50	12.00	12.00	395.50

WT8:
Project Effort and costs

Project Number [1]	619249	Project Acronym [2]	SSL-erate

Project efforts and costs

Beneficiary number	Beneficiary short name	Estimated eligible costs (whole duration of the project)						Requested EU contribution (€)
		Effort (PM)	Personnel costs (€)	Subcontracting (€)	Other Direct costs (€)	Indirect costs OR lump sum, flat-rate or scale-of-unit (€)	Total costs	
1	TNO	55.00	457,490.00	3,500.00	88,500.00	360,562.00	910,052.00	587,708.00
2	LU	56.00	504,000.00	3,500.00	47,000.00	110,200.00	664,700.00	593,070.00
3	LE	41.00	290,500.00	3,500.00	85,000.00	74,400.00	453,400.00	405,285.00
4	ESADE	19.00	119,700.00	12,000.00	29,000.00	29,740.00	190,440.00	171,108.00
5	LUCI	7.00	38,500.00	0.00	14,000.00	10,500.00	63,000.00	56,174.00
6	CL	25.00	192,500.00	0.00	40,000.00	46,500.00	279,000.00	248,775.00
7	LiV	12.00	84,000.00	0.00	27,000.00	22,200.00	133,200.00	118,769.00
8	KU Leuven	12.00	90,000.00	0.00	26,000.00	23,200.00	139,200.00	124,119.00
9	CICAT	12.00	60,768.00	0.00	26,000.00	17,353.00	104,121.00	92,841.00
10	DTU	12.00	100,200.00	0.00	29,000.00	100,200.00	229,400.00	138,243.00
11	SYNTENS	4.00	28,000.00	0.00	6,000.00	9,800.00	43,800.00	36,380.00
12	UCL	6.00	63,444.00	0.00	10,000.00	14,688.00	88,132.00	78,584.00
13	VU	14.00	40,165.00	0.00	12,000.00	10,432.00	62,597.00	55,816.00
14	UNIBAS/UPK	14.00	98,000.00	0.00	12,000.00	22,000.00	132,000.00	117,700.00
15	AALTO	14.00	128,520.00	0.00	16,000.00	107,957.00	252,477.00	154,636.00
16	RuG	28.00	196,000.00	0.00	24,000.00	44,000.00	264,000.00	235,400.00
17	Malmö	6.00	36,000.00	0.00	8,000.00	8,800.00	52,800.00	47,080.00
18	Bassano	9.00	45,900.00	0.00	12,000.00	11,580.00	69,480.00	61,952.00
19	HAW	17.00	102,000.00	0.00	15,000.00	23,400.00	140,400.00	125,190.00
20	Stavanger	6.00	36,000.00	0.00	10,000.00	9,200.00	55,200.00	49,220.00
21	Eindhoven	2.50	22,000.00	0.00	5,000.00	5,400.00	32,400.00	28,890.00

WT8:
Project Effort and costs

Beneficiary number	Beneficiary short name	Estimated eligible costs (whole duration of the project)						Requested EU contribution (€)
		Effort (PM)	Personnel costs (€)	Subcontracting (€)	Other Direct costs (€)	Indirect costs OR lump sum, flat-rate or scale-of-unit (€)	Total costs	
22	UOXF	12.00	95,278.00	0.00	15,000.00	22,054.00	132,332.00	117,996.00
23	RMP	12.00	84,000.00	30,000.00	14,000.00	19,600.00	147,600.00	134,860.00
Total		395.50	2,912,965.00	52,500.00	570,500.00	1,103,766.00	4,639,731.00	3,779,796.00

1. Project number

The project number has been assigned by the Commission as the unique identifier for your project. It cannot be changed. The project number **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

2. Project acronym

Use the project acronym as given in the submitted proposal. It cannot be changed unless agreed so during the negotiations. The same acronym **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

53. Work Package number

Work package number: WP1, WP2, WP3, ..., WPn

54. Type of activity

For all FP7 projects each work package must relate to one (and only one) of the following possible types of activity (only if applicable for the chosen funding scheme – must correspond to the GPF Form Ax.v):

• **RTD/INNO =** Research and technological development including scientific coordination - applicable for Collaborative Projects and Networks of Excellence

• **DEM =** Demonstration - applicable for collaborative projects and Research for the Benefit of Specific Groups

• **MGT =** Management of the consortium - applicable for all funding schemes

• **OTHER =** Other specific activities, applicable for all funding schemes

• **COORD =** Coordination activities – applicable only for CAs

• **SUPP =** Support activities – applicable only for SAs

55. Lead beneficiary number

Number of the beneficiary leading the work in this work package.

56. Person-months per work package

The total number of person-months allocated to each work package.

57. Start month

Relative start date for the work in the specific work packages, month 1 marking the start date of the project, and all other start dates being relative to this start date.

58. End month

Relative end date, month 1 marking the start date of the project, and all end dates being relative to this start date.

59. Milestone number

Milestone number:MS1, MS2, …, MSn

60. Delivery date for Milestone

Month in which the milestone will be achieved. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

61. Deliverable number

Deliverable numbers in order of delivery dates: D1 – Dn

62. Nature

Please indicate the nature of the deliverable using one of the following codes

R = Report, **P** = Prototype, **D** = Demonstrator, **O** = Other

63. Dissemination level

Please indicate the dissemination level using one of the following codes:

• **PU =** Public

• **PP =** Restricted to other programme participants (including the Commission Services)

• **RE =** Restricted to a group specified by the consortium (including the Commission Services)

• **CO =** Confidential, only for members of the consortium (including the Commission Services)

• **Restreint UE =** Classified with the classification level "Restreint UE" according to Commission Decision 2001/844 and amendments

• **Confidentiel UE =** Classified with the mention of the classification level "Confidentiel UE" according to Commission Decision 2001/844 and amendments

• **Secret UE =** Classified with the mention of the classification level "Secret UE" according to Commission Decision 2001/844 and amendments

64. Delivery date for Deliverable

Month in which the deliverables will be available. Month 1 marking the start date of the project, and all delivery dates being relative to this start date

65. Review number

Review number: RV1, RV2, ..., RVn

66. Tentative timing of reviews

Month after which the review will take place. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

67. Person-months per Deliverable

The total number of person-month allocated to each deliverable.

PART B

COORDINATION ACTION

Table of Contents

B1. CONCEPT AND OBJECTIVES, CONTRIBUTION TO THE COORDINATION OF HIGH QUALITY RESEARCH, QUALITY AND EFFECTIVENESS OF THE COORDINATION MECHANISM AND ASSOCIATED WORK PLAN 2

B1.1 CONCEPT AND PROJECT OBJECTIVE(S) 2
B1.2 CONTRIBUTION TO THE COORDINATION OF HIGH QUALITY RESEARCH 7
B1.3 S/T QUALITY AND EFFECTIVENESS OF THE COORDINATION MECHANISMS AND ASSOCIATED WORK PLAN 8
B1.3.1 Overall strategy and general description 8
B1.3.2 Timing of work packages and their components 10
B1.3.3 Risks and contingency plans 11

B2. IMPLEMENTATION 13

B 2.1 MANAGEMENT STRUCTURE AND PROCEDURES 13
B 2.2 BENEFICIARIES 18
B 2.3 CONSORTIUM AS A WHOLE 49
B 2.3.1 Partnership objectives, complementarily and balance 49
B 2.3.2 Subcontracting 52
B 2.3.3 Third parties 53
B 2.3.4 Other countries 53
B 2.4 RESOURCES TO BE COMMITTED 53

B3. IMPACT 56

B 3.1 STRATEGIC IMPACT 56
B 3.2 SPREADING EXCELLENCE, EXPLOITING RESULTS, DISSEMINATING KNOWLEDGE 57
B 3.2.1 Dissemination Activities 57
B 3.2.2 Exploitation Activities 59

B4. ETHICAL ISSUES (IF APPLICABLE) 61

B5. GENDER ASPECTS (OPTIONAL) 61

B1. CONCEPT AND OBJECTIVES, CONTRIBUTION TO THE COORDINATION OF HIGH QUALITY RESEARCH, QUALITY AND EFFECTIVENESS OF THE COORDINATION MECHANISM AND ASSOCIATED WORK PLAN

B1.1 Concept and project objective(s)

Solid State Lighting [SSL] has the potential to re-invent the lighting market and industry, leading to a paradigmatic shift in lighting.

For all European citizens – in fact for all mankind – the use of digitized light could bring a healthier, "natural" and more comfortable world, and, at the same time, a world where they could better fulfill their daily activities, at home, school and work. The needs of an ageing population could be served better, the cognitive development of the youth improved, and the alertness and performance of the working population raised, because the smart use of light has positive effects on the well-being of men.

For the SSL owners the long lifetime and energy efficiency will save money and reduce hassle. Citizens will note that directly on their energy bill, the benefits of employers will be more indirectly, viz. in increased productivity (Halonen, E. Tetri, and P. Bhusal. *Annex 45: Guidebook on Energy Efficient Electric Lighting for Buildings*, AT Kearny report "Human Centric Lighting").

For the society as a whole the environmental footprint can be reduced – even more if we consider sustainability aspects from the start. Companies that are able to bring these valuable innovations to the market can flourish and create employment opportunities. SSL can also bring new possibilities to designers and architects, contribute to cost reduction in hospitals (and related to that insurance fees) to name just a few. To unlock this huge potential as soon and effectively as possible a holistic, open-innovation approach is required involving the right stakeholders. Establishing this way-of-working is the main objective of SSL-erate; this is a prerequisite for acceleration of the uptake of SSL in the highly fragmented lighting market.

In this section we would first like to put the current situation in the right historic and global perspective and subsequently explain the main objectives of SSL-erate and describe the ways these will be implemented.

In perspective

In the last century the lighting industry's value chain had two different faces: upstream the focus was on mass manufacturing of lamps and lamp drivers, while downstream an enormous number of mainly SME companies created a wide offering of luminaires (i.e. fixtures). Most of the value was added upstream as lamps had to be replaced regularly. An oligopolistic market structure resulted as high volumes and low prices of standardized products were key factors of success. Furthermore the lamps were breakable products and had a low value density, so local/regional manufacturing was needed. European companies were able to become the global leaders in this domain.

The arrival of electronic drivers during the 1980's initiated a first change: an increasing share of the added value was attributed to the electronics. As already most of the consumer electronics were produced in Asia, new players entered the lighting market and existing players were forced to shift part of their production to this region.

Since the beginning of this century SSL is evidently becoming the next wave in lighting. Especially China and the USA have made big, concerted efforts to gain the leadership in this new market.

China, with its “National Semiconductor Lighting Project”, has focused initially on gaining dominance in LED manufacturing: currently more than two thirds of the global LED die manufacturing capacity is China based and low price is the main feature of the resulting products. Their next move is to extent this to the luminaire/system market. China’s starting position is a good one, as currently almost half of the global construction is taking place in their home market.

The USA, led by the Department of Energy (DOE), is organizing and funding the SSL R&D program on components and system level. In collaboration with the industry and research institutes a long term roadmap has been made and priorities have been set to get significantly lower system costs: the Multi Year Program Plan organizes and funds a long term effort to increase product efficiency and to reduce product costs. Furthermore this program is making significant contributions to quality methods and standards of Solid State Lighting.

The European lighting industry is thus facing a serious challenge especially at the upstream side of the market, but Europe’s know-how in making consumer and application specific systems and solutions could become our key strength. The lighting industry is changing from a ‘regular replace/repeat’ business to one where most of the value is in the initial sale of differentiated luminaires and complete lighting systems. However, to develop that know-how into a unique selling point all actors have to collaborate and overcome the current fragmentation, which is the main objective of SSL-erate.

Objectives

The aim of CSA SSL-erate is to accelerate the uptake of high-quality SSL technology by means of open innovation with, and by bringing validated information to, all relevant stakeholders. As explained above a coordinated European effort is required for the lighting actors to address the European societal challenges (in particular health & quality of life in an ageing society, energy consumption and resource efficiency). A coordinated effort will resolve the specific challenges of the Lighting industry as noted also in the results of the Green Paper "Lighting the Future", COM(2011) 889 final. There are two types of barriers actually identified in the SSL Green Paper for addressing the persisting hesitancy in the wider market uptake of SSL technologies in Europe:

1. Barriers related to the SSL market uptake by consumers and professional users: poor quality of some SSL products; lack of information for the citizens in their move from incandescent solutions to SSL; high initial purchase cost of SSL; also some health concerns are being mentioned.

2. Barriers related to the further development of the European SSL industry: lack of coherent standards; lack of sufficient market surveillance; low public investments in innovative (SSL) lighting solutions (public procurement); and, improving cooperation along the value chain and between the lighting industry and professional users

SSL-erate will inform the main stakeholders, including the building and construction industry, about SSL opportunities and initiate dialogues among them (WP2, WP4, WP5) and make steps in use of biological effects (human centric lighting) to foster SSL uptake (WP3).

SSL-erate aims to improve cooperation along the SSL value chain and between professional users and lighting industry (WP2, WP4), and to raise innovation in SSL, involving SME’s (WP2, WP4), and to raise procurement of SSL systems, especially in Cities (WP2).

Finally a coordinated effort enables lighting solutions with a societal and environmental sustainability perspective, leading to a future in which Europe evolves to the global leadership in SSL systems and solutions.

Specific objectives are:

Deployment of SSL: From energy saving to acceleration of 'green' business development

- To show how sustainability interests can be activated to accelerate deployment of SSL.
  KPI: Based on a.o. a review of ecological foot prints and the scarcity of SSL materials a number of green business development experiments have been defined and initiated (WP 2, WP 4).
- To clarify how sustainability-oriented interests, knowledge and control measures can be used to promote early European investments in high quality SSL solutions.
  KPI: Awareness, commitment and real action have been created by means of local and European workshops, the initiation of business development experiments, the content on the SSL Innovation Platform and the Smart Lighting Forum meetings (WP 2, WP3, WP 5 and WP 4).
- A map of sustainability-related concerns for SSL and their possible interplay with green business development actors, experiences and methods.
  KPI: A map of green business development opportunities and concerns has been drafted (WP 2).

Accelerated innovation: Analyze effects of biologically effective lighting on health and well-being

- Create stakeholder mapping and involve these stakeholders in the further process.
  KPI: Dynamic mapping of all stakeholders of the lighting value chain has been performed (WP 5, WP 2 and WP 3); these key actors have been involved in gathering sustainable and biologically effective lighting options and in initiating business experiments based on those options (WP4).
- Define sound research methodology, including ethical dimension
  KPI: The analysis of research conducted on health and well-being effects of SSL has resulted in a research methodology, and a metric to quantify biologically effective light exposure doses (WP 3).
- Analysis of existing proof-points (scientific insights and showcases) to:
  (i) define substantiated claims on the health, performance & well-being effects of light;
  (ii) identify the most important application opportunities of these proof-points points and give guidance on a healthy/productive light exposure dose for different application domains;
  (iii) quantify the economic and social value of these application opportunities.
  KPI: Existing insights and demonstrations on the beneficial effects of lighting have been analyzed resulting in a number of recommendations for biologically effective SSL solutions.
- Execute a benefit analysis from collaboration with local actors for relevant application domains (workplaces, education, hospitals, elderly care homes, domestic lighting, ismart cities including street lighting) to identify potential new functionalities in biologically effective lighting
  KPI: A cost-benefit analysis of SSL applications for the relevant domains has been conducted resulting in recommendations for applications (WP2, WP 3 and WP 4).
- Create guidelines and nomenclature to communicate these qualities and benefits
  KPI: The analysis of insights and demonstrations on the beneficial effects of lighting has resulted in communications guidelines and in a metric to quantify biologically effective light exposure doses (WP 3).
- Agree on innovation recommendations per application domain with stakeholder groups on European level.
  KPI: Cities workshops, Lighting Cluster meetings and Smart Lighting Forum meetings have yielded agreement on a number of innovative, green business recommendations (WP 2, WP 3 and WP 4).

Open Innovation to accelerate value creation

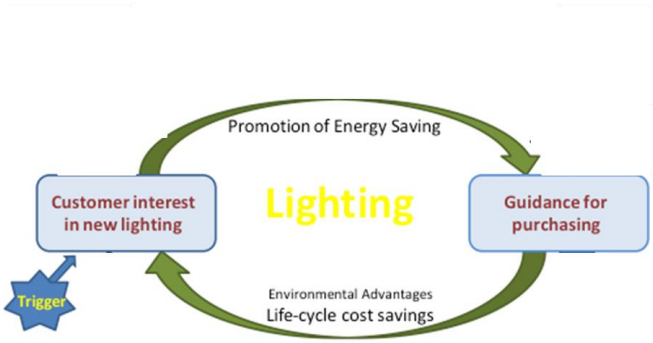
- Support effective open collaboration and accelerate deployment of value enhancing SSL solutions.
  KPI: An open innovation toolkit has been developed for SSL, and made known and available for use in open innovation workshops and on the SSL Innovation Platform (WP4 and WP 5)
- Facilitate utilization of genuine 'open innovation' understanding and tools
  KPI: A number of workshops on open innovation and the toolkit available on the SSL Innovation Platform have enabled effective use of open innovation.

- Business development experiments organized by regional clusters for the most promising suggestions for green business development for enhancement of health and well-being.
  KPI: A number of business development experiments on sustainability and/or health and well-being have been defined and initiated (WP 2, WP 3 and WP 4)
- Establish and facilitate a European SSL Innovation platform for networking & dialogue on SSL Innovation in Europe.
  KPI: Networking and dialogue opportunities on innovative SSL have been created on the SSL Innovation Platform and in Smart Lighting Forum meetings (WP 5 and WP 4).

Baseline

The base line for SSL-erate is shown in the picture below by the inner (green) circle. The use of SSL is promoted to achieve energy savings (environmental advantages) and life-cycle cost reductions. Related to this, EU regulation has been introduced force phasing out inefficient lighting products as the incandescent lamp. With regard to procurement and lighting design, lighting norms of the 50ties and 60ties are still predominant. The industry follows suit by providing SSL lamps as cheap as possible, seen as a replacement of incandescent lamps, with little focus on the potential of added user value of SSL. Such advertisement is not that easily understood as advantageous by consumers or professional users. The existing SSL promoting model ignores the demand side. Moreover, press reports on poor quality SSL systems impedes SSL take-up.

At present, in the EU 27 member states, 85% of existing building stock have no intelligent lighting; which could half the electricity consumption, saving potentially 70-75 TWh/year. What should also be stressed to increase SSL use and create opportunities for SSL related business is that intelligent lighting may also improve the quality of light, in schools, work places, hospitals. Also in the EU 27 member states, 90% of existing streets can only be switched on/off. Here intelligent lighting could save 10-15 TWh / year, but also increase safety, reduce light pollution.



Approach

SSL-erate is about getting the framing right to enhance the SSL-take up, by looking at both the demand and supply side. The current model promoting SSL take-up with potential energy savings and life-cycle cost reductions needs to be enlarged to highlight the opportunities of SSL for better light quality and the possible features of personal light experiences, as depicted by the outer circle in the picture below.

Creating new needs that lead to new customers and lead to new solutions (services, products) resulting in business could be key. Smart lighting with LED is a positive trigger because it allows to get any type of lighting.

To overcome the current level of fragmentation a collaborative way-of-working, based on **open-innovation** and **smart specialization principles**, will be taken as the guiding approach. The active involvement of the various stakeholders, including a number of cities that participate in the ENIGMA project (where the objective is to implement innovative lighting solutions through Pre-Commercial Procurement), will be realized through workshops and business development experiments but also through the creation of an web-based Innovation platform.

An European SSL Innovation platform, which is planned to continue beyond the duration of this project, will be created in which not only relevant lighting and non-lighting companies **but also other stakeholders (like e.g. public authorities (esp. cities), property owners, research institutes, (lead) users, architects, etc.)** are requested to become active contributors to the acceleration of the innovation process.

This web-platform is not a dissemination but a dialogue tool. It will be actively used during the SSL-erate project as an interface to transfer results of two parallel specialist inventarisation & stocktaking studies on 'Green Business Development' and 'Lighting effects on Health and Well-being' to the 'smart-specialized' lighting clusters for carrying out open innovation experiments in field of SSL systems and services. It will also make relevant information available for a broader audience of interested stakeholders whether entrepreneurs, cities, nursing homes, schools or citizens and will enable them to convey questions to the research and development community. This web-based innovation platform will play a central role in an European lighting innovation eco-system, also after finalization of the SSL-erate project.

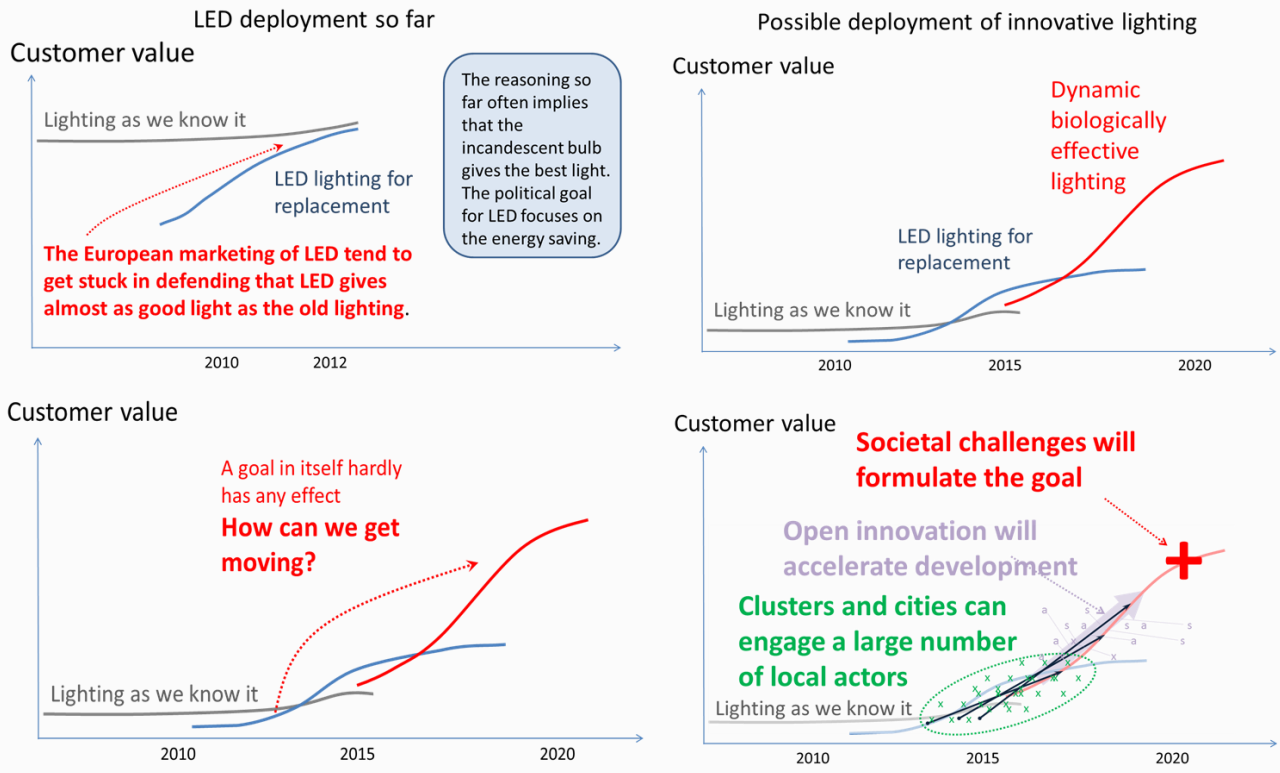
Hence open innovation principles are crucial in HOW the SSL-erate project will work. WHAT we will focus on are two main topics from which most innovation opportunities in Solid State Lighting are expected to arise:

1) '**Green' business development**: educating consumers and potential technology appliers (such as architects, designers and installers) to accelerate wide deployment of SSL, vital for sustainable societal development. To accelerate the deployment of SSL solutions information on new SSL metrics (lumen, CRI, CBA etc.) is crucial to make purchasing decisions based on quality and sustainability.
2) Scarcity of materials, use of hazardous materials and recyclability & disposability (waste management) of SSL products need to be addressed to ensure a sustainable supply of the essential scarce materials in order to harvest the SSL energy saving potential. A coherent view on consumers' and societal, and environmental benefits in concert with Life Cycle Cost improvements is a major basis for entrepreneurship and job creation and will be one of the main results of WP2.

3) **SSL effective on health and well-being**: Although recent showcases and scientific research prove the positive effects of good lighting on health, performance and quality of life (well-being), the market penetration of such health-oriented lighting solutions is still very low. One of the main barriers is the limited awareness of the scientifically proven beneficial effects of light among decision makers and the broader public. Moreover, there is a general skepticism towards initiatives from industry to promote health-oriented lighting solutions. Therefore, renowned research institutes and universities will be involved in WP3 to obtain a scientifically validated overview.

For both these topics coordination will be done on a European level because the business concepts and scientific results will be largely valid throughout Europe and the world. Implementation of the innovative business concepts varies with local circumstances and often requires face-to-face collaboration. Therefore, the business experiments will be guided and conducted by local/regional lighting clusters.

B1.2 Contribution to the coordination of high quality research



Envisaged contribution of SSL-erate to bring state-of-the-art research approaches and focus to high-quality research for future SSL market and meeting societal challenges with lighting (left to right, top to bottom).

The many contributions of this project aim to make existing knowledge available to the lighting industry and the related stakeholders; furthermore the project will identify and prioritize opportunities and develop methodologies for on-going and future research and development projects. This will be further clarified for both Sustainable development (WP2) and Light for Health and Well-being (WP3) in the following paragraph.

Sustainable development (WP2)

Over the last years several studies have been conducted (and e.g. the FP7 Cycled project is still on-going) with a focus on recycling of scarce and hazardous materials. The outcome of many of such projects are used by companies and research institutes to support their research & innovation activities. In the SSL-erate project we will create a state-of-the-art overview of this information as a basis for alignment on future directions and opportunities with a dedicated focus. Sustainability should in the future become a business development opportunity, an opportunity for the European companies to differentiate themselves in the market and to create the (local) jobs that come with it. That's a paradigm change in how recycling is currently perceived. Active experimentation with this approach is foreseen in WP4, the required fundamentals and analysis on roadblocks is done from a multiple stakeholder perspective in WP2.

The learning from the local business experiments may initiate new, multi- and cross-disciplinary research questions that link e.g. urban strategies (we regard cities and regions as the key societal drivers to make this paradigm change) to the behavior of individual humans and, last but not least, the enabling technologies. The results will be brought forward as recommendation for future programs like Horizon 2020.

Light for Health & Well-being (WP3)

Whereas the topics related to sustainable development and open innovation focus on putting existing results together and applying these, the challenging for Light for Health and Well-being is significantly larger. Evidence of the positive influence of light on health, well-being and performance is accumulating, but to obtain (statistically reliable) validation remains a major challenge. So far research has been mostly performed by individual research institutes, universities or companies whereby their research methods varied in terms of research questions and conditions. Laboratory conditions are well controlled but highly variable across many studies, complicating comparisons and transfers into the field. This leads to a situation where many individual parties claim just as many individual results, but the market as a whole lacks information and is unlikely to accept any of these.

To overcome this problem three steps need to be done:

1) The research done so far needs to be benchmarked and the generally accepted, scientific insights need to be identified. Fact based, objective guidance and recommendations on beneficial light exposure strategies and doses are required. These results can be used in the short term for development of new applications, propositions and products, thus accelerating of the (solid state) lighting market;
2) Furthermore for future work a general framework and standardized methodologies for conducting research on light and health aspects needs to be agreed, in order to assure that in the future the results will be sufficiently comparable. It will also increase the impact of future research and prevent unnecessary duplications. Moreover, consensus on the right ethical standards is desired as future experiments are likely to impact the well-being of European citizens at home and work.
3) Finally after mapping the relevant and useful research so far, 'white spots' will be identified; this will be based not only on the perspective of the research institutes, but will be aligned with the needs of a wide range of stakeholders, that represent among others the owners and users of light, and the companies that will ultimately bring these products, solutions and services to the market.

By executing these three point the co-ordination of the SSL-erate project will facilitate dramatic increases in focus, effectiveness and quality of the research and development work in this domain.

B1.3 S/T Quality and effectiveness of the coordination mechanisms and associated work plan

B1.3.1 Overall strategy and general description

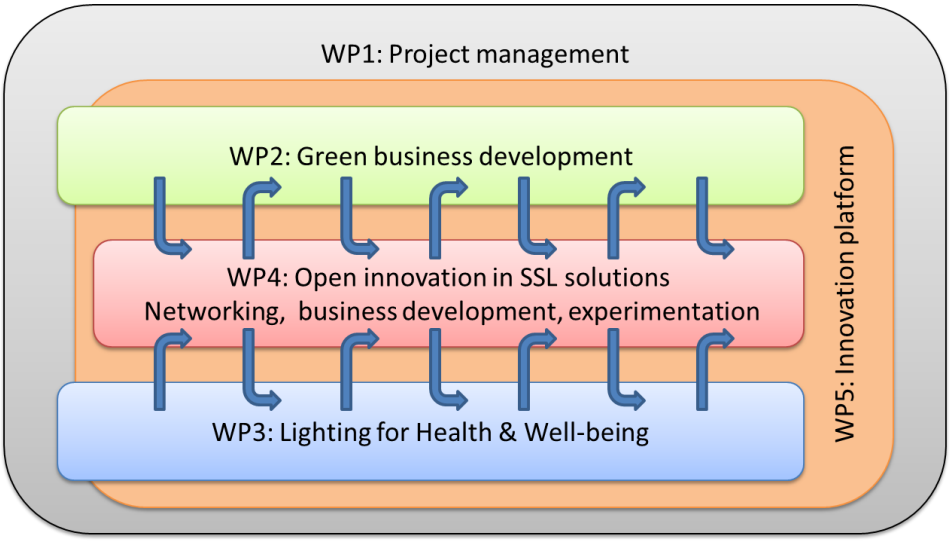
The lighting industry, especially downstream at the luminaire/systems/solutions side of the market, has been a differentiated and fragmented one. Many players in the industry, but also other stakeholders like e.g. public authorities, research institutes have come to realize that as a consequence of this the innovation speed and success rate have been too low and the benefits that we all expect from better lighting solutions, do not sufficiently materialize.

System innovations, that require a joint effort of a variety of parties, like e.g. green, sustainable SSL business development and the application of Lighting for improved health & well-being, are also seriously hampered by this.

The work program reflects the opportunities stemming from green, sustainable SSL business development and the effect of lighting on health and well-being, as well as the need to foster new businesses not only on European scale but especially on a regional level with a wide variety of stakeholders. The approach is to engage lighting clusters in open innovation business experiments (in WP4) and provide these with information, tools for working with green business concepts (WP2) and validated and extended knowledge on health and well-being effects of (solid-state) lighting (WP3).

WP5 will ensure the uptake of SSL along the extended value chain. Existing stakeholder maps and interest studies will be used as the baseline for a stakeholder inventory, which will be kept up to date, with especially an eye for stakeholders beyond the traditional lighting value chain. The result will be used to select and address stakeholders in accordance with their needs to enhance the SSL uptake, where appropriate these stakeholders can be invited for specialist workshops in WP2, 3 and 4. This activity plan will be made for each project year separately. The resulting knowledge and experiences will be anchored in an open innovation platform, which will also enable networking & dialogue on SSL use and business development in Europe.

Progress and key information will be circulated to a wider public through a series of dissemination and outreach activities coordinated in WP5.



B1.3.2 Timing of work packages and their components

GANTT chart with deliverables and milestones

WP / Task name	Project month 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
WP1 Management												M1.1												M1.2												M1.3
Task 1.1 Administration and financial management												D1.1												D1.2												D1.3
Task 1.2 Project coordination																																				
WP2 Deployment of SSL: from energy saving to acceleration of 'green' business development						M2.1						M2.2																				M2.3				
Task 2.1 Review of ecological footprints, scarcity of SSL materials and related management issues				D2.1																									D2.8						
Task 2.2 Engaging European cities in green business development for SSL			D2.2																																
Task 2.3 City specific application of green business development for SSL						D2.3 D2.4					D2.6																										
Task 2.4 Development of a joint map of Green Business development opportunities for SSL									D2.5																												
Task 2.5 Creating demand for green SSL business and solutions											D2.6													D2.7									D2.9				
WP3 Accelerated innovation: inventory of effects of biologically effective lighting for health and well-being										M3.1											M3.2			M3.3												
Task 3.1 Stocktaking and analysis			D3.1						D3.2															D3.7												
Task 3.2 Lighting for health and well-being in 'Smart Cities'			D3.3						D3.4																												
Task 3.3 Analysis of potentail barriers and opportunities for implementation of SSL											D3.5										D3.6															
WP4 Open Innovation to accelerate value creation				M4.1		M4.2							M4.3																							M4.4
Task 4.1 Develop and evaluate Open Innovation Toolkit				D4.1																		D4.2														
Task 4.2 Workshops on 'open innovation'										D4.3																											
Task 4.3 Business Development Experiments												D4.4												D4.5												D4.6 D4.7
Task 4.4 Smart lighting Forum						D4.8																														
WP5 Ensure and measure the uptake of SSL along the extended value chain		M5.1							M5.2																					M5.3						
Task 5.1 Dynamic stakeholder inventory			D5.1																																	
Task 5.2 Promotion strategy and implementation, alignment of actions		D5.2										D5.3												D5.4												D5.5
Task 5.3 Specification, building, moderating and exploitation of SSL-erate innovation platform		D5.6		D5.7					D5.8			D5.9												D5.10						D5.12						D5.11
WP / Task name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

Project month

B1.3.3 Risks and contingency plans

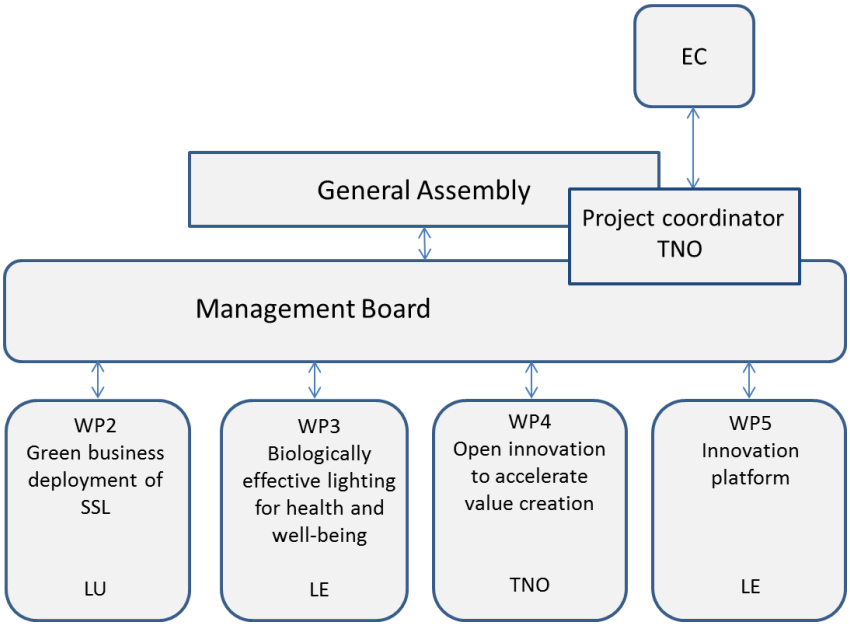
Risk	WP	Level	Contingency plan
Diminishing focus on SLL-erate objectives during project	All	medium	The project management is especially alert for deviations from the project course, and, together with the WP leaders, from tasks' courses in order to prevent too much focus on just one promising business development or biological effect of lighting.
Communications problems within WPs and consortium	All	medium	WP leaders and the project management are first responsible for noticing and solving such problems; each partner in SSL-erate has its own responsibility to indicate such problems.
Loss of critical competence or access to specific region	All	medium	In such a case, lost competences will be redistributed within the same partner organization, or within the consortium, as some redundancy exists in the consortium. If needed a new partner will be proposed to the EC.
Delay in deadlines for deliverables and milestones	All	medium / low	The project will be continuously monitored by WP leaders and project coordinator, evaluation status and progress. Potential deviations will be known quickly so that appropriate actions can be taken.
Not sufficient innovative ideas for business experiments	2, 3	high	If planned activities not result in sufficient output, the available results will be used for additional brainstorms in WP 2 and 3, and in local clusters and associations meetings.
Not sufficient participants for business experiments	2, 3, 4	high	The participating clusters , associations and the other partners have all a large national and international network. If in a certain region or country not sufficient participants can be found, participants will be sought as nearby as possible. As a last resort, major SSL companies will be contacted for help.
Innovation platform not adequate enough (poor or missing functionalities)	5	high	The platform is one of the main project results, being a cornerstone of activities during and after the SSL-erate project. The partners responsible for the platform have more than adequate experience in building such platforms. Still great attention and care will be given to its realization and subsequent maintenance.
Lack of cross-fertilization between WP 2 and WP 3	2, 3	medium	Interaction between green business development and analysis activities of SSL on health and well-being are a major point of attention of the project management; open innovation and the innovation platform are the tools to promote that interaction.
Lack of access to SSL-erate results for participants	All	medium	The partners of the SSL-erate project have large experience in participating in European funded projects, where SSL-erate will benefit from. The project management will urge for

Risk	WP	Level	Contingency plan
			making available (intermediate) results on the project web-disk.
Consortium's ability to disseminate SSL-erate results	5	low	The dissemination activities are designed so that a continuous and balanced approach is maintained through the work of the different partners and sourced from the other work packages e.g. workshops, innovation platform dialogues, etc. We plan for a 6-monthly evaluation of dissemination effectiveness to be able to introduce corrective factors if required.

B2. IMPLEMENTATION

B 2.1 Management structure and procedures

The organizational structure of the project to ensure competent management is shown in the following diagram.



Governance and management of the project are organized at three levels:

- **General Assembly (GA):** The highest body, consist of one senior representative per partner (project beneficiary) and is responsible for the overall direction and administrative issues of SSL-erate. The Chairman of the GA is the Project Coordinator, TNO

- **Management Board (MB):** At project technical level the MB is responsible for decision-making and the monitoring of technical progress. It consists of the WP Leaders and is chaired by the Project Coordinator. The project Coordinator reports to the European Commission.

- **Work Package Committees (WPC):** Covers the operational management of respective work packages, is chaired by the WP Leader (WPL) and consists of all WP participants.

The responsibility for the day-by-day management lies with the Project Coordinator, TNO. TNO has extensive experience in EU research and project management through involvement

in coordinating and participation in many EU projects. TNO has appropriate infrastructure to support necessary coordination activities, reflected in dedicated project support offices and administration and accountant departments.

Dr. Pieter Bolt will be assigned the task of the SSL-erate co-ordination.

The details of the Project Coordinator (PC) and all bodies including the decision making mechanisms are described in the next paragraphs.

Project Coordinator (PC)

The Project Coordinator will fulfill all the tasks pointed out in the contract concerning the reporting, internal as well as external, financial as well as technical, and cover all the interactions with the European Commission. The main role of PC is to:

- Coordinate the project; keep regular contacts with the partners to ensure that project direction is maintained,
- Maintain accurate records of costs, resources, and time scales for the project; ensure the integration of management reports and coordinate the preparation of project annual review reports and their delivery to Commission,
- Ensure the project maintains its technical objectives; ensure the project maintains its relevance within the ICT program and agreed technical annex; act as interface with the Commission for all matters associated with the Project,
- Setting up approval procedures and decision making mechanisms for project deliverables,
- Organize General Assembly and Executive Board meetings, and facilitate the others in case needed.

General Assembly (GA)

Composition: One representative from each partner, chaired by Project Coordinator.

Activities: The GA is responsible for the global direction of SSL-erate. It takes decisions on issues that exceed the scope of individual WPs and on disputes that cannot be resolved within a WP, after mediation of the Management Board. The General Assembly has the following powers:

- Strategic management: decisions on matters as changes in technical program;
- Financial management: decisions on budget allocation;
- Administrative management: review/amendment of the Grant Agreement, decisions on defaulting parties, decisions on IPR issues.

Meetings: Once a year, to have the overall project progress and plans presented and agreed on, and when relevant, in case of problems or difficult decisions have to be agreed on.

Decision and voting: The GA shall not deliberate and decide validly unless a majority of the two-thirds (2/3) of its partners are present or represented at the meeting. Where decisions are to be taken unanimously, all partners must be represented at the meeting. In voting, each GA partner has one vote.

Management Board:

Composition: All WP Leaders and Task 4.3 leader, chaired by the Project Coordinator.

Activities:

- Monitors and harmonizes the activities and progress
- Reviews plans for the project phases
- Monitors the project progress on a day-to-day basis from its start-up phase to completion.
- Approves deliverables
- Approves content of the Innovation Platform
- Formulates proposals for decisions to be made by the GA
- To prepare a progress report once a year to the GA
- To prepare yearly all required reports for the European Commission

Meetings: at least twice a year.

Decision and voting: MB shall not be deliberate and decide validly unless majority of two-thirds (2/3) of its partners are present or represented. Where decisions are to be taken unanimously, all partners must be represented at the meeting. In voting, each MB partner has one vote.

Work Package Leaders (WPL):

The partner responsible for the work package will nominate a WP leader to coordinate the WP. Main roles of WP Leaders are:

- To properly coordinate, monitor and control progress of all activities under their responsibility in order to ensure timely achievement of all objectives and milestones agreed and produce relating deliverables to be sent to EC
- Initiate corrective action for program deviations in its area; ensure program schedule, costs and resources are maintained and flag any discrepancy immediately to the PC
- Provide summaries on progress and possible critical issues on a regular basis; assist in the preparation and consolidation of Semester Reports and Project Annual Review

Reports; to be technical reference as far as the technical description in their work package activities is concerned

- Arrange regular technical meetings as required for their work package and organize technical presentations of work package activities

Task Leaders (TL):

If necessary within large work packages it is rational that coordination responsibility is delegated to Task Leaders (TL). TL report directly to the WP Leader, and they are briefed about the higher level requirements of the Task they are assigned to. Furthermore, they are required to steer the activities towards completion on time. The Task Leaders provide a summary of these activities to the WP Leader on a regular basis. All TL have already been assigned in the project's work plan.

Conflict handling and risk management

The method for reaching agreement in any possible issue or dispute is discussion, but if this has failed after a reasonable time, and progress of one or more Work Packages is threatened, the conflict will be brought to the attention of the EB. If no solution is found (e.g. in case of a seriously defaulting partner), a positioning paper is then prepared by the PC (with possible help of a WP Leader) and circulated to all the partners and a decision will be taken during a GA meeting (face-to-face or by telephone conference), which may be called for.

Throughout the entire duration of the SSL-erate project, risks will be identified, assessed and minimized as the project will be actively monitored and reported on. Contingency plans will be devised for all significant risks and all significant risks will be managed actively.

Project communication and knowledge management

As for the project management structure, the communication between different levels will be established as follows:

- The WP Leaders will have to report the work progress to the PC periodically and also possible
- deviations from the plan. Task Leaders will report to WP Leaders.
- PC has reporting and information duty towards the GA.
- "Top-down" communication will also be implemented.

A document repository server will be set-up to store and exchange all documents, considering the dissemination level of documents and access rights of different user groups. This repository will be implemented as a private section of the project's web portal. A system will be established to manage the classification and versioning of project documents.

An appropriate number of "mailing lists" will be established to initiate communication on all organizational levels of the management teams.

Meetings

The following project meetings will be organized:

- Kick-off meeting at the start of the project, in presence of all project members;
- GA meetings, at least once a year;
- EB meetings, at least twice a year a face-to-face meeting;
- WP meetings, whenever considered necessary for the progress of the WP;
- Review meetings (to be organized by PC in agreement with the Project Officer), once a year.

Reporting

A quarterly control report will be submitted by each partner to the PC. The reporting will include information on the technical progress, main results obtained, and compliance with the work programme and efforts and costs spent. The PC collects accurate information and keeps records on project costs, resources spending, deliverable production and time scale keeping.

Technical deliverables production will be the prime responsibility, within each WP, of the WPL, though it will be subject of review at short periodic intervals and have to be approved by the EB. They will be formally delivered to the EC by the PC. The PC will also deliver to the EC Semester Management Reports (SMR) made up from partners' control reports, Annual Review Reports, cost claims and any other information required by EC. The SMR will provide, for the reporting period:

- The technical progress and achievements of the project (the project status, work completed, possible work delays, status of deliverables, remedial actions required if applicable)

- Resources expenditure by partner and work package (absolute values for the reported period, aggregated values (actual versus planned))

In order to obtain maximum efficiency, the various meetings will as much as possible be organized in conjunction, e.g. GA meetings will be combined with review meetings.

Other activities

The project will actively participate in the activities organized at program level relating to the ICT domain, with the objective of providing input towards common activities and receiving feedback (e.g. from clusters), offering advice and guidance and receiving information relating to ICT program implementation, standards, policy and regulatory activities, national or international initiatives, etc.

Consortium Agreement

The project management, policies concerning IPR and dissemination, and the decision-making process will be described in detail in the Consortium Agreement (DESCA model), which will be signed by the partners at the start of the project.

B 2.2 Beneficiaries

Partner no.	Partner full name	Short name	logo
1	Netherlands Organisation for Applied Scientific Research	TNO	TNO innovation for life

Description of the organization

TNO is an independent applied research organization with a staff of 4400 people and an annual turnover exceeding €500M€. TNO maintains close contacts with universities and basic research institutions in order to translate up-to-date knowledge and insights into practical applications. Clients include government, large companies and SME's. TNO has extensive experience in EC research and project management through involvement in coordinating and participation in many EU projects.

Role in the project

TNO coordinates the SSL-erate (WP1) as well as WP4. It also has a major involvement in WP2 and is a small partner in WP3, WP5 and WP6. TNO will support also the interface with the Netherlands national and regional authorities.

Relevant previous experience

TNO has been involved on the one hand in European collaborative projects since the start – in all fields covered by TNO organisation. TNO is also active in a large number of ETP's, Joint Programme Initiatives,Joint Technology Initiatives and working groups, such as the High Level Expert Group on KETs. On the other hand TNO is active in dissemination and helping to exploit results from RTD projects and partners in industry and public sector.

TNO has expertise on manufacturing, materials scarcity, sustainability and energy aspects of SSL; on effects of lighting on perceived human comfort, discomfort and safety and the relation between urban planning, physical and social disorder; on open innovation management.

Key participants

Pieter Bolt - M.Sc Applied Physics University Groningen, PhD Technical Sciences TU Eindhoven. Worked in Japan at AIST in Tsukuba and for Hitachi Ltd before joining TNO in field working on product development and integration in production facilities. This included multi-client research and knowledge transfer projects in automotive, building, medical, electronics, lighting and PV industries. He is and was involved in a large number of European networks and coordinated action and research projects, as participant as well as coordinator.

Nils Erkamp - M.Sc Chemistry, Business Line Manager Lighting at TNO. Over 25 year experience in innovation in lighting industries. The results vary from successful creation of products and new businesses, in Europe and Asia, to a number of patents and application concepts. He is an active participant in Photonics21 and contributed as co-writer to SSL related sections of the Photonics21 research agenda.

Marc Steen - holds PhD, MTD and MSc degrees from TU Delfty and works as a senior research scientist at TNO. Prior to that, he worked at Philips Electronics and KPN Research. Has expertise in open innovation, innovation management, human-centred design and co-design. He contributed to four patents, published in *Int. J. of Innovation Management*, *Design Issues* (by MIT), *Int. J. of Design*, *CoDesign*, *IEEE Technology and Society Magazine*, and *Science and Engineering Ethics*. Marc is currently interested in the ways in which innovation can help to solve societal problems and promote wellbeing.

Nancy Westerlaken - MSc, BBE, Building Physics and Systems at TU Eindhoven. Ten year experience in building physics, especially lighting, and user demands. Her particular interest focuses on the integrated approach of energy-saving and sustainable lighting, including the focus on the (well-being of the) users and their support in an optimal way. Is manager of TNO's Human Centric Lighting Solutions programme, on evidence based lighting concepts for both indoor and outdoor lighting applications. She is chair of the committee for Indoor Lighting of the Dutch Society for Illumination, board member of the Dutch Light and Health foundation, board member of the Dutch Society for Building Services and is associated in standardization activities (guide lines, NEN).

Eliane Schreuder – M.Sc Applied Cognitive Psychology, Business Administration and Executive Master in Finance & Control. Works for three years as medior applied scientist at TNO. Her focus is on the impact of the ambient environment on the human perception, emotions and behavior. Prior experience at Unilever R&D and 5 years of experience in financial- and performance management of multinational organizations at Ernst & Young.

Partner no.	Partner full name	Short name	logo
2	Lund Universitet	LU	

Description of the organization

Lund University is the largest institution for research and higher education in Scandinavia with more than 2300 active researchers. The University collaborates with IDEON Science Park, which has 290 companies, e.g. in ICT and Life Sciences.

The activities of Lund University in SSL-erate will be coordinated by Lund Lighting Initiative, LLI (www.lth.se/lli). This is a quadruple helix organization at Lund University, which coordinates the Swedish innovation agenda and a quadruple helix collaboration, including the LLI cluster of SSL related companies. The research related LLI activities are multidisciplinary and carried out in collaboration with different faculties. LLI is action oriented and combines a wide academic and business intelligence network with extensive business and cluster development experience.

Role in the project

Lund University is leading the WP2 green business deployment and is also a main actor in the WP4 promotion of open innovation oriented collaboration. Here LLI will engage the various partners in open dialogue to build mutual understanding and a common "map" of the value chain and business acceleration opportunities and challenges. The mapping will include both scientific knowledge and real life understanding of the preconditions for acceleration of green public procurement and renewal-oriented investments in SSL.

Relevant previous experience

Lund University is a strong actor in inter- and multidisciplinary research and educations. Lund has significant experience from EU Research and has participated in over 650 projects over the years. In FP7 we are involved in more than 170 projects.

The project team has extensive experience from a variety of European and regional development oriented collaboration activities. The key persons have own experience from applied research, industrial work and business development.

Key participants

Reine Karlsson - leads LLI and has 17 years industrial experience and 11 years as professor in Ecodesign. Karlsson is an expert in Green Business Development and has extensive experience working at the intersection of research and business development.

Lars Montelius - head of LLI and a distinguished professor of Solid State Physics, focusing on applied Nano Science. He is founder and board member of 9 companies and entrepreneurial networks and has coordinated 11 EU projects.

Charles Edquist - distinguished professor of Innovation Research and founder of CIRCLE, an interdisciplinary Centre for Innovation, Research and Competence in the Learning Economy, at Lund University. He has written many reknowned books and articles on innovation processes, innovation systems and innovation policy.

Thomas Lindhqvist - director of PhD educations for the International Institute for Industrial Environmental Economics, www.iiiee.lu.se. Lindhqvist research focuses on extended producer responsibility and control measures for green business development.

Thorbjörn Laike - director for the Swedish Centre for Energy-Efficient Lighting, CEEBEL, www.ceebel.se. Laike is a professor of Environmental Psychology. His main research group focuses on non-visual-effects of light and human experiences of environments.

Partner no.	Partner full name	Short name	logo
3	LightingEurope	LE	

Description of the organization

LightingEurope is an industry association representing fourteen leading European lighting manufacturers and seventeen national lighting associations; totaling thirty one members and their constituent members and companies. Members include: AFLE, AGID, AGORIA, ANFALUM, ASSIL, ASSOLUCE, Aura Light, Belysningsbranschen, BLV Licht-und Vakuumtechnik GmbH, FEEI, GE Lighting, GIL, HALLA, Havells Sylvania Europe Ltd., IGNES, Lighttech, NLA, NMB Minnebea Gmb, NVFN, OSRAM GmbH, Panasonic, Philips Lighting, Pol-lighting, PZPO, Syndicat de l'Eclairage, The Lighting Industry Association, TOSHIBA Europe GmbH, Venture Lighting Europe Ltd., Verbatim, ZUMTOBEL AG, and ZVEI. LightingEurope members employ over 100,000 people in Europe and represent an annual turnover estimated to exceed 20 billion euros.We are committed to innovation, sustainability, quality and leadership. We are dedicated to promoting efficient lighting practices for the benefit of the global environment, human comfort, and the health and safety of consumers.

Role in the project

LightingEurope will participate in WP 2 and WP 6. LightingEurope will be the leader for WP 3 (Lighting for Health and Well-Being) and WP 5 (Open Innovation Platform).

Relevant previous experience

LightingEurope builds on nearly 30 years of the European Lamp Companies Federation and CELMA experience. In December 2012 the two organizations joined to form LightingEurope and to become the leading lighting industry trade association. LightingEurope comprises leading European experts who contribute to light and health research and innovation as well as open innovation platforms.

Key participants

Jürgen Sturm – is Secretary General of LightingEurope. Jürgen practiced Law between 1996 and 2001, gained subsequently more than 10 years of experience in the senior management of European and international trade associations and represents European lighting manufacturers since 2009. He has participated in several European research projects as well as in other EU funded projects. Jürgen is a graduate from Passau University School of Law and holds a LL.M. on European and International Law from Aberdeen University, as well as a Diploma in Hispanic Studies from the University of Salamanca.

Anne Vick – serves currently as the Communications Director for LightingEurope. She has spent the last two years with the European Lamp Companies Federation/Lighting Europe and has over ten years of communication experience, with a particular focus on the areas of environment and higher education. Anne also holds a Bachelors' degree in English from the University of Michigan and a Masters in Polar Studies from the University of Cambridge.

Partner no.	Partner full name	Short name	logo
4	**Fundación ESADE**	**ESADE**	ESADE

Description of the organization

ESADE is one of the world's most prestigious academic institutions. Its main richness stems from faculty and staff whose reflection, dialogue, projects and initiatives contribute to excellent training, relevant investigation and research. ESADE has agreements and collaborations with over 100 universities and business schools on five continents and is currently the European business school with the most extensive student exchange network in Latin America. ESADE offers Masters and PhD level courses in Management Studies that draw on the expertise of high profile academics, institutions and research centres/groups, who focus on entrepreneurship, innovation, leadership and governance, management, business social responsibility, economic law, etc.

Role in the project

ESADE participates in Task 4.1, development and evaluation of an Open Innovation Toolkit, and Task 4.2, towards the organization of Workshops on 'open innovation'. ESADE has among its professors some of the world leading thinkers in the field of Open Innovation. Furthermore it has a solid International Relations Office that organizes hundreds of national and international events and workshops each year. ESADE will contribute to WP5, especially with activities for public awareness, social media, providing project dissemination material.

Relevant previous experience

In 2010 ESADE created the **Institute for Innovation and Knowledge Management (IIK)** with the purpose to host and nourish many of ESADE's most significant efforts to understand the creation of knowledge and innovation. The IIK main research topics include **open innovation,** scientific discovery and technology transfer, platform and ecosystem design, sustainable technologies and systems of use, open government and democratizing technologies**.**

The IIK goal is to focus the talent of some of the leading thinkers in the field to better understand these new innovation systems: their theoretical foundations, mechanisms, possibilities, and costs; with the aim of informing users, managers and policy makers on their optimal use and potential.

Moreover, ESADE has solid experience in EU-funded research with participation in several FP7 projects, and are coordinators of 3: COLLAGE, Commons for Europe, and Open Cities.

Key participants

Dr. Wim Vanhaverbeke - studied philosophy and economics at the Catholic University of Leuven and obtained a DBA at the IESE-business school in Barcelona in 1995. He is currently appointed as visiting professor of Open innovation at ESADE. His research centres on alliances and acquisition of external technological capabilities; alliance management; new business development and corporate venturing.

Dr. Henry Chesbrough - is professor at ESADE, and the Executive Director of the Center for Open Innovation at the Haas School of Business at UC Berkeley. Ph.D. in Business Administration from the UC Berkeley, an MBA from Stanford University, and a BA from Yale University, summa cum laude. His research focuses on managing technology and innovation. He is well known for his works on open innovation among academics and practitioners.

Laura Castellucci and **Victoria Cochrane** will be in charge of WP6. They are senior EU project managers at ESADE with more than 10 years of experience in managing EC projects and dissemination tasks.

Partner no.	Partner full name	Short name	logo
5	Lighting Urban Community International	LUCI	

Description of the organization

Created in 2002 at the initiative of the City of Lyon, LUCI (Lighting Urban Community International) is the international network of cities on urban lighting. The network brings together over 65 municipalities worldwide that are engaged in using light as a tool for urban, social and economic development. It also includes over 35 lighting professionals (lighting manufacturers and designers, universities, etc.) as associated members.

LUCI aims to help cities develop appropriate lighting strategies that contribute to sustainable urban development. This involves innovating new technologies and lighting solutions as well as exploring new spheres in which urban lighting can play a role. www.luciassociation.org

Role in the project

Based on its network of cities and extensive contacts in the lighting field, LUCI will bring together existing knowledge on SSL within cities and communicate the project's results and updates. LUCI will specifically focus itself on the topics related to outdoor lighting within SSL-erate.

LUCI will contribute to **WP2** by:

- Bringing in the knowledge on SSL in urban lighting from previous projects
- Participating in the various WP2 workshops.
- Initiating an SSL working group on outdoor lighting within LUCI to have other cities contribute to the project.
- Creating links with other current EU projects on lighting that LUCI is and will be involved in.

LUCI will contribute to **WP6** by:

- Capitalizing on LUCI's communication tools (newsletters, website, PLUS best practice database, etc.) and extensive contacts in the field to ensure widespread dissemination of the project's updates, research outputs and results to cities and public purchasers.
- Using LUCI's calendar of events on urban lighting (Cities under Microscope, Annual General Meetings) to incorporate special meetings and conferences on SSL-erate.
- Contributing to the organization and production of other project events and documents.

LUCI can ensure the durability of SSL-erate beyond the project period as it offers the infrastructure to continue communicating and developing the outputs of the project related to SSL and urban lighting.

Relevant previous experience

Through its various activities and projects, LUCI has extensive expertise in the following areas:

- Organization of international conferences, workshops and field visits on urban lighting.
- Development of communication tools to disseminate knowledge on urban lighting to cities worldwide and raise awareness among policy makers.
- Promotion of best practices in urban lighting through international awards and the development of the first international best practice database dedicated to urban lighting.
- Publication of studies and reports on key issues in urban lighting.
- Management of EU projects, through its involvement in projects such as :

INTERREG IVC – PLUS (Public Lighting Strategies for Sustainable Urban Spaces), a two year project with 11 cities and LUCI as communication partner;

INTERREG III C – LUCI: a three year cooperation project on urban lighting led by LUCI with 12 cities.

Key participants

Alexandre COLOMBANI - General Manager of LUCI Association since 2008; develops the network's activities and communication strategy, and has coordinated various EU projects and publications on urban lighting strategies and policies over the past few years. He has a background in urban planning with 6 years of experiences in local governments. He holds a M.Sc. in Regional and Urban Planning from the London School of Economics.

Nikita JUNAGADE - LUCI Communication Officer since July 2010, in charge of the realization of the communication strategy and tools for the exchange of information within and beyond the LUCI network (LUCI website, newsletter, brochures, liaising with the press, etc.). She has a Master in Communication from Roskilde University (Denmark).

Partner no.	Partner full name	Short name	logo
6	Cluster Lumière	CL	

Description of the organization

The Cluster Lumière (CL) foundation brings together more than 140 private and public organizations of the lighting sector, covering the whole value chain: research institutes, technical and training centres, manufacturers, engineering consultants, major electrical installers, lighting designers, architects, local and regional authorities. The Cluster Lumière has been created in 2008 on the initiative of 5 founder members: (PHILIPS, SONEPAR, ENTPE, CDO and The Chamber of Commerce of Lyon City. It aims at (i) boosting innovation through cutting edge technologies (SSL and controls) in order to meet economic challenges and encourage sustainable development and (ii) - promoting competitiveness, cooperative business and international development of the lighting sector

Role in the project

Cluster Lumière main role is in WP4 as Task 4.3 leader, especially coordination of (and participation in) the business development experiments and supporting the creation of and cooperation between lighting clusters in Europe. The latter will be realized under the umbrella of the European Lighting Cluster Alliance (ELCA). CL aims to organizing with their members business development experiments through open innovation principles in field of street lighting and office lighting applications.

Relevant previous experience

Among the cluster members, RTD expertise is present at partners such as ENTPE (regarding perception and comfort fields), CEA-LETI (materials and electronic components), INSA (social and ergonomic approach of light) and PISEO (characterisation of lighting and electrical properties of products). Cluster Lumiere members collaborated in SSL projects such as PACTE LED (development of halogen low voltage equivalent LED lamps), CITADEL (characterisation of LED sources and LED products), LUMARTHOME (LED product range), LUMINOSURF (development of nano-luminophors for white SSL sources). Especially relevant examples are (i) the street lighting demonstra-tion project "DEDRA" with local authorities in order to test and disseminate energy efficient SSL based systems and lighting schemes for cities of less than 5000 inhabitants and (ii) the design and implementation of full SSL solutions for the lighting of two industrial sites which comprise workshops and offices.

Key participants

Marc Fontoynont - international expert of the Cluster lumière, previously Professor at the ENTPE National Engineering School of State Public Works in Lyon, France and Head of the Building Sciences Laboratory. He actively participated in the creation of the ELCA network and will monitor its development within the project.

Joel Thome - responsible, since January 2013, of the R&I programs of Cluster Lumière, previously associate director at INGELUX, a consulting and engineering lighting firm and innovation and LED Global Platforms director at PHILIPS Lighting from 2007 to 2011.. Joël Thomé has more than 20 year experience in the lighting industry.

Ophelie Barou - collaborative projects manager at Cluster Lumière since 2011; she is piloting three groups of cluster companies based on markets approach (Street and urban lighting, lighting of offices and industrial sites and lighting of shops). In a former experience at INEUM Consulting (2008 -2011) she used to work on European projects as consultant in financial subsidy services.

Partner no.	Partner full name	Short name	logo
7	**LUCE IN VENETO SCARL**	**LIV**	

Luce in Veneto (LiV) was established in 2009 and groups 44 companies located in the Veneto Region. This companies are all part of the supply chain related to the lighting industry offering an extensive choice and selection of lighting products. Luce in Veneto coordinate also the Venetian District of lighting systems with more than 140 SME companies. LiV promotes strategic actions to make the whole chain of technical lighting companies more competitive, from providing and assembling raw materials to packaging and trading of final products. The aim is to support the companies in the SSL value chain in projects in field of export, research and training, among other by promoting collaborative projects and actions.

Role in the project

Luce in Veneto main role is in Task 4.3, development and execution of business development experiments. It will stimulate, as local cluster, a dialogue between more than 140 SME about the result of this project to know the new technologies in lighting field and to improve their products. It will furthermore involve a network of local stakeholders in the dissemination activities. Luce in Veneto will involve, also, other lighting actors like: architects, installers, engeneers….

Luce in Veneto will cooperate with local actors to make the demonstration of Open Innovation Process, for example involving companies or Municipalities (Bassano del Grappa) to demonstrate their solutions on SSL systems.

Relevant previous experience

Luce in Veneto has five years of experience in coordinating projects with their associated companies (RTD projects, training courses, internationalization projects).

Luce in Veneto organizes, furthermore, many conferences inviting: public authorities, local stakeholders, lighting experts to discuss about specific topics following the requests of the companies itself.

Key participants

Alberto Sozza - Electronics engineer (PhD) with more than 10 years experiences on LED technology. He collaborated with many lighting companies for the conceiving of new LED-based light fixtures and related power supplies/controlling devices for Italian and international market development. He worked also as technical coordinator for national and international projects. Vice-president of Luce in Veneto Scarl.

Antonella Venza – Cluster Manager of Luce in Veneto, she has a Degree in Political Sciences and a Specialization in “Economy and policy of European Union”, University of Padua. She has more than 10 years of experiences in managing and coordinating regional, national and European Programs to support companies in RDT projects.

Partner no.	Partner full name	Short name	logo
8	KU Leuven – Light and Lighting Laboratory	KUL	KU LEUVEN

Description of the organization

The Light and Lighting Laboratory is a division of the engineering department of the KaHo Sint-Lieven, a member of the KU Leuven Association. The laboratory combines research activities with activities of industrial support.Starting October 2013, this will be part of the Faculty of Engineering Technology of the KUL.

The Light and Lighting Laboratory has a 63% share in Groen Licht Vlaanderen, which is cluster of companies organized in a Flemish Thematic Innovation Partnership. Other partners are: WTCB: 24%, VEI: 6% and PHL: 7% . The project activities are partially funded by the IWT, the Flemish government agency for Innovation by Science and Technology.

Groen Licht Vlaanderen is a member of the European Lighting Cluster Association ELCA.

Role in the project

KUL participates in WP4, especially Task 4.3. They will promote solid state lighting and energy efficient lighting towards the cluster members and external actors and will organize open innovation and networking initiatives.

Relevant previous experience

The Light and Lighting Laboratory is a well recognized knowledge centre on lighting and measurement facility. Competencies include applied research, demonstration projects, technology dissemination, technological advice and support activities concerning lighting knowledge, perception, psychophysics, standards, optical design, intelligent control, daylight usage. Theu hold well attended lighting course (including Dialux).

They were co-founder of a first lighting cluster in October 2005, focusing on technological advice on lighting and colour appearance for small, medium and large businesses in Flanders. The cluster has 40-plus members.

In December 2008 a new cluster started, Groen Licht Vlaanderen, focusing on energy efficient lighting with 50-plus members and reaching out to more and more end-users (150 new ones).

Key participants

Peter Bracke - received the Master of Engineering degree in electrical engineering from KIHO Ghent in 1985. Currently he is Project Officer at Light and Lighting Laboratory. Previously he was a research manager, including managing external research. From 1986 until 1999 at the Barco Central Lab, mainly projects related to display technology. From 1999 until 2012 at Barco Graphics, Dotrix and Agfa-Graphics, mainly projects related to industrial inkjet. He participated in three European Projects.

Wouter Ryckaert - received the Master of Engineering degree in electrical engineering from KAHO Sint-Lieven in 1998 and his M.Sc. degree in electrical and mechanical engineering from Ghent University in 2001. He received his PhD from Ghent University in 2006. Since September 2006, he is lecturer at the Catholic University College Sint – Lieven (KAHO Sint - Lieven) and responsible for the topic 'Interior lighting and energy efficiency' in the Light and Lighting Laboratory of KAHO. Since September 2011, he is associated lecturer at the ELECTA research group of the ESAT department of KU Leuven.

Partner no.	Partner full name	Short name	logo
9	CLUSTER D'IL·LUMINACIÓ DE CATALUNYA	CICAT	

Description of the organization

CICAT is a non-profit organization with the main goal of enhancing the competitiveness of the Lighting industry of the region with the execution of cooperative projects and activities. There are three main lines of development: Internationalization, Innovation processes and Knowledge Management.

It was founded as an association in September 2010. The number of current members is 30 which counts for the 60% of the total regional turnover and 24% of nationwide (Spain) value in SSL business.

Its actual members cover all steps of value chain, from design, prescription, engineering and manufacturing of product and processes to additional services: lab testing and certification. There are also component suppliers and a research institute.

Role in the project

CICAT's main role is on Task 4.3, organizing, executing and reporting on open innovation business experiments with the cluster members. CICAT will especially bring in new interests related to (a) electronic companies which are entering the lighting industry through niche products/services (b) energy saving consultants which are reviewing their business models to adapt them to SSL (c) Smart cities related companies (d) Urban solution providers / operating systems. An open approach will strengthen links between players of the lighting value chain, create opportunities, promote quality and identify new applications.

Relevant previous experience

CICAT has been working for the last two years on one of the main goals of the association: to open the Barcelona Light Center by the end of 2013. This is a complex project in which it has been necessary to analyze the current situation, develop a business plan, search for the stakeholders and fund raising.

CICAT is well known in the Lighting Industry with strong connections to main stakeholders.

Key participants

Jessica Kamps – Senior Project Manager. Bachelor from the ESC Business School (Toulouse, France). Expert in active Development and Management of extensive network contacts of private companies and related governmental agencies.

Carolina Carrillo – Junior Project Manager. Bachelor from the ESEC Business School.(Barcelona, Spain). International commerce experience and launch of new businesses.

Partner no.	Partner full name	Short name	logo
10	Danmarks Tekniske Universitet – Danish Lighting Innovation Network	DTU	

Description of the organization

Danish Lighting Innovation Network started its activities 01. June 2010 with support from the Danish Agency for Science, Technology & Innovation and is chaired by DTU. The main tasks are: (i) Matchmaking activities across the value chains, (ii) Knowledge collection and sharing among members, organizing conferences, seminars and dissemination activities and (iii) Internationalization and support for SME's

The network has a strong base of 6 university institutes spanning from electronics, photonics, building sciences, architecture and software and the Danish Center for Lighting. The network has 300+ members, representing a variety of actors in the value chains including municipalities and professional users/installers of SSL and intelligent lighting systems.

Among the achievements are launches of important innovative projects within hospital lighting, interactive urban lighting, power supply & energy conversion, daylight-artificial lighting convergence, solar driven LEDs a.o. Matchmaking activities has been successful, e.g. leading to research-based innovation projects within intelligent lighting. Building up strong relations with Chinese actors as well as a European network for the benefit of SME's and other members.

Role in the project

Main role is in the execution of the business experiments in Task 4.3 in the field of sustainable lighting solutions and biologically effective lighting, the project's two main focus areas.

The experiments will be carried out with relevant SME's and research environments matching the results, as well as demand side (municipalities and hospitals/regions) on a national level.

The cluster will involve municipalities and hospitals as well as citizen's organizations within e.g. the elderly area in order to create a strong presence of and strengthened relations with professional users (buyers) and end-users, creating networks and linkage involving new players in the lighting sector development processes and thus achieve a more effective platform for innovation.

Relevant previous experience

The network has been initiating and leading projects, involving research & education, SME's and municipalities within areas as development of: hardware and software in order to ensure energy savings and intelligent control of luminaries, of new contexts of using aesthetic light in public spaces, on buildings, at special events and entertainment, of the usage of light in public spaces in terms of energy savings, security issues and better efficiency, identification of existing education in Denmark and abroad in order to commence the process of establishing the foundation for a light /lighting education on bachelor and/or master level

The cluster has also been conducting export promotion, conferences, seminars, workshops and entrepreneurship promotion matchmaking events, playing the role as bridging and facilitating innovation organization across the value chains.

Key participants

Michael A. E. Andersen, co-founder as well as Head of Danish Lighting Innovation Network. Michael A. E. Andersen is also the deputy director at DTU Elektro and his area of research has consisted of switch mode power supplies, piezoelectric transformers, power factor correction, switch mode audio power amplifiers, and radio frequency switch-mode power supplies. In addition to this basic research and teaching covers all areas of power electronics, components and circuits, thermal management, magnetic components, modeling of circuits, control, modulation,

analogue and digital signal processing, design of filters and EMC. As a consequece hereoff Michael A. E. Andersen is extremely competent with respect to all issues concerning switch-mode power supplies for LED lighting. Furthermore, he is Innovation responsible (since 2011) and Patent responsible (since 2003) both at DTU Elektro.

Partner no.	Partner full name	Short name	logo
11	Syntens Innovatiecentrum	Syntens	

Description of the organization

Syntens Innovation Centre contributes to the growth of the Dutch economy by stimulating innovation in SME's. Syntens raises awareness amongst SME's of their options to innovate and assists them to take concrete steps that lead to tangible results. The large, personal network of Syntens, embracing technology providers, entrepreneurs and branch and trade organizations extends across the most important sectors of the Dutch economy and is regionally accessible. By creating new links within this network, innovations are created that result in new business.

Role in the project

The large, personal network of Syntens, especially the (SME) enterprises related to the lighting industries, will be brought into action for awareness and dissemination of the project results.

Relevant previous experience

Leading partner in JESSI Project AE23: Small and Medium sized Industry Support, building an operating European network of Support and Competence Centers which has made JESSI technologies available for SMIs pervasively throughout Europe.

Leading partner in MUST Microsystems: Usage, Strategies and Technology, Esprit Project 8520, gathering information about the state and markets of MST technology and disseminate this information to interested SMEs.

Leading and local partner in the First User Action (FUSE), Esprit Project, establishing a pan-European network of Technology Transfer Nodes (TTNs) to promote microelectronic technologies and provide regional support to companies.

Key participants

Cor Westerbaan van der Meij – At present Innovations consultant at Syntens Innovatiecentrum, before Innovations consultant at Innovatiecentrum Z.O. Brabant, Senior Consultant at Centrum voor Micro-Elektronica, Electronic hardware designer at Sagantec, Electronic CMOS IC designer at Philips Electronics Netherlands.

Partner no.	Partner full name	Short name	logo
12	University College London	UCL	

Description of the organization

University College London (UCL) was established in 1826 to open up education in England for the first time to students of any race, class or religion. UCL was also the first university to welcome female students on equal terms with men.

Academic excellence and conducting research that addresses real-world problems inform our ethos to this day. UCL has the best academic to student ratio in the UK (1:10), enabling small class sizes and outstanding individual support (Times 2013).UCL has more professors than any other UK university, meaning our students get taught by the most highly qualified experts in their field (Higher Education Statistics Agency 2011). In the most recent Research Assessment Exercise, 62% of UCL's submissions were ranked at the highest grades of 4* ("of world-leading quality"), or 3* ("internationally excellent"), placing it third in the UK (RAE 2008 results). UCL attracts the second highest number of academic citations in the UK showing the high esteem and relevance of the institution's research.

Role in the project

UCL will participate in WP2 tasks 2.1, 2.2 and 2.3. This will use our expertise to review the SSL landscape in the UK in terms of existing knowledge, interests and control measures and to deliver a joint map of these. The final task will be to help facilitate a series of workshops to understand how SSL could be more effectively deployed.

Relevant previous experience

The UCL team has considerable experience in delivering major research projects and has been named as investigators or co-investigators on research projects worth over £12M since 2005. The team offers particular experience in conceiving and deploying strategy, policy and applied research to deliver business advantage across a broad spectrum of stakeholders in the built environment. Professors Broyd and Davies have worked extensively on sustainability in the built environment and innovation in complex products and systems using a variety of both quantitative and qualitative research methods involving case studies, interviews and participant observation in focus groups.

Key participants

Professor Broyd - graduated from the University of Birmingham with PhD and has spent his entire career working at the interface between industry practice and academic thinking in the construction and infrastructure sectors, including in roles with a formal responsibility for influencing business and government leaders to embrace and drive innovation through their organisations. Experience includes chief executive of industry research body CIRIA, as well as a number of years as the corporate research and innovation director of Atkins.

Professor Davies - has a Chair in the "Management of Projects". Andy's current research is concerned with how organizations develop routines and capabilities to manage uncertainty and complexity in large, multi-party, temporary organizations. Publications have focused on how innovation occurs in complex product systems, project-based firms and organisations, systems integration, and integrated solutions business models.

Partner no.	Partner full name	Short name	logo
13	Vilniaus universitetas	VU	

Description of the organization

Vilnius University, the leading higher-education and research body of Lithuania, will participate in the project mainly through the Institute of Applied Research (IAR). The main research area of IAR is growth and characterization of materials for optoelectronics; optical, electrical, and thermal characterization of optoelectronic structures and devices; and engineering smart luminaires for niche applications of solid-state lighting technology. VU is coordinator of a newly founded Association of Advanced Lighting Technology Developers in Lithuania.

Role in the project

The main role of VU is in WP2 and WP3. In WP2 particular focusing on SSL applications stemming from green business relevant technologies such as (i) illumination that meets subjective needs and preferences of colour vision in e.g. educational, manufacturing, architectural applications, (ii) illumination of photosensitive objects such as artwork and other museum objects and (iii) illumination with the control of nonvisual photobiological function, e.g. with low circadian action at nighttime and alerting action at daytime. And in WP3 focusing on smart city lighting.

Relevant previous experience

The main competence of VU relevant to the project comes from 12-year academic research on various aspects of solid-state lighting technology. The facilities of IAR comprise numerous tools for optical, electrical, and thermal characterization of solid-state sources of light, as well as computer software for optical and thermal modelling and cabinets for psychophysical assessment. Through the implementation of national projects in the past decade, numerous innovative solid-state lighting installations have been developed and demonstrated, such as luminaries for plant cultivation, outdoor luminaries with controllable circadian factor for preventing health hazard, luminaires for photosensitive objects (e.g. artwork) with controllable photodamage potential.

Key participants

Artūras Žukauskas - has been with VU since 1979, where he received Ph.D. (1983) and Dr.Sc. (1991) degrees. At present he is a Chief Research Scientist and Head of the Department of Semiconductor Optoelectronics at the IAR. He has published two books and over 250 technical papers and holds four patents. Currently, his research group works on advanced applications of solid-state lighting.

Pranciškus Vitta - received the PhD degree in physics from VU in 2010. Since 2001, he has been with VU, where he is currently a Postdoc Researcher. His main scope of scientific interest is the investigation of LED devices, and the development of intelligent solid state illumination systems with optimized spectral power distributions and smart control. P. Vitta also serves as an R&D Director of the spin-off company LEDigma JSC. He co-authored over 40 technical papers and holds two patents.

Rimantas Vaicekauskas - received the Ph. D. degree in computer science from VU in 2000. Since 1986 he has been with Vilnius University, where he is currently a Professor and the Head of the Department of Computer Science. His main scope of research is the optimization of spectral power distributions and the engineering of colour rendition properties of polychromatic solid-state sources of light. He has published over 30 technical papers and holds a patent.

Partner no.	Partner full name	Short name	logo
14	Universität Basel	UB	

Description of the organization

The Centre for Chronobiology at Psychiatric Hospital of the University of Basel, conducts research on circadian and homeostatic regulation of human sleep, alertness, cognitive performance, mood, memory consolidation and thermoregulation, and applying that knowledge to ageing as well as to sleep and psychiatric disorders.

Besides that, the Centre has more than 30 years of research experience on the non-visual effects of light on circadian physiology, sleep regulation, cognitive performance, well-being and mood in healthy people and patients suffering from psychiatric disorders.

Role in the project

UB's main role is in WP3.2 Stocktaking and Analysis as Task 3.2.4 leader, looking at the impact and potential of lighting in domestic settings for health, cognitive performance, well-being and behaviour. We will discriminate the needs of different age groups, particularly for adolescents and aged (>65) people. The most important and relevant scientific insights and use cases will be identified, and concrete suggestions for application, utilization and implementation of this knowledge will be given.

Relevant previous experience

The University of Basel is an excellent partner for basic and clinical research as well as education and has been involved in numerous projects in FP7. The Centre of Chronobiology has extensive experience from the EU FP6 Integrated Project: LSHM-CT-2006-018741, Euclock, Entrainment of the Circadian Clock. The key persons have extensive experience with research in the human chronobiology field with particular focus on non-visual effects of light on human circadian rhythms and sleep.

Key participants

Antoine Viola - PhD, 8 years of experience as post-doctoral fellow in sleep and chronobiology research with a broad knowledge in conducting light studies in the field and the laboratory. His special focus is on light effects on performance, sleep and circadian rhythms. He has coordinated more than 5 research projects.

Christian Schmidt – PhD, 4 years of experience as a post-doctoral fellow in neuropsychology and chronobiology, with special focus on circadian fMRI techniques.

Vivien Bromundt – PhD, 2 years of experience as post-doctoral fellow in clinical chronobiology focusing on clinical aspects of light treatment in psychiatric disorders. She has a broad experience in research at the intersection between lab studies and the end-users in the field.

Partner no.	Partner full name	Short name	logo
15	Aalto University Foundation	AALTO	A?

Description of the organization

Established in 2010, the Aalto University (AALTO) is a new university with centuries of experience. It was created by a merger of three universities: Helsinki School of Economics, Helsinki University of Technology and University of Art and Design in Helsinki. The combination of six schools opens up new possibilities for strong multi-disciplinary education and research. Aalto has 19 700 undergraduate and postgraduate students, staff of about 5 000 people and 346 professors. 166 doctoral degrees and 1228 master's degrees were gained in 2011 in Aalto.

Aalto is a noted and appreciated member of the international scientific community, an equal partner in the networks of science and research. Aalto and its predecessors have extensive experience in project coordination and project management. Aalto has participated in the 4th, 5th, 6th and 7th EU framework programmes and been a partner or coordinator in more than 700 EU projects.

Role in the project

Aalto's main role is in WP3. It will bring to the project its expertise and experience in R&D of lighting applications and smart lighting systems. Aalto provides expertise in outdoor lighting from the technological point of view, as well as from the human factors and lighting service point of view. We provide knowledge for studying and defining the output of the lighting systems in terms of human behavior and user satisfaction. We have world leading expertise in outdoor lighting (mesopic photometry), which is needed in future design of public outdoor lighting and smart cities.

Relevant previous experience

Aalto Lighting Unit has long lasting experience in research and development of lighting solutions: study and analysis of lighting performance, human behaviour and task performance, user acceptance, energy-efficiency life cycle analysis. Experience in the analysis of outdoor lighting from the human perception point of view and in terms of biologically efficient lighting. . Experience in co-operation with municipalities and in defining and developing a supply model for energy-efficient and sustainable public lighting. Long experience in co-ordinating international networks (EU, IEA, CIE).

Key participants

Liisa Halonen - D.Sc. (Tech.), Professor. Head of the Aalto Lighting Unit (LU). She is responsible for Master and doctoral education of illuminating engineering in Finland. She has managed numerous national and international research projects. She has supervised 15 Doctor's

Thesis and 80 Master's Thesis. She has more than 250 national and international publications. She was the Operating Agent of IEA Annex 45, co-ordinator of several EU-projects and member of numerous committees in the lighting field.

Pramod Bhusal - D.Sc. (Tech.), Researcher at Aalto University. He has been the key expert in several national and international research projects. His research interests include lighting in developing countries, light sources, colorimetry and color rendering.

Partner no.	Partner full name	Short name	logo
16	University of Groningen	RuG	rijksuniversiteit groningen

Description of the organization

Founded in 1614, the University of Groningen is one of the oldest and largest universities of the Netherlands and belongs to the top 25 research universities in Europe. It is an international university (>1200 foreign students per year) with a rich experience in managing large international projects. Within the Faculty of Mathematics and Natural Sciences, within its Centre for Behaviour and Neurosciences (CBN) the research unit of Chronobiology has a major interest in the impact of light on human health and performance and performed many studies to unravel the underlying mechanism.

Role in the project

Within WP4, RUG will take the lead in writing a review report on the scientifically substantiated health and performance effects of light in work places, with special emphasis on the impact of color and intensity of light in relation to the time of the day of exposure. RUG will also help organize the systematic evaluation of health and performance effects measured in various (experimental) (dynamic) light conditions at work places.

Relevant previous experience

RUG has performed various studies to explore the effects of light on human health and performance and collaborated in review papers on this topic (Chellappa et al 2011). Recent topics include studies on the effects on psychophysiology of light applied at different times of the day (Rueger et al 2006), studies on the effects of artificial dawn (wake-up light) on sleep inertia, skin temperature and other physiological aspects (Gimenez et al 2010a; Van de Werken et al 2010); studies on the effects of lens pigmentation on blue light transmission in the elderly (Giménez et al 2010b) and the consequences for sleep timing, sleep quality, performance and health (Gimenez et al, in prep); studies on the effects of blue enriched light on symptoms of Seasonal Affective Disorder patients (Gordijn et al 2012); studies on the effects of morning light exposure on sleep timing and daytime performance (Geerdink et al, in prep);and studies on the effects of extra light at the office on daytime alertness and performance (Geerdink et al. in prep).

Key participants

Domien Beersma - Full Professor in Chronobiology, Head of Research Unit Chronobiology; Director of Research Institute Centre for Behaviour and Neursciences; Adjunct Director of Research Master Education in Behavioural and Cognitive Neurosciences; participant in international (FP6 programme EUCLOCK) and national (CTR) chronobiology consortia; contributed to more than 175 scientific papers and book chapters. Web of Science lists 105 papers, in total cited more than 2800 times, h-factor 27.

Partner no.	Partner full name	Short name	logo
17	Department of Internal Services, City of Malmo	MAL	

Description of the organization

The Department of Internal Service manages the City of Malmö's properties for schools, child care, elderly care, culture and leisure, much of the city's public areas. Municipal Properties is a pro-active and forward-looking partner and supports customers in reaching their goals through offering operationally adapted and cost-effective premises. The property portfolio totals 1.6 million square meters. Municipal Properties has an annual turnover of SEK 1.3 billion.

Role in the project

The City of Malmo will contribute to the project in WP2:

- With expertise in the fields of procurement, existing lighting solutions and future needs within the municipality
- With perspective of the costumer and user
- As a dialogue partner

Relevant previous experience

Malmo has a long tradition of continuously working with different projects in which we use and learn about, for example, smart lighting, LED and new solutions. Malmo has worked with development in such areas as information technology, communications and so-called smart buildings since the department was established, and has participated in several EU projects. Malmo constantly strives to find value for our customers while their methods and services must be sustainable from an ecological, economic as well as social perspective.

Key participants

Peter Lindhqvist - Director R&D, Department of International Services, City of Malmö; Solar Region Skåne, Chariman of the board; Scandinavian Green Roof Institute AB, chairman of the board; Skånsk vindkrafts Akademi, Member of the board. Peter has worked within EU projects since 1997 in several different areas e.g. development, environmental and energy efficiency.

Partner no.	Partner full name	Short name	logo
18	Municipality of Bassano del Grappa (Comune di Bassano del Grappa)	BAS	

Description of the organization

Bassano del Grappa is a city in the Veneto Region in the north east of Italy. Bassano's Public Works and Urban Planning Department are involved in the management of public lighting. The latter department coordinates activities related to public lighting, in particular the implementation of the municipal lighting plan, along with activities regarding the sustainable development and energy efficiency. The former department is responsible for the maintenance and requalification of public lighting works as well as realization of new lighting lines.

In the field of energy efficiency and sustainable development Bassano cooperates with several local and regional stakeholders and authorities, such as the Regional Agency for Environmental Protection and Prevention of the Veneto and regional Astronomical observatories on the correct application of the regional lighting regulations. Bassano works in partnership with the Bassano's Territorial Living Lab PREALPE, and they together promote the local public-private-people partnership (PPPP) for open innovation.

Role in the project

Bassano's main role is in WP2. Bassano will support Green Business Development approach among various groups of stakeholders, as citizens, industrial and commercial sector as well as public building owners. Bassano has already set out the public-private participatory process regarding the implementation of SSL lighting, as foreseen in the municipal lighting plan.

Relevant previous experience

PLUS Public Lighting Strategies for Sustainable Urban Spaces – Interreg IVC cooperation project, leaded by the Eindhoven Municipality (LP), duration: 01.10.2010 – 31.12.2012. Activities performed: exchange of best practices on public lighting, know-how learning and capacity building through the deep dive sessions; development of the local lighting strategy and action plan (Municipal Plan for Public Lighting); local communication and dissemination activities through the Lighting Local Forums addressed to project stakeholders and target groups, application of the Triple Helix model.

The Municipality of Bassano won the 2012 edition of the Award Ecohitech - Special Public Administrations for the Municipal Lighting Plan and its execution in the City historic centre.

Key participants

Adriano Ferraro –Head of the Urban Planning Department, responsible for implementing of the General Municipal Development Plan, incl. municipal lighting plan. He is in charge of the city

mobility planning, private building regulation, protection of the cultural heritage and environmental protection and city sustainable development. He has a degree in Urban Planning from IUAV University of Venice and was project manager in the PLUS project.

Roberta Michelon - Lighting and sustainable expert in the Urban Planning Department. She has a degree in Architecture from the IUAV University of Venice and specialized in bio (ecological) architecture. She has collaborated in the development of the Municipal Plan for Public Lighting incl. the coordination of the participatory and open public consultation processes.

Andrea Bonato – Technical instructor in the Urban Planning Department, has a degree in architecture–territorial urban and environmental planning from the IUAV University of Venice. Responsible for development of territorial urban and environmental planning tools and their variants, as urbanization executive plans and projects.

Partner no.	Partner full name	Short name	logo
19	Hamburg University of Applied Sciences	HAW	Hochschule für Angewandte Wissenschaften Hamburg *Hamburg University of Applied Sciences*

Description of the organization

With over 12,000 students the Hamburg University of Applied Sciences (HAW Hamburg), founded in 1970, is the second largest institution of higher education in the Hamburg region and one of the largest in Germany. HAW Hamburg offers undergraduate and postgraduate degree programmes. 1,600 international students, representing over 100 nations, study at HAW Hamburg (14 % out of the total number of students). Practice orientation is HAW's trademark: theory from lectures is put into practice in the laboratories, study projects are completed in the form of case studies, close cooperation with industry ensures a direct link to the future field of work.

There are five Research and Transfer Centres at HAW Hamburg. The Research and Transfer Centre "Applications of Life Sciences" (abbreviation: FTZ-ALS) of the HAW Hamburg, headed by Prof. Walter Leal, was established in August 2007. It offers local, national and international project-related approaches to solving problems primarily in the field of Life Sciences, specifically superordinating topics such as water, energy, climate protection, and sustainability. HAW Hamburg also hosts the "Competence Centre on Renewable Energy and Energy Efficiency" (CC4E), with about 50 professors covering all areas of energy.

Role in the project

HAW Hamburg will contribute to WP2, 4 & 5.

Relevant previous experience

The FTZ-ALS is well experienced in respect of interregional cooperation as well as in the management of research funds. It has a current portfolio of 12 EU-projects in Europe, Latin America, Africa and Asia. FTZ-ALS coordinates the German-Polish Energy Efficiency Programme (GPEE), the Joint Latin-American European Renewable Energy Project (JELARE) and is the German partner of the FP7 Project PLEEC (Energy Efficient Cities). In addition, HAW Hamburg is member of the Cluster on Renewable Energy in Hamburg, with 170 companies, and provides advice to the City and region of Hamburg on matters related to energy efficiency.

Key participants

Walter Leal (Prof. Dr. Dr. h.c.) is a senior professor at the Hamburg University of Applied Sciences (HAW Hamburg, Germany) where he heads the Research and Transfer Centre "Applications of Life Sciences".

Prof. Leal is one of the top 10 leading sustainability researchers worldwide, with over 20 years of research experience on all aspects of environmental information and education and has a particular interest on the connections between environmental management, sustainability, climate and human behaviour. He has written, edited or coedited over 60 books and has nearly 200 published papers and book chapters to his credit. He is a Review Editor of Working Group II at the Intergovernmental Panel on Climate Change (IPCC). He has been partner or coordinator of over 60 EU projects to date as well as of other international development and applied research projects focusing on sustainable development and renewable energy.

Partner no.	Partner full name	Short name	logo
20	Stavanger Komune	STA	STAVANGER KOMMUNE

Description of the organization

Stavanger, located on the South West Coast of Norway is Norway's most densely populated municipality and has approx. 130,000 inhabitants. Stavanger's Master plan for the city centre lighting, approved by the City Council in 2005, resulted in several lighting projects. One of the main projects (Cathedral Place, King's Yard, and the City Park) was awarded second price at City.People.Light award in 2012.

Parks and Streets Department is responsible for the managing and maintenance of all municipal outdoor areas, ranging from kindergarten's outdoors, through schoolyards, streets, bicycle roads, marketplaces, playgrounds, sports venues to parks, green trails and nature conservation areas. Lighting is a very important topic for most of these areas.

Role in the project

The main role of Stavanger is to actively participate in the WP2 dialogue about how sustainability oriented cites can make use of green business development interests and sustainability concerns to accelerate the uptake of the new functionalities that SSL enables. The aim is to improve the function and the environmental impact of city lighting, e.g. by inclusion of SSL value change partners in the process.

Relevant previous experience

Stavanger's Park and Streets Department, which has recently carried out major lighting projects, and is in charge of meeting high demand for energy efficient lighting, public safety and attractive lighting of buildings and places important for the city's identity.

Key participants

Torgeir Esig Soerensen - head of Parks and Streets Dept., City of Stavanger. He graduated as Landscape Architect, Norwegian University of Life Sciences, 1976, works for City of Stavanger since 1988. He is at present president of the International Federation of Park and Recreation Administration.

Ingjerd Bratterud - head of Project section, Parks and Streets, since 2011. Main education: Landscape architect, Norwegian University of Life Science, 1978. She was head of Parks and Sports Department of City of Sandnes from 1992 till 2011.

Anne Cecilie Lassa - urban design engineer, Project section. Parks and Streets, since 2010. Main education: Engineer, University of Stavanger 2001, worked as planner, Department of Transportation Planning, City of Stavanger from 2001 till 2010. She is today working mostly on

streetscape, programming the planning and engineering of streets and open space.

Nils Henrik Haaland - advisor, procurement and contract management, Procurement and Contracting Department, Finance Division, City of Stavanger, since 2007. Main education:
BA (social anthropology, political science, history) University of Bergen, 1998 and MSc (social anthropology) London School of Economics, 1999. Jarl Hoogstad - Head of Road and street lighting in Lyse Elnett. Educated in marketing. Many years of experience in management, account management, project management of data and telecom industry. Work at Lyse since 2009, since January 2013 worked with lighting.

Jarl Hoogstad - Head of Road and street lighting in Lyse Elnett. Educated in marketing. Many years of experience in management, account management, project management of data and in telecom industry. Works at Lyse since 2009, since January 2013 on lighting.

Partner no.	Partner full name	Short name	logo
21	**Gemeente Eindhoven, The Netherlands**	**EHV**	EINDHOVEN

Description of the organization

The city of Eindhoven is a local authority within The Netherlands. With a population of 220.000 inhabitants, it is the 5th largest city of the country. The city administration currently consists of 24 task related sectors. The city has its city specific character and identity, which is reflected in this multifunctional city organization. The sectors are organized in themes, varying from specific centers of expertise to city related services including urban development. These diverse tasks are carried out by a permanent staff of around 1800 employees.

Role in the project

As one of the participating cities Eindhoven will be involved in WP2.

Relevant previous experience

As a knowledge based and innovation oriented city, Eindhoven strongly focuses on creating the needed support structures in the domains of innovation, labor market, technology development and business development. This is most visible through the Brainport Foundation, established in 2005, a triple helix structure involving the public sector, the knowledge institutes and private enterprises. Today, following the launch in 2011 of the "BRAINPORT 2020 Strategy", Eindhoven is taking the triple helix cooperation further, linking even closer to EU strategic objectives and aiming to strengthen further the ties with European policy priorities in areas of knowledge and innovation, thereby strengthening its position as a leading knowledge based economy.

Eindhoven has a proven track record in innovative project development. As the largest local authority in the region, through its recognition as the centre of innovation in The Netherlands and as leading partner in the Triple Helix "Brainport Foundation", the city of Eindhoven has significant capacities to develop and influence economic development and innovation policies. Eindhoven has a political ambition to become a Living Lab for innovative technology solutions, a SMART city, improving dramatically the quality of life of its citizens. Furthermore, Eindhoven has specific experience with EU supported projects in the fields of both Public lighting (BLISS – INTERREG IVB, PLUS – INTERREG IVC) and Innovative procurement (SPEA – CIP). Eindhoven has joined the International SSL Alliance, in which it will participate in the Municipal SSL Applications Committee.

Key participants

Arthur Noordhoek - ing (advisor and project leader outdoor lighting, Sector Public Space, Traffic and Environment, City of Eindhoven). After studying civil engineering and ICT, he worked for over 10 years in different functions in the consultancy of municipalities. Arthur is being responsible for public lighting in Eindhoven for over 15 years. As an advisor and project leader Arthur has been involved in many EU supported projects (BLISS, PLUS, ENIGMA) and the national project E3 SLIM (Smart Light in Metropolitan areas) project, in which the cities of Amsterdam, Rotterdam and Eindhoven share experiences and knowledge related tot innovative lighting solutions.

In addition, Arthur is member of the committee for Public Lighting of the Dutch Society for Illumination (NSVV, Nederlandse Stichting voor Verlichtingskunde) and vice-chairman of an inter-municipal platform for public lighting (IGOV, Intergemeentelijk overleg Openbare Verlichting) officers from 131 Dutch municipalities.

Partner no.	Partner full name	Short name	logo
22	Oxford University	OXF	

Description of the organization

The research interests of the circadian neuroscience group range across visual neuroscience, circadian rhythms and sleep. Our most notable contribution has been the discovery of a third class of photoreceptor within the vertebrate eye which consists of a small sub-set of photosensitive retinal ganglion cells (pRGCs). We approach research questions using a multidisciplinary approach spanning gene discovery, expression, silencing and ablation and use functional assays that include calcium imaging, circadian behaviour and EEG/sleep.; With the Oxford Eye Hospital we are exploring the impact of retinal disease on sleep and circadian rhythm disruption.

Role in the project

Oxford's main role is in WP3.2 Stocktaking and Analysis as Task 3.2.3 leader, looking at the impact and potential of lighting (in prevention and treatment) within healthcare and elderly care settings. We will discriminate the needs of various patients groups, including aged (>65) people and mentally ill people, together with staff needs. The most important and relevant scientific insights and use cases will be identified, and concrete suggestions for application, utilization and implementation of this knowledge will be given. The work will identify options for early intervention prior to illness, perhaps preventing or delaying illness onset

Relevant previous experience

Recently we have established a Centre for Sleep and Circadian Neuroscience within the Biomedical Centre to place fundamental findings in sleep and circadian neuroscience into a clinical context. The work of this centre is directed towards an understanding of the causes of sleep and circadian rhythm disturbance in neurological disorders such as schizophrenia, bipolar, dementia etc. and the development of evidence-based countermeasures

Russell Grant Foster - professor of circadian neuroscience and the Head of Department of Ophthalmology at University of Oxford. He and his group are credited with the discovery of the non-rod, non-cone, photosensitive ganglion cells in the mammalian retina which provide input to the circadian rhythm system. Foster was elected a fellow of the Royal Society in 2008 and a member of the Biotechnology and Biological Sciences Research Council council in 2011

Educated at the University of Bristol with a PhD in Neuroscience from 1984, Foster was a member of the National Science Foundation Center for Biological Rhythms at the University of Virginia before returning to the UK. Internationally, he has received several awards for his discovery of ocular photoreceptors. He is the co-author with writer and broadcaster Leon Kreitzman of two popular science books on circadian rhythms.

Partner no.	Partner full name	Short name	logo
23	Revo Media Partners – Lux magazine	RMP	

Description of the organization

Revo Media is an award-winning broad spectrum media company, created in September 2010 by Gordon Routledge and Ray Molony.

We are committed to helping our customers be more successful in the global lighting and energy efficiency markets.

We do this by providing them with access to their target audience and to insightful business critical information with live events, publications, data analysis or digital media.

The world of energy efficiency is changing fast with new technologies, new markets and new customers bringing huge opportunities. Our expert team has a broad and deep understanding of the industries we serve, which, combined with a culture of innovation, creativity and collaboration means we can help our customers develop compelling solutions to achieve their business objectives.

Our flagship title is Lux magazine which is the official publication of the Lighting Industry Association in the UK.

Role in the project

RMP will contribute to WP5. Main task is to set up and manage a comprehensive internet platform to facilitate and enable the communication along the extended value chain and towards other stakeholders. Development of a concept that will enable the innovation platform to continue beyond the end of the project.

Relevant previous experience

Lighting accounts for around 20% of world electricity consumption, and new energy efficient lighting technologies offer the potential to reduce this by over 50%. This huge potential opens up new international markets, specifically end users looking to upgrade and improve existing installations and buildings.

This new global market presents a new lighting audience, with new challenges and educational requirements. Revo Media Partners international portfolio of print, digital and live brands are the only ones geared towards this new market.

Working with RMP gives editorial integrity and expertise as the publications and websites are written by experts with over 40 years' experience in the lighting industry.

The Lux magazine website incorporates an interactive magazine reader which recreates our industry-leading monthly print magazine in an easy-to-use online format. It uses the latest web technology and is designed to work with as wide a range of browsers and devices as possible - including iPads and mobile phones.

Online magazine pages include all the content from the print edition, as well as additional interactive content such as videos, clickable links and image galleries.

Key participants

Gordon Routledge - chairman and co-founder, has over 17 years' experience in the lighting industry. In 2001, he founded Lumidrives, a pioneering company in the use of high powered LEDs for illumination applications which he led until its acquisition by Dialight PLC in 2006. Gordon then developed and led the global lighting business unit.

In 2009 he established an independent consultancy to provide technical, engineering and business development services to a wide range of companies within the lighting sector.

He studied electrical and electronic engineering and is a chartered Engineer and member of the Institute of Directors.

Lucy Wykes - business development director, has over 15 years' experience in international media and events. She started her media career at UBM where she worked for 12 years on various publications, websites and conferences.

She has also worked for Capita Conferences and the CBI developing corporate partnerships.

B 2.3 Consortium as a whole

B 2.3.1 Partnership objectives, complementarily and balance

Europe 2020, the EU's growth strategy for the coming decade, aims at confronting Europe's structural weaknesses by pursuing three mutually reinforcing goals:

- smart growth, based on knowledge and innovation;
- sustainable growth, promoting a more resource efficient, greener and competitive economy;
- inclusive growth, fostering a high employment economy delivering economic, social and territorial cohesion.

These objectives are very relevant to the solid state lighting market as well, in which the European leadership is under pressure due to the strong coordinated competitions from the USA and China,.

The aim of SSL-erate, to accelerate the innovation in the lighting domain, requires involvement of a wide range of stakeholders. Both the effects of light for health and well-being and sustainable, green business development can be regarded as social innovations and will need a broad approach. The partners have been chosen on basis of the quadruple helix model for the Public-Private Partnership (in accordance with the Guide to Research and Innovation Strategies for Smart Specialisations (RIS3)).

The four main roles of the quadruple helix are embedded in the SSL-erate consortium as follows:

Public Authorities: these are covered by involving a number of cities which are actively working on the social challenges they are facing.

Users: the same cities are actually also major lighting users and/or representing the needs of such users on their roads, offices, schools, sport facilities, (health) care units, etc. LUCI will bring together existing knowledge on SSL within cities and communicate the project's results and updates to their members.

Companies: these are represented through the participation of the LightingEurope lighting industry association. LE works on an European and global level, needed to achieve market leadership. Lighting Europe is an industrial association with 31 members including Philips & Osram. With total exceed 20 billion euros turnover and 100,000 of employees in Europe it covers large part of Europe's lighting industry. Their members support the SSL-erate project actively, key persons will be: Luc Schlangen (Philips, Senior Principal Scientist at the Brain, Body and Behaviour group of Philips Research), Berit Wessler (Osram, Manager Strategic Technology Cooperation), Peter Besting (R&D Manager at Panasonic Lighting Europe).

However, collaborative innovation requires also face-to-face involvement on a local or regional level, which occurs in and around the lighting cluster partners in the consortium – which work together within the European Lighting Cluster Association (ELCA).

Research institutes: the knowledge of leading research institutions is needed to support the innovations, both in subject matters like health effects and sustainability as well as in business methodologies and processes to introduce and improve the (open innovation) way of working.

The four main roles in the quadruple helix are complementary to one another. But also within each category the selected partners are sufficiently different to cover a wide spectrum of essential subject knowledge, geographical and cultural aspects, needs and context.

Finally to assure that the different perspectives are adequately considered the governance of the project has been assigned to the management board with TNO, Lund University, Lighting Europe, and a cluster representative, Cluster Lumiere.

The consortium has a wide geographical coverage of Europe, with 23 partners from 13 countries, from the north-east in Finland and Latvia to the south-west in Spain. This enables to set-up and execute SSL-deployment and business studies under a large variation of climatic, lighting and cultural conditions, which also characterize Europe. But also to look for and initiate cooperation on SSL across Europe.

Partnership

No.	Name	Type	Major role / expertise
1	TNO	RTD	Coordinator, WP2 (leader Task 2.2), WP4 (leader); manufacturing and sustainability aspects of SSL, behavioral effect of lighting, open innovation management and business development
2	LU	HES	WP2 (leader), WP4 (leader Task 4.2); green business development, innovation processes, coordinator of Lund Lighting Initiative, RTD association and lighting cluster
3	LE	Industrial Association	WP3 (leader), WP5 (leader); European association of lighting manufacturers
4	LUCI	City Association	WP2, WP5; dissemination towards municipalities; international association of cities on urban lighting
5	ESADE	HES	WP4,WP5; world renown expertise on open innovation
6	CL	Cluster Association	WP4 (leader Task 4.3); lighting cluster in Rhône-Alpes region
7	LiV	Cluster Association	WP4, especially Task 4.3; open innovation experiments; lighting cluster in Veneto region

8	KUL	HES	WP4, especially Task 4.3, open innovation experiments; light and lighting expertise, coordinator of lighting cluster Groen Licht Vlaanderen in Flanders region, Belgium
9	CICAT	Cluster Association	WP4, especially Task 4.3, open innovation experiments; lighting cluster in Catalunya region
10	DTU	HES	WP4, especially Task 4.3, open innovation experiments; coordinator of Danish Lighting Innovation Network
11	SYN	Innovation Agency	WP4, especially Task 4.3, open innovation experiments; national innovation agency, setting up a new lighting cluster in South-Netherlands region
12	UCL	HES	WP2; sustainability in the built environment and innovation in complex products and systems
13	VU	HES	WP2, on green business opportunities and WP3, on lighting for smart cities; SSL technology and adapted illumination for specific purposes
14	UB	HES	WP3 (leader Task 3.2.4, domestic applications); chronobiology, on-visual effects of light on human circadian rhythms and sleep
15	AALTO	HES	WP3 (leader Task 3.3, lighting for smart cities); analysis of lighting from human perception perspective, modeling of energy-sufficient and sustainable public lighting
16	RUG	HES	WP3 (leader Task 3.2.1 lighting in education and Task 3.2.2, lighting for work places); impact of light on human health and performance
17	MAL	Municipality	WP2, city of Malmo, Sweden
18	BAS	Municipality	WP2, city of Bassano del Grappa, Italy
19	HAW	HES	WP2, WP5; sustainability research, member of the Cluster on Renewable Energy in Hamburg,
20	STA	Municipality	WP2; city of Stavanger, Norway
21	EHV	Municipality	WP2; city of Eindhoven, Netherlands
22	OXF	HES	WP3 (leader Task 3.2.2, lighting in health care / nursing homes); circadian neuroscience
23	RMP	SME	WP5, setting up and running of the SSL-erate iInnovation platform; media company

Associated partners

Crucial for carrying out business experiments to explore and demonstrate open innovation methodology for accelerating SSL innovation in Europe, are networks of companies, municipalities, research institutes, which constitutes an ecosystem needed to realize envisaged SSL products and systems. These are provide by the seven clusters in the SSL-erate consortium:

- Groen Licht Vlaanderen (Flanders, Belgium, coordinated by partner KUL),
- Cluster Lumiere (Rhône-Alpes, partner),
- Luce in Veneto (Veneto, Italy, partner),
- CICAT (Catalunya, partner) and
- Danish Lighting Innovation Network (Copenhagen area, coordinated by DTU).
- Lund Lighting Initiative (Skåne region, coordinated by LU)
- Syntens (South-Netherlands, partner)

These clusters have shown to be able to organize and execute business and research collaboration and their members re members have expressed their willingness and commitment to participate in the SSL-erate activities, workshops and/or business experiments. In the annex letters of support have been attached. The clusters themselves are highly motivated to collaborate on European level and have founded the European Light Clusters Association, which will adopt and promote the recommendations for open innovation SSL deployment and business development stemming from SSL-erate for their members.

Likewise, members of LightingEurope will actively support the execution of the SSL-erate project with their networks and subject knowledge.

B 2.3.2 Subcontracting

Subcontracting is foreseen for the Audit certificates for TNO, LU and LE, for which 10.500 € is reserved in WP1.

ESADE will subcontract (i) catering, audiovisual support material for the open innovation meetings and workshops, (ii) video and animation production(s) for the general dissemination of the project and (iii) design and production of publicity material, as flyers, brochures, etc. for estimated costs of 12.000 €

RMP will subcontract the IT part of the development of the Innovation Platform in WP5, for a planned value of 30.000 €.

When subcontracting, the organizations will follow their usual management principles in line with the provisions of Annex II of the grant agreement (General Conditions), in particular with article II.7

B 2.3.3 Third parties

The University of Basel includes the UPK (UNIVERSITÄRE PSYCHIATRISCHE KLINIKEN BASEL) as third party (special clause 10). The affiliation is based on the fact that the University of Basel is in charge of all aspects regarding education and research carried out at the University Hospitals. The legal basis is given by the public laws establishing the University of Basel and the University Hospitals as well as the bilateral contracts (performance agreements, Leistungsvereinbarungen) between the University of Basel and its University Hospitals.

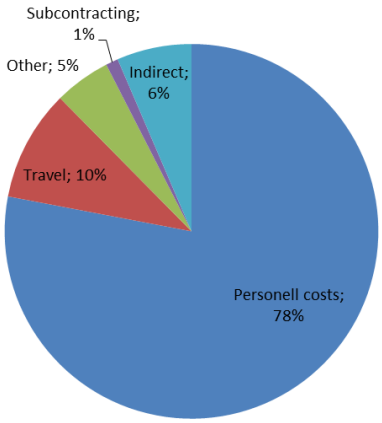
The UPK will carry out the work as described in Annex I. The University of Basel – mandating its University Clinics regarding education and research - is in charge of all aspects concerning contract management, accounting, controlling, financial reporting, exploitation of intellectual property and audit management.

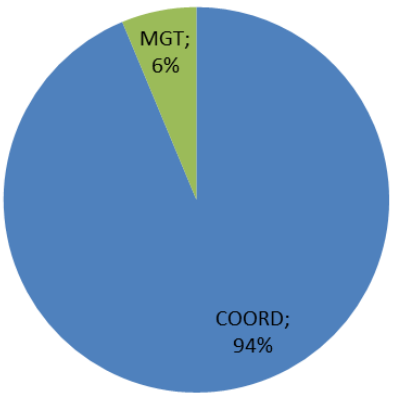
B 2.3.4 Other countries

No non-EU countries participate.

B 2.4 Resources to be committed

The SSL-erate project beneficiaries plan to mobilize an amount of 396 person-months for the completion of the overall project. Majority of effort is in coordination activities (369 pm, 93%), which shows the dominant coordination character of the project. Management activities count for 27 pm (7%). The project's total eligible costs and requested funding are 3779796 €. It should be noticed that the four coordination work packages have their own program of external meetings, aimed at dialogues with stakeholders.





Budget distribution per nature of costs *Budget distribution per type of activity*

Partners have allocated travel budgets and (other cost) budgets for workshop organization and materials, according to estimated needs. The planned meetings include the yearly General Assembly and half-yearly Management Board meetings as well as 20 technical meetings / workshops within the consortium, 50 workshops / events with external parties (cities and cluster meetings, Smart Lighting Forum, seminars at conferences). Travel costs will be

minimized by combining meetings and events when possible. The table below shows the estimated number of meetings (of any kind) per WP and per project year.

	year 1	year 2	year 3	total
WP1	3	2	2	7
WP2	14	1	0	15
WP3*	1	1	1	3
WP4	21	9	14	44
WP5	5	4	3	12
total	44	17	20	81

*not including technical meetings at project plenary meetings

Besides hosting of meetings, other costs include design and realization of graphic and audiovisual supporting material (brochures, flyers, banners, movies), booth design and realization at conferences, fairs.

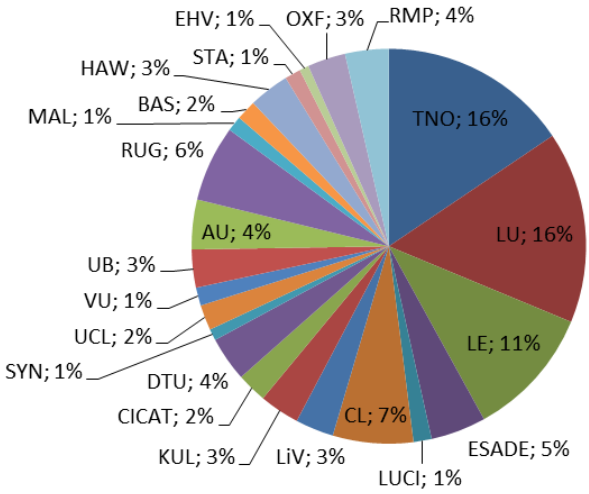
A fixed budget of 'dynamic' resources of 41.5 kEuros is allocated as reserve. (This budget will allow the SSL-erate project to react in a flexible way to specific needs and initiatives within the three years of its duration. The budget is hold in trust by the project coordinator, who will be in charge of the distribution to partners).

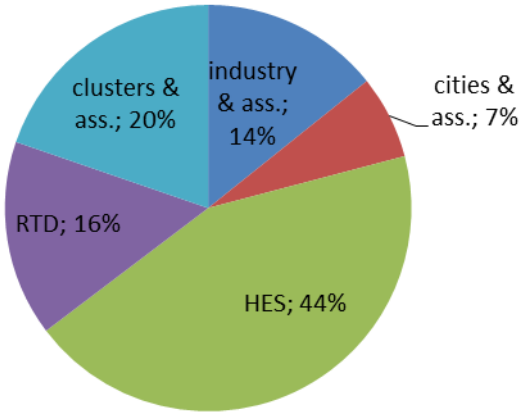
An overview of the costs (i.e. for all activities) per partner per cost category is given (in €) in the table below.

Partner		Personnel	Travel	Consum-ables	Other	Sub-contracts	Full indirect	Total	Requested funding
1	TNO	457490	27000	0	61500	3500	360562	910052	587708
2	LU	504000	27000	0	20000	3500	110200	664700	593070
3	LE	290500	25000	0	60000	3500	74400	454400	405285
4	ESADE	119700	25000	0	4000	12000	29740	190440	171108
5	LUCI	38500	8000	0	6000	0	10500	63000	56174
6	CL	192500	25000	0	15000	0	46500	279000	248775
7	LiV	84000	17000	0	10000	0	22200	133200	118769
8	KUL	90000	16000	0	10000	0	23200	139200	124119
9	CICAT	60768	16000	0	10000	0	17353	104121	92841
10	DTU	100200	19000	0	10000	0	100200	229400	138243
11	SYN	28000	6000	0	0	0	9800	43800	36380

12	UCL	63444	10000	0	0	0	14688	88132	78584
13	VU	40165	12000	0	0	0	10432	62597	55816
14	UB	98000	12000	0	0	0	22000	132000	117700
15	AALTO	128520	16000	0	0	0	107957	252477	154636
16	RUG	196000	24000		0	0	44000	264000	235400
17	MAL	36000	8000	0	0	0	8800	52800	47080
18	BAS	45900	12000	0	0	0	11580	69480	61952
19	HAW	102000	12000	0	3000	0	23400	140400	125190
20	STA	36000	10000	0	0	0	9200	55200	49220
21	EHV	22000	5000	0	0	0	5400	32400	28890
22	OXF	95278	15000	0	0	0	22054	132332	117996
23	RMP	84000	14000	0	0	30000	19600	147600	134860
	Total	2912965	361000	0	209500	52500	1103766	4639731	3779796

The figures below show finally the budget distribution per partner and per category:





Lund University, LightingEurope and TNO, the three largest partners, are coordinating, connecting and cross-linking the three main work packages, on SSL deployment, biological effective lighting and open innovation respectively.

B3. IMPACT

B 3.1 Strategic impact

SSL-erate aims to accelerate the deployment of solid state lighting and addresses as such the requested impact in the program as follows:

*Secured European **industrial leadership** in photonic applications and technologies, and safeguarded European capacity to manufacture innovative products*.

SSL-erate focuses on (Solid State) Lighting. In this domain the European leadership is under pressure. In the current disruptive phase of the market, progress in China and the USA is notably rapid. The opportunity for the European industry however lies in addressing context specific user needs by combining (dedicated) components into lighting applications, system and services, the main topics in the business experiments.

WP2 will articulate the green business development motives for SSL as a tool for development of sustainable houses and sustainable cities, WP 3 will enlighten the effects of biologically effective lighting for health and well-being, and WP 4 will accelerate open collaboration and deployment of value enhancing SSL solutions by an open innovation approach. This will promote a broader interest in European lead markets, and thereby investments, for advanced system solutions with high added value.
KPI: 4 business experiments involving development and manufacturing of SSL systems defined and started (at months 15). This leading to demonstrations of concept and prototypes by the participants in this studies within project duration.

*Broader and faster **take-up** of photonics in innovative products, in particular by SMEs*.

SSL-erate will mobilize green business development interests as drivers for public purchasing of innovative high-quality SSL, not only on demand side (WP2: cities) but also on the supply side (WP4: SME's). Through the participation of clusters the SME's will be actively involved in the project, especially through the open innovation business experiments.

Public investment interest will strengthen the market for advanced SSL related products and services. Dynamic mapping of green business opportunities will enhance the demand creation for green business and innovative SSL products (WP2). Sustainability aspects of SSL applications will be especially considered (Task 2.1).
KPI: 4 business experiments with involvement of SMEs defined and started (at month 15) , leading to new product or service concepts and demonstrations within project duration.

Accelerated innovation and deployment of SSL

SSL-erate aims to enhance the competence of architects, designers and installers regarding SSL applications. The business experiments that will be conducted in WP 4.3 will bring together industry and end-users, forming locally kernels for innovative business development. The setting up of a Smart Lighting Forum (Task 4.4), assembling actors along the building value chain (from real estate operators and investors to the building industry itself), will help the penetration of new SSL solutions in the building and construction industry.

The guidelines, metric standards and nomenclature for lighting for health and well-being will help and stimulate companies to develop SSL products and services for human-centric lighting (WP 3), which is expected to become a multi-billion Euro business.
KPI: Establishment of Smart Lighting Forum (month 6) and 5 business experiments defined and started with involvement of actors from cities and the building industry (month 15) .

*Improved **innovation** effectiveness of photonics clusters in particular towards SMEs*
SSL-erate pursues actively the improvement of the innovation ability of SME's by advocating open innovation (WP4). With the help of the lighting clusters in the SSL-erate consortium, SMEs will not only be engaged in open innovation business experiments (Task 4.3), but also be educated on innovation effectiveness using the dedicated tools to be developed by renowned specialists on open innovation (e.g. ESADE, prof. Chesbrough) and green business development (e..g. Lund University, prof Karlsson).
KPI: Open innovation tool available and introduced via workshops at cluster level for five clusters with involvement of SMEs (month 12). SSL-erate innovation platform functional (month 9) and used within 10 business development experiments (months 15).

Increased **awareness and interest** in photonics amongst the general public, youngsters and entrepreneurs.
Various stakeholders will be actively involved in SSL-erate activities. They participate in workshops and cluster meetings, use the project website and the innovation-platform and receive disseminated results (WP 2 - WP 5). All that information will make them SSL "ambassadors". Moreover all participants, though especially Lighting Europe and the cluster associations, representing the industry, will convey the SSL message.
By means of the Smart Lighting Forum (Task 4.4) awareness and interest will be created in the building industry.
SSL-erate will work – as part of the dissemination activities - with relevant stakeholders in order to organize specific actions to raise the interest of young people and entrepreneurs in photonics – these may range from participating in local-level science open days for schools to including sessions in the workshops specific to engaging these target groups.
KPI: SSL-erate project and Innovation Platform publically launched (at Light & Building) and functional (month 9) – with information (exchange) for general public.

B 3.2 Spreading excellence, exploiting results, disseminating knowledge

B 3.2.1 Dissemination Activities

The SSL-erate dissemination activities aim at increasing the project's visibility among the targeted stakeholders as well as the wider community, with direct or indirect interest in the project results (scientific, technological, political, etc.). The dissemination actions will be part of a yearly SSL-erate action plan for promoting SSL uptake. (finalized in Month 2 for project year 1, in Month 12 for year 2, and in Month 24 for year 3).

Dissemination activities will be conducted at both the consortium level and at partners level and will include elements for reaching out to the following groups:

- **Academia and research groups** which will be informed about the human centric lighting knowledge stock taking and mapping results, through papers and presentations on conferences.

- **Public authorities** which have an active role in SSL related policy making and act as advocates at national, European or global institutions to promote and communicate about SSL deployment policies. LUCI will have a pivotal role concerning the communication with cities and municipalities. LUCI has good contacts with many cities, also in countries not covered by the SSL-erate consortium, such as Glasgow (UK), Budapest (Hungary), Bucharest and Iasi (Romania), Varna (Bulgaria), Dubrovnik (Croatia), Jelenia Gora (Poland), Tallinn and Tartu (Estonia). Their Annual General Meeting 2014 will be held in Dubrovnik (Croatia), and will a good opportunity to engage with cities from South Eastern Europe.

  SSL-erate will connect with existing EU initiatives targeting Smart Cities via the Smart-City Expo (an event held annually in Barcelona and in which SSL-erate partner ESADE plays a key role) and Smart City exhibition (an annual event to be held in Bologna).;.

  Workshops will be held (WP2) for the city partners and regional stakeholders to have a dialogue, with the aid of Lighting Clusters, about local SSL deployment and the creation of business opportunities.

- **Businesses and Industries**, which will be stimulated to create new business opportunities, through interacting with the SSL-erate Innovation Platform. The SSL-erate website will be launched publicly at the Light & Building event. The project will also be promoted at other key events for the lighting industry, such as ForumLED (France), Strategies in Light Europe, Smart Lighting Conference, LED Professional Symposion (Bregenz) and Licht 2014 (The Hague). Furthermore, a Smart Lighting Forum will be started within the first half year of the project, a series of workshops to address in particular how lighting and construction could join forces, aiming at a better integration, (technological, organizational) for a win-win business cooperation.

  Workshops will be held (organized by the cluster partners) to promote open innovation tools and to set up business development experiments, case studies on open innovation in SSL.

- **The Web 2.0 community** , which will be actively informed about the SSL-erate project and SSL lighting deployment activities. The web 2.0 community will act as the project's multiplier over social networks and media, increasing thus awareness around the open innovation, green business development and humanized lighting concepts introduced by SSL-erate.

- **General Public,** one of the main stakeholders, will be engaged through (besides the - social - media) specific outreach activities. For example **raising the interest of young people and entrepreneurs** in SSL by participating in local science open days of schools. Cooperation with the cities is here foreseen.

To support the dissemination activities**:**

- **Production and promotion of marketing material**, to be provided as information material in all public events where SSL-erate partners will participate. Such material includes the project booklet, leaflets or brochures, posters, electronic newsletters in order to present the project achievements and enhance the involvement of unreached stakeholders.

- Development of the **SSL-erate innovation platform website** aiming at different levels of dissemination and acting as the reference point for collecting information about the project and its scientific and technological results. The website will have a public and the private area with different access rights.

- Exploitation of popular **web 2.0 channels and social media** for further enhancing the image of the project and engaging the web 2.0 community as multipliers of the knowledge diffused. The SSL-erate page and group in LinkedIn, along with the project's Twitter Profile, and YouTube channel are among the web 2.0 instruments that will contribute to the project's wider and more effective dissemination.

- Design of a triggering and appealing **project logo** that will accompany the project in every public dissemination activity and even more will be used in all the documents produced, exchanged and published by the SSL-erate partners.

- Production of **media oriented dissemination material**, including press releases, news items and videos to be published both in traditional media (newspapers, magazines, TV) and web 2.0 social media (news portals, e-magazines, blogs, web streams).

- Development of **communication channels** with established and well-known Technology Platforms, in areas relevant to SSL-erate and in which SSL-erate partners are already established members, such as Photonics 21. Within this cooperation framework, the aforementioned collaborators will deliver presentations of SSL-erate in events coordinated and organized by them and several publications in documents produced and released under their supervision and responsibility.

Finally, SSL-erate will **liaise** with other **FP7 projects** , such as ENIGMA (FP7-ICT-2013-10 / ICT-2013.11.1), which aims to develop and execute pre-commercial procurement of innovative lighting solutions, if sharing scientific, technological and practical interests brings in added-value to the project network(s) and activities.

B 3.2.2 Exploitation Activities

As already noted, the lighting industry - especially downstream at the luminaire/systems/solutions side of the market - has been a differentiated and fragmented one, and the speed of innovation and successful application advances have been too slow or do not sufficiently materialize. System innovations, that require a joint effort of a variety of parties, like e.g. green, sustainable SSL business development and the application of Lighting for improved health & well-being, are also seriously hampered by this.

To accelerate the SSL innovation and exploitation in Europe, coordination and alignment is needed at the European level on the one hand side. On the other hand side, to increase the demand for and supply of SSL services and systems, local collaborations are needed.

For this purpose, on a central level, with European experts, (i) an open innovation tool kit is developed for the SSL values chain, (ii) validated information provided on biological effects of lighting for health and well-being, (iii) metrics defined to quantify biological light exposure doses, (iv) criteria developed for determining the environmental footprint for LED products, (v) best practice advice given on SSL materials recycling, ecodesign and landlord-tenant problem (principal agent problem), (vi) SSL green business opportunities mapped and (vii) recommendations made for setting up new regional lighting clusters and for their European cooperation.

These project results will be used by their developers in future research and courses, for the benefit of futures employees and entrepreneurs in the SSL value chain. Its use will be advocated via the SSL-erate innovation platform and through publications and presentations.

But most importantly, these results will be exploited in the project workshops, for cities and associated local actors (including building / construction industry) on deployment of SSL solutions, for regional clusters, on SSL business development, as well as in the open innovation business experiments.

The SSL-erate innovation platform itself will be a major project result. It will be operational in a basic version from month two and fully from month nine. It will accelerate the uptake of high-quality SSL technology by promoting and supporting open innovation and by bringing validated information to all relevant stakeholders. It is the consortium's intent that this web-based platform will play a central role in the European lighting innovation eco-system, also after finalization of the SSL-erate project. As a project deliverable a concept will be made for the continuation, funding and exploitation of the platform after the project end.

This platform and the envisaged content and functionality will stimulate key actors in lighting and application fields to collaborate in addressing the European societal challenges (in particular health & quality of life in an ageing society, energy consumption and resource efficiency), to resolve the specific challenges of the lighting industry, and to enable lighting solutions with a societal and environmental sustainability perspective, leading to a future in which Europe evolves to the global leadership in SSL systems and solutions. This in turn will create value to the participating partners and offer them competitive advantages when the final product or its individual components will be introduced to the market.

All publishable project results will be publically available at the project's website, except management and financial reports. The partners will further develop and implement their own independent exploitation strategy for these results, in line with their organizational strategy, their role and motivation in the SSL-erate project. The partner's exploitation strategies will be discussed within the consortium and will be part of the Consortium Agreement.

B4. ETHICAL ISSUES (IF APPLICABLE)

The consortium does not foresee any problematic ethical issues. The consortium declares to be compliant to current EU and National legislation, regulations and ethical codes of conduct. The project will respect cultural differences, privacy, interest and rights to persons.

B5. GENDER ASPECTS (OPTIONAL)

-