Innovative policies for improving citizens' health and wellbeing addressing indoor and outdoor lighting

Deliverable D2.4

Protocol for qualitative interviews on health and wellbeing, postlighting intervention

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1 Introduction

Task 2.4 builds on the long term social research, community engagement and co-design work reported in D2.1 ('Establishing ULLs in selected target districts') and the lighting designs reported in D2.2 ('Co-design of innovative outdoor and indoor lighting solutions') for installation in each pilot district. The aim of deliverable 2.4 is to report the preparation of tools to make qualitative assessments of the ways in which the lighting innovations impact on the quality of life and wellbeing of the elderly populations in each area. Above all, using the findings of T2.2 as baseline, T2.4 will address the ways in which

> *diverse stakeholders' experience of urban spaces was altered (including perceptions of safety, environmental quality, visual comfort) and the ways in which their social practices (such as mobility, socializing, access) are changed under the different lighting innovation. These impacts will be tracked over the course of the implementations (with concentrated fieldwork every three months and at the end of the implementation period) through a variety of methods (e.g. interviews based on quota sampling; interviews and focus groups drawn on stakeholder panels established in the ULLs; 'nightwalks' and other group engagements with the target areas; visual/photographic and diary self-documentation; observation and photographic documentation of pilot areas across seasons and times) and considering, when relevant, different ethnic, racial, or cultural minorities groups within the population.*

D2.4 is therefore entirely methodological: it reports on the production of a research strategy and protocol to accomplish T2.4, which will last from the completion of the lighting installations in September 2023 until June 2024. T2.4 will be conducted – like T2.2 – by the city teams (TARTU CITY, AMST, FIU) and Urban Lighting Labs (ULLs) in each target district, overseen by the LSE team. The results of T2.4 will be reported in D2.5 (M42): 'Qualitative monitoring and assessment of the perceived effects of the lighting innovations on quality of life and mental health'.

Assessment of the lighting design innovations will be iterative rather than an end-of-project evaluation at the conclusion of the installation period. The protocols are therefore designed to be responsive and experimental. The designs and technologies installed allow for experimentation with several lighting parameters, above all dimming schedules and colour temperature. This allows T2.4 to continue in the responsive co-design mode established in T2.2, ensuring that the lighting installations are used to explore local stakeholder demands, concerns and experiences of public space as it is altered. As a result - as per the original annex – 'Protocols for each method ... will be coordinated across the three pilot districts *at appropriate levels of standardization*.' (italics added) As stressed throughout, the research in T2.4 – as throughout WP2 - is ethnographically-oriented qualitative research and community engagement. It is therefore responsive and flexible. A protocol in this case provides starting points and guidelines rather than a standardized script to be inflexibly implemented.

Section 2 offers more detail on the activities involved in development of the protocols. Section 3 details the research strategy and protocols themselves. Section 4 offers some provisos.

2 Description of Activities

This section details the activities and processes by which the research strategy that is reported in this deliverable was produced. The actual protocols are reported in the following section.

- The studies of the lighting interventions in the three target cities are to be conducted in relation to the qualitative social research conducted in T2.2 over the previous year. Protocols were therefore designed on the basis of analysis of fieldwork and community engagement. This was conducted on the basis of close work between the LSE team and our city-based researchers (AMST, FIU, TARTU CITY). In addition

meetings between the LSE team and the three researchers were held to gather specific suggestions for protocols and to ensure that the strategies adopted made sense in all three cities.

- This process resulted in the adoption of a thematic analytical approach, detailed below, that would allow a compromise between standardization across the cities and location-specific research. The choice and definition of themes was trialed in fieldwork, data analysis and in discussion between researchers and the LSE team.
- During and after the detailed design phase for the design interventions (D2.2), technical discussions between LSE, NERI, ISMMS and the city beneficiaries (AMST, TARTU CITY, COBO/FIU) continued to connect intervention design closely to planning for T2.4. These particularly focused on specifications for dimming control, tunable white, mobile-phone based control application and gateway to city control systems. These were to ensure the maximum ability to experiment with lighting parameters.

3 Results

The research strategy is designed at two interrelated levels:

1. **Global settings:** Two three-month periods (Oct-Dec 2023; Feb-April 2024) during which the research teams will 1. experiment with dimming and colour temperature settings; and 2. relate settings to seasonal differences in the use of the installation sites. These will be monitored through observation, night walks with a panel of informants and a questionnaire to be administered on site**.**
2. **Workshop activities:** Three two-week periods of intensive research activity (Oct 2023, Jan 2024, April 2024), focused on holding workshops and group discussions in which participants can experiment with light settings and are actively involved in exploring public space of the installations.

NB: Lighting installation settings can be changed 1. By LSE team or city researchers remotely via a gateway; 2. By a password-protected phone app. The former will be used for global settings; the latter can be used during the workshop activities for real-time manipulation of the installation (password is under LSE control, released to our local researchers; in the case of Bologna, a local resident will be entrusted with the mobile phone app and password so that we can experiment with community control of settings. This is not feasible in the other two target districts, because of relations between ethnic groups, in Amsterdam; and lack of community in Tartu).

Global settings:

Given the unique opportunities offered by having three real-life lighting interventions in three cities, the aim is to use them as a kind of distributed laboratory to gauge their interaction with diverse social worlds and to experiment with manipulable parameters. The metaphor of 'laboratory' and 'experiment' should not suggest a scientific paradigm: rather, in keeping with T2.2, the intention is to maintain a responsive co-design approach that allows close and meaningful connection between lighting installations and diverse social relations amongst the elderly populations.

The challenge in this respect is to simultaneously produce understandings of **both** the relationship between lighting interventions and local conditions **and** of any generalizations that can be made across the three target sites. Both types of understandings may take the form of either specific lighting recommendations, if appropriate (eg, elderly users generally experienced less visual confusion with higher colour temperature settings) or recommendations as to variations that city lighting policy must research and address (eg, colour temperature is widely experienced as impacting visual confusion, but desired temperatures vary by ethnic, class, gender, disability or other differences that need to be investigated in the lighting design process).

The strategy that has been adopted is to launch the lighting installations with **standard** light settings, identical in all three cities. The settings will correspond to conventional levels that might be default settings across a wide range of cities. These initial settings will be decided in September 2023 following completion of the installations and consultations with researchers and city teams. Starting from this common baseline, the team (LSE and city researchers) will analyze both reported and observed reactions to these settings, using the following methods:

- In each city a panel of (approx.) 10 participants will be selected from amongst elderly local residents who are known to be interested and potentially active and involved, on the basis of T2.2 and ULL experience; they should also reflect significant local differences in the elderly population (ethnicity, age and disability ranges, gender, etc). Starting two weeks after changes in the installation settings are made, the researcher in each city will do evening walks with panelists to explore their reactions and suggestions.
- Observations of the behaviour in the installation site from early evening into darkness, recording participants, activities and interactions in the space. Observations to be taken across weekday and weekend periods and in different weathers.
- Short onsite interviews with passersby.
- Administration of questionnaire devised by ISMMS. This was administered in the three cities prior to the new installations and therefore allows some comparison. It covers issues of visual confusion and wayfinding, glare, atmosphere and so on (see appendix).
- Finally this new material will be analyzed within the wider body of WP2 material, and in particular within the six themes framework (see below). On this basis the team (LSE, together with AMST, FIU/COBO, TARTU CITY) will decide on issues to be further explored and addressed through changed settings.

Each iteration will involve the same methods and analysis, with a minimum of two iterations between intensive research periods. The October and January research intensives will also generate ideas for the installation settings in their immediate aftermath.

Over the course of the experiments with global settings, the aims are to

- Explore how the lighting, and different experimental settings of the two key parameters (colour temperature and brightness levels/dimming), relate to local needs and lifestyle of the elderly population;
- How changing lighting parameters in relation to local needs and discussions results in divergence or convergence between the three cities.

Within these processes we are also concerned the kinds of conversations and activities that produce more involvement and control of local communities over the lighting of their neighbourhoods; this is a key to understanding how city lighting policies can be more transparently connected to citizens.

Workshop activities:

The three two-week intensive periods of research are intended to create more public and interactive activities, involving a wider range of participants. The exact numbers of workshops and numbers and composition of stakeholders involved will be set in accord with the tables on pages 38 and 40 of the DoA part B: the aim is to involve sufficient numbers to significantly represent the key demographic variables identified in the previous year of research. It is known from over a year of fieldwork that these workshop activities will be more or less effective and more or less necessary in different cities, and may play different roles in each. The most consistent elements of this level of research will be:

- Use of the mobile app to make on the spot, real time changes in light levels and colour temperature.
- Use of public events in the installation sites to involve and educate a wider public in lighting and public space.

October workshops:

- Focus on securing public awareness and interest in the installations through launch events and open workshops.
- Nightwalks for invited participants to explain and discuss the installations.
- Workshops of 5-10 people that explore dimming and colour temperature, and help people articulate responses to lighting and atmosphere.

January workshops:

- 3-4 workshops plus panelists assembled to 1. Assess awareness and experience of lighting settings during previous three months; and 2. Replicate and experiment with these using the gateway phone application.
- One public event to discuss future plans for the installations.

April workshops:

- End of project workshops to assess and discuss experiences of the lighting
- Interviews with 20-30 people in each district. Semi-structured interviews with participants representing key demographics for each city. Interviews be as far as possible conducted in the installation sites, and will focus on assessing participants' experience of the sites in terms of the six analytical themes, allowing material to be drawn into the same analytical frame as all previous material from T2.2 and T2.4, and allowing incorporation into one comparative analytical framework for all three cities.

Thematic research and analysis guidelines

The thematic approach for WP2 has already been reported in D2.2 but is repeated here as integral to the current phase of research design.

The approach is a common ethnographic strategy of identifying a limited number of themes that emerge, unprompted, as key concerns across fieldwork sites concerning how people feel and live within the urban space. The criterion is that each of these themes would be recognized as important by most informants (normally without any prompting) but might produce entirely different responses in each target area or demographic within target areas. The aim is to maximize identification of both similarities and differences to leverage the comparative research and analysis structure of the project.

For example, while 'active ageing' and maintaining 'activity' is an identifiable and critical issue in all three cities, and within different ethnic groups, and is recognized as crucial to how state and professional bodies engage with ageing, there are radical differences in what counts as 'activity' or 'being active', how active life is defined, what kinds of activities are valued and so on. In general, 'being active' in Bologna is largely defined by older residents as continued participation in informal social networks, such as socializing in the public square; in Amsterdam, an active white elder normatively participates in organized activity clubs or civic volunteering while ethnic minorities tend to see activity as located in family and immediate community; in Tartu, an active elder is one who can continue to be independent, self-reliant and able to continue non-social hobbies and outdoor activities without a normative element of social participation. These differences in the meaning of 'being active' directly connect to the ways in which urban design including lighting impact elderly populations by supporting or impeding locally normative understandings of active ageing. This analysis, as it emerged, underpinned the lighting design in D2.3 and will continue to underpin the ways in which the lighting installations are used to experiment in T2.4. For example, at the broadest level, our lighting design in Bologna has been strongly focused on supporting informal socializing, inter-generational mixing and valued atmospheres; in Amsterdam, the aim was to mix functional improvement with some provision of meeting

points and social atmosphere; in Tartu the focus has been on improving largely individual use of the public space for solitary pursuits such as walking.

The aim of fieldwork is therefore to leverage the limited number of such themes that have emerged from T2.2 which are both common to the cities yet make visible the key differences between them, and which can be related to urban lighting design and city policy and standards. To a very large extent, we expect that the conclusions to emerge are less likely to be specifications of lighting parameter levels that are best across the board and much more likely to take the form of key issues that cities need to research locally in order to adapt lighting to the needs and understandings of their own citizens.

These themes will guide questions in interviews and workshops, the focuses of observational work, and experimentation with global settings:

Being active/active ageing: What is defined and valued as 'activity'? How do people connect ageing, well-being and activity?

- Interview questions and discussions: activities related to installation space and ways in which lighting can support those activities (including installation space as en route to activities). Observation of how lighting supports active participation and access.
- Experimentation: focus on visual clarity/confusion, wayfinding, safety. Atmosphere and welcoming activity and participation.

Public space: What concepts and values make up the experience of public space?

- Interview and discussion questions: role of lighting in producing normative public space and understandings of role and value of public space.
- Experimentation: lighting levels that produce atmosphere and other visual properties that support normative sense of public space and its values and functions.

Social connection: What kinds of social contact are normative at different stages/conditions of ageing? What are the drivers and costs of social isolation? What supports or limits social participation?

- Interview and discussion questions: exploration of density and forms of social connection desired at different stages of ageing with focus on the ways in which public space and lighting support or impede connection.
- Experimentation: lighting arrangements that support or impede connection, with particular emphasis on producing social zones and atmospheres.

Social value: What social status and value do older people have relative to other generations? What does social value depend on? What cultural assumptions about the elderly impact their conditions?

- Interview and discussion questions: explorations of relative value of the elderly as experienced or mediated through public participation and visibility.
- Experimentation: how lighting and urban design parameters value elderly needs and experiences relative to other users and function of the installation spaces and surrounds.

Care and citizenship: What are the sources and qualities of care and carers (family, neighbourhood, state, market)?

- Interview and discussion questions: ways in which public space provision and design reflect support for the elderly and their communities.

- Experimentation: ways in which lighting parameters reflect concern and care for the elderly (including extent to which failure to attend to specific needs – eg, safe pavements, crossings, visual confustion, etc – are understood as failures of municipal care and as secondary citizenship).

Sharing space – identity and ownership: How does ageing in this place connect to narratives and histories of belonging, identity, ethnicity, safety and security? Who makes up this neighbourhood?

- Interview and discussion questions: explore the sense of ownership and belonging of elderly in target space in relation to lighting installations; explore issues of co-presence and relationships to other users.
- Experimentation: change lighting parameters in relation to facial recognition, meaningful atmospheres, managing co-presence.

4 Deviations

This deliverable was affected by some deviations due to changes occurred in other tasks, that led to an amendment of the Grant agreement. These have impacted this deliverable, with ongoing implications for carrying out the research protocol over the coming year leading to D2.5:

Because of delays in the installations (included in the last amendment), this phase of research cannot start until October 2023. The three installations will not be operational until September; hours of darkness until October do not allow for participation of elderly local residents. The periods of research will include autumn, winter and spring but not summer. In fact, summer lighting has little relevance for the elderly in our target districts as has been established by our prior research. .

5 Conclusions

As this deliverable reports methodological preparations for the coming year rather than the findings of completed research, there are no conclusions to be drawn at this point.

Appendix 1

Icahn School of Medicine at Mount Sinai (ISMMS) prepared a short questionnaire for administration at each of the target installation sites. The questionnaire allows LSE to ask simple questions to track residents' experiences of the sites. The questionnaire has been administered prior to the new installations, for comparison purposes: it will be used again at launch and at the end of the research period. The questionnaire was administered based on a quota sampling approach to capture residents of a range of ages, with a distribution of sex.

Target site lighting questionnaire

We are conducting a survey as part of a European Horizon 2020 project, *ENLIGHTENme*. The project aims to understand how better lighting can improve the lives of older people. We will be installing new public lighting in this area in June, for one year. We'd like to ask you some questions about how you think the lighting in this area feels now, before we change it.

The questionnaire is entirely anonymous and no one will be able to identify you from this form or your answers.
Age (circle one): **18-29 30-39 40-49 50-59 60-69 70-79 80+**
Date: _____ Time of Day/Night: _____

Have you had cataract surgery? Yes No

1. I think the lighting here is too DIM.
   Strongly Agree *Agree* *Neutral* *Disagree* *Strongly Disagree*
2. The lighting here creates DARK PATCHES that make it difficult for me to see hazards.
   Strongly Agree *Agree* *Neutral* *Disagree* *Strongly Disagree*
3. The lighting here causes uncomfortable GLARE (is confusing or uncomfortably bright).
   Strongly Agree *Agree* *Neutral* *Disagree* *Strongly Disagree*
4. I have ENOUGH LIGHT here to find items I dropped on the ground.
   Strongly Agree *Agree* *Neutral* *Disagree* *Strongly Disagree*
5. This lighting helps me to SEE FACES of people approaching me.
   Strongly Agree *Agree* *Neutral* *Disagree* *Strongly Disagree*
6. I like what COLORED ITEMS look like under these lights.
   Strongly Agree *Agree* *Neutral* *Disagree* *Strongly Disagree*
7. I would prefer the light here to be….
   Warmer *Cooler* *Just as it is now* *I don't care*
8. Overall, compared to other outdoor areas/bridges in (Tartu/Bologna/Amsterdam), the light here is...
   Better *About the same* *Worse*

Please share any comments about the lighting in this space:

Thank you for participating in this research!