

# OUTPUT O.T1.2

## Manual on transferable technical solutions

Version 1

<b>Project index number and acronym</b>	CE 452 Dynamic Light
<b>Lead partner</b>	University of Applied Sciences: Technology, Business and Design, Wismar (Hochschule Wismar)
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### Summary description of the key features of the tool (developed and/or implemented)

This manual on transferable technical solutions along with the manual on dynamic lighting and social needs completes a set of manuals aimed at outlining the factors which are essential for light quality, ecology, energy efficiency and subsequently social sustainability. The objective of this manual is to provide Urban planners, municipalities, authorities, technical consultants with a tool for understanding social needs, user demands and aspirations, and how these can be translated into dynamic lighting control strategies using the upcoming technology.

This document defines and develops the terminology and technology available for dynamic public lighting; it identifies the role of vision and eyes, LED lamp technology and luminaire design. The manual further investigates the performance requirements, measurements, and calculation methods. The manual then goes on to list the characteristics of dynamic lighting control, lighting management and control strategies.

The manual concludes by explaining the influence of different dimming strategies on energy efficiency, influence of various electrical equipment including LED on energy consumption.

The manual finally elaborates on energy management and monitoring through examples and case studies.

### NUTS region(s) where the tool has been developed and/or implemented (relevant NUTS level)

NUTS 0, NUTS 2, NUTS 3 (Germany, Czech Republic, Croatia)

## Expected impact and benefits of the tool for the concerned territories and target groups

The information contained in this manual will help the planners, municipalities, towns and cities to better understand the technology behind public lighting control and especially dynamic lighting control. This manual is useful for the Central European Region and the partners as it is based on the inputs received from the various project partners. This manual will help the partners in developing lighting strategies to meet these varied needs and demand of their respective regions and territories.

The local public authorities will be able to establish the direct connections between satisfying the user demands and social needs and the technology available for this purpose. Through this manual the ideas of light quality can be directly linked with the technical solutions.

This manual will provide the various urban planners, architects, technical planners and other such individuals an overview of the current technological possibilities. This will also help the infrastructure and service providers to provide tailor-made dynamic lighting solutions to the various stakeholders.

The manual completes a set of manuals designed to bring together the concepts of light quality, ecology and sustainability. Creating a set tools to discuss concepts like human needs, light pollution, adverse effects to Flora & Fauna alongside issues like light quality, energy and cost savings.

## Sustainability of the tool and its transferability to other territories and stakeholders

The manual connects the concepts of human needs and social demands established in the previous manual with the technological and scientific possibilities, in order to implement dynamic lighting strategies. The manual is created to allow for an easy adaptability to various regions and countries. The individual regions and cities can very easily build upon technical information contained in this manual and develop it to suit their particular requirements and technical capabilities.

The structure and contents of the manual ensure long term usability. The flexibility of the manual allows it to be easily adaptable to various regions and territories. The manual has also been developed independent of any manufacture or industry, allowing the various regions and partners to adjust the manual as per availability of technology and know-how.

The proposed manual provides a set of tools for designers and technicians from any region or territory, enabling them to develop dynamic lighting strategies for their particular region or territory or type of location.

This manual is envisaged to be used along with the manual on social needs and strategies for dynamic light. This will provide a wide range of tools that are valid and easily modified for individual regions and territories.

## Lessons learned from the development/implementation process of the tool and added value of transnational cooperation

The development of this manual brought to the **focus** the importance of technology and technical know how in implementing dynamic lighting strategies.

It is of utmost importance to understand the various technological and technical possibilities available today for public lighting strategies. A successful public lighting strategy can only be implemented with the proper understanding of the technology.

During the development of the manual we came across a myriad of information on technical possibilities but nowhere we could find the relation to **light quality, user needs and demands**. Many technologies still only discuss energy efficiency and keep ignoring topics like quality of light, right light for the right function and right users. Similarly, issues like user needs and demand rarely found a mention in public lighting strategies.

Through the development of this manual it became abundantly clear that **dynamic lighting controls** will play a **crucial role in the future of public lighting**.

The **municipalities** need to **adapt and adjust their planning according to the changing technologies and need a support from urban designers and technical consultants to ensure their vision for public lighting is realised**.

**Technology today allows to** precisely control various aspects of light but how this can be achieved is still not very clear for many municipalities, planners etc. This manual tried to address this question and provide a comprehensive overview.

The inputs received from the other project partners and their experience with the various technologies provided a valuable insight into the state of current technologies in central Europe.

## References to relevant deliverables and web-links If applicable, pictures or images to be provided as annex

O.T.1.1 Manual on dynamic lighting and social needs