

OUTPUT O.T1.1

Manual on dynamic lighting and social needs

Version 1

Project index number and acronym	CE 452 Dynamic Light
Lead partner	University of Applied Sciences: Technology, Business and Design, Wismar (Hochschule Wismar)
Output number and title	Output O.T1.1, Manual on dynamic lighting and social needs
Responsible partner (PP name and number)	University of Applied Sciences: Technology, Business and Design, Wismar (Hochschule Wismar), PP1
Project website	http://www.interreg-central.eu/Content.Node/Dynamic-Light.html
Delivery date	28.02.2018

Summary description of the key features of the tool (developed and/or implemented)

The manual on dynamic lighting and social needs outlines the factors which are essential for **light quality, ecology, energy efficiency** and subsequently **social sustainability**. This manual establishes the **relevance and importance of user demands, social needs and the human dimension for the successful planning of dynamic lighting strategies**.

This manual provides Urban planners, architects, lighting designers etc. with **a guide/ tool for understanding social needs, user demands and aspirations**, and how these can be **translated into dynamic lighting control strategies**. Through the use of **practical tools** developed in the previous deliverables, like - **Monitoring Tools and Demand Analysis**, information about the needs and demands can be collected on location. **Monitoring tool** enables **detailed information gathering** and the **demand analysis** assists in **organising and prioritising** the information collected in the first stage.

This document further **defines and develops on the concept of dynamic public lighting; it identifies the three main objectives behind dynamic lighting - a liveable city (Light Quality), a healthy city (Ecology) and a sustainable city (energy efficiency)**.

The manual further investigates the concept of **human needs and social demands**, explaining and establishing them in the **context of public lighting**. The manual then goes on to **list the prevalent urban design theories and creating the link between human needs and urban design**.

The manual continues by seeking to create a common thread between human/ social needs, urban design and public lighting.

In the end, the **development of a tool** is proposed that brings together the **various parameters for dynamic lighting** such as light direction, quantity, brightness, colour, light scattering, glare in relation to human/social needs as safety, visual identity of the city, attractive city areas, reduction of light pollution etc.

These tools help in **understanding the local needs** and demands of a particular location and the local stakeholders, in turn helping to **develop a time-based & activity-based schedule** for dynamic lighting strategies. This manual brings together the findings from the previous deliverables (D.T1.1.1 till - 3).

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

NUTS 0, NUTS 1, NUTS 2, NUTS 3 (Germany, Poland, Italy, Czech Republic, Austria, Croatia, Slovenia)

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

The concepts and knowledge contained in this manual will help the **communities, towns, cities** to better **understand the needs and demands of the various stakeholders and users**. This manual is especially useful for the **Central European Region and the partners** as it is based on the inputs received from the various project partners.

Furthermore, 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 achieving high quality public spaces**. Through this manual the **local authorities** can once again put the **human dimension in focus**. Thus, impacting the **local population/ citizens** directly and helping to **improve their well-being**. The ideas of light quality addressed in this manual directly affect the well-being of the local population.

This manual will provide the various **urban planners, architects, lighting designers** and other such individuals an initial a set of **tools for dynamic lighting**. These tools create an in-depth understanding of **how to translate and transfer human/ social needs into lighting design requirements**.

Such tools will also help the **infrastructure and service providers** to provide **tailor-made dynamic lighting solutions to the various stakeholders**. A deeper understanding of the needs, demands, and human dimension will enable the **different sectoral agencies to plan holistically and with long term goals**, whilst avoiding false efficiencies. This ensures **not only higher energy savings but a truly sustainable strategy** taking into account economical, ecological and social aspects.

The manual serves as **platform to bring together the concepts of light quality, ecology and sustainability**, in turn creating a common platform for the various NGO's, associations for environmental protection, energy saving, neighbourhood safety etc to discuss their goals and concerns. Concepts like **light pollution, adverse effects to Flora & Fauna** can now be easily discussed alongside issues like light quality, energy and cost savings.

Such a platform will ensure that public lighting provides the **right light quality, for the right function, for the right user, at the right time and in the quantity and duration**.

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

The manual provides an outline connecting dynamic lighting concepts, human /social needs and urban design and it is created in such a way as to **allow an easy adaptability to various regions and countries.**

The **individual regions and cities can very easily build upon and develop this manual further** to suit their particular requirements.

The manual has been specifically created to **ensure long term usability**, it is designed to be **flexible** and easily **transferable to various regions and territories.** The manual has also been developed **independent of technologies**, allowing the various regions and partners to **adjust the manual** as per availability of technology and know-how.

The 3 over-arching concepts: 1. The lively city - Quality of light 2. The healthy city - Health, Ecology, Pollution. 3. The Sustainable city - Energy efficiency, social sustainability, are **themes that are valid for any region or country** and are **very simple to understand and interpret.**

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

The manual is also designed from the **point of view of activities in different places-** parks, squares, marketplaces, streets etc. This further enhances the advantage of the **manual to be used in various locations** and regions.

This toolbox is envisaged to be used along with the manual on technical solutions and strategies for dynamic light. This will provide a wide range of toolbox 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** that the **chief goal of public lighting** is to ensure the **satisfaction** of the **various user needs**.

It is imperative to know and understand people's needs, demands, expectations and preferences. Hence it becomes a vital key to a successful public lighting strategy.

However, during the development of the manual it also become **evidently clear** that there is a **varied level of awareness of light quality, user needs and demands**. Very often the topics like quality of light, right light for the right function and right users, were not being discussed as part of public lighting. Similarly, issues like user needs and demand rarely found a mention in public lighting strategies. The awareness of such important issues was also found to vary, with certain regions and municipalities showing high level of awareness for these important issues and some municipalities and regions having very low awareness for the same.

User needs-based thinking and planning is very new concept for the municipalities.

Other **interesting observation** made was regarding the **focus on benefits**. Various regions were focusing on different benefits from dynamic lighting. For many, **energy saving, and cost reduction** were the main aims, while others were looking at **reducing light pollution**. But the encouraging fact was that through this manual, the regions were able to understand that local citizens, users and stakeholders are at the **centre of these benefits**. All these **benefits can truly be realized** only by putting the **user and stakeholders as the focus**.

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** to more **user-centric planning**. In this context the **tools and guides provided in this manual** will help municipalities **establish the priorities and develop suitable dynamic lighting strategies**.

Dynamic lighting controls with the ability to have precise light distributions, different light distributions, on demand, controllable light colour and colour rendering qualities, on demand illuminance and luminance levels, and integration of sensors and other services, can very **easily adapt the public lighting according to the needs and demands**.

Furthermore, the **feedback** obtained from the project partners from the **various regions in Central Europe**, especially for the deliverables D.T1.1.2 - 3 provided for an **invaluable insight into the demands and needs from various regions**. Such a **transnational exchange** led to the development of a **flexible Manual** that can be understood and adapted for various regions.

References to relevant deliverables and web-links

If applicable, pictures or images to be provided as annex

D.T1.1.1: Baseline Inventory- Social needs and quality demands - Inventory of existing experiences and knowledge, D.T1.1.2: Joint monitoring tool, D.T1.1.3: Demand analyses