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SENSORY FOR DEMENTIA, LIGHT AND SOUND IN LONG TERM CARE ENVIRONMENT

ABSTRACT

The purpose of this study is to gain an understanding of the sensory implications regarding light and sound in combinations with common disturbances pertaining to dementia patients such as anxiety, sleep deprivation, depression and agitation. People with dementia show behavioural change in respect to their environment. Noise and light are the two most obvious sources of sensory stimulation in the environment, and when ignored or mismanaged, they can become important sources of under or over stimulation for the person with dementia (Dewing, 2009).

BACKGROUND

People with dementia experience change in sensitivity in regards to their environment and have difficulty understanding their sensorial experiences. Based on Hayne & Fleming research; by the time severe or late-stage dementia is reached most people with dementia are already in residential care (2014). Light and sound are the most sensorial stimulation in any environment and controlling and managing the level of light and sound can be challenging for caregivers and staff in long/short term care facilities. These physical and social environments become home to these patients and are all they relate with day to day. If not designed properly;



- The hallways can seem like confines that they wander through in confusion,
- Dining rooms can be loud and confusing, and
- Bedrooms can feel generic and distracting, causing poor sleep.

People with dementia have impaired function, however as Rosemary Bakker says, "It is commonly assumed that the problem is the cognitive decline rather than interaction between patient and the environment" (Radvin & Katzen, 2014).

Sensory elements such as light and sound are two major environmental factors within dementia care units that are frequently left untapped. For example, in most dementia care units, fluorescent lighting from the ceiling casts a strong white light, in pools, on the floor, creating spotlights and shadows, confusing the patients, which can promote anxiety; this can be irritating for staff and most of all, to the fragile patients. The one constant lux level cast throughout the day distorts the

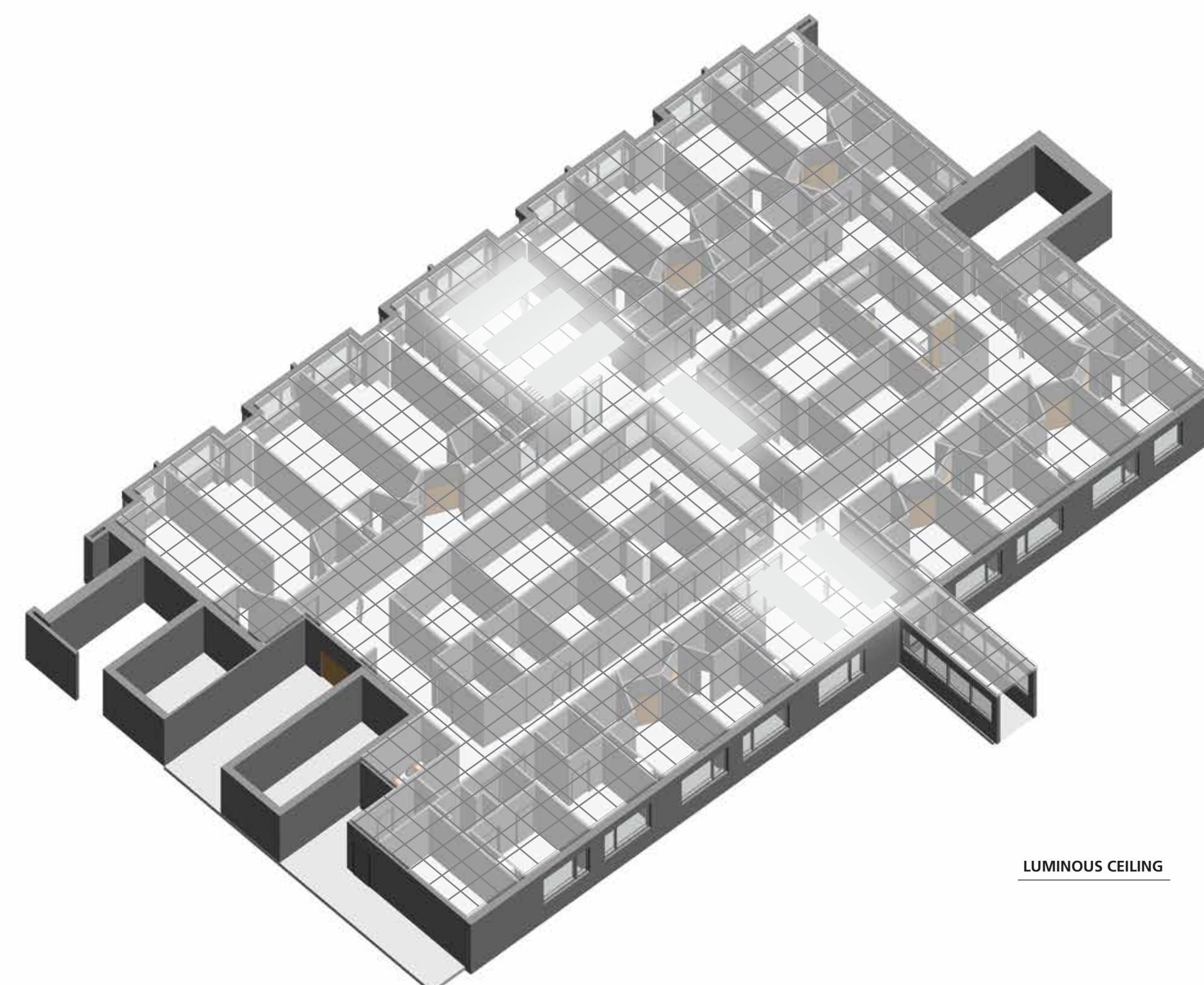
patient's circadian rhythm while the constant hum of the mechanical systems and the jarring alarms can also affect the patient. These distortions correlate back to the psychological effect that lighting can have on a person, in regards to depression, sleeping disorders, agitation, confusion and restlessness (Figuerora, Plitnick, Lok, et al., 2014; Ellis, Gonzalez & McEachron, 2013).

METHODS & APPROACH

- A mini-scoping review of existing literature was conducted to determine the impact of light and sound in dementia-care facilities.
- Observation of effect of light and sound on residence of Geriatric Psychiatric unit at Toronto Rehab Institute (TRI) has been done during January to April 2017.

OUTCOMES

- Controlling light exposure inside resident's room and imitating skylights in the corridors and public spaces can facilitate meaningful experience for the residents, while keeping them occupied and engaged.
- Using uniform glare-free LED light, eliminates shadows and helps navigate through space.
- Considering the control of sound transmission between certain areas, for example patient rooms and mechanical or high traffic spaces, will improve patient sleep patterns.
- Using sounds that act as sensory, help lower the agitation in people with dementia.



RECOMMENDATION

- An artificial circadian rhythm has proved to be an effective means of therapy. This concept can be implemented with the use of LED lights that fluctuate over a 24-hours cycle, mimicking the gradual change of sunlight from sunrise through night time.
- Torrington & Tregenza recommended the implementation of scenes from nature to help people feel connected to the outside and create a pleasant and relaxing atmosphere, for both patient and staff (2016). The reduction of a hectic atmosphere also lends to faster recovery as it helps to calm patients (OneSpace luminous ceiling).
- Control of sound transmission between certain areas such as patient rooms and mechanical and high traffic spaces, will improve patient sleep pattern (Design and Dementia, 2011).
- Using soundproof HVAC equipment throughout the unit will help reduce the sound attenuation measure.
- Sound masking reduces the dynamic range and sound vibration, making the space feels quieter. It also minimizing the differences in the sound level and quality across the space.



CONCLUSIONS

Sufferers of dementia deal with issues such as depression, agitation, sleeping disorder, and malnutrition on a regular basis, with many of their surrounding environmental factors acting as a contributor to either the digression or the improvement of the symptoms. If conducted properly, sensory aspects within a hospital ward or long-term care facility, such as light and sound can be crucial in the treatment for dementia patients. This seemingly slight aspects have major effects on the patients as they are factors that are employed throughout the units on a constant basis. Thus, creating design intervention and a set of guidelines for lighting and sound can have a major effect on the patients and staff.

REFERENCES

- Design and dementia. (2011, July). Retrieved March 12, 2017, from <http://brainxchange.ca/Public/Resource-Centre-Topics-A-to-Z/Design-and-dementia.aspx>
- Dewing, J. (2009). Caring for people with dementia: noise and light. *Nursing Older People*, 21(5), 34-38. doi:10.7748/nop2009.06.21.5.34.c7102
- Ellis, E.V., Gonzalez, E.W., & McEachron, D. L. (2013). Chronobiology engineering indoor lighting to enhance facilities for aging and Alzheimer's disorder. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/17508995.2013.807764>
- Figuerora, Mariana G., Barbara A. Plitnick, Anna Lok, Geoffrey E. Jones, Patricia Higgins, Thomas R. Hornick & Mark S. Rea. (2014). Tailored Lighting Intervention Improves Measures of Sleep, Depression, and Agitation in Persons with Alzheimer's Disease and Related Dementia Living in Long-term Care Facilities. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4168854/>
- Hayne, M. J. & Fleming, R. (2014). Acoustic design guidelines for dementia care facilities. Proceedings of 43rd International Congress on Noise Control Engineering: Internoise 2014 (pp. 1-10). Australia: Australian Acoustical Society.
- OneSpace luminous ceiling. (n.d.). Retrieved November 18, 2017, from <http://www.largeluminoussurfaces.com/onespace>
- Radvin, L. D., & Katzen, H. L. (2014). *Handbook on the neuropsychology of aging and dementia*. New York: Springer (pp.153-166).
- Torrington, J. M., & P. R. Tregenza. (2016). *Lighting for People with Dementia*. Retrieved from <http://journal.sagepub.com/doi/pdf/10.1177/1365782806074484>

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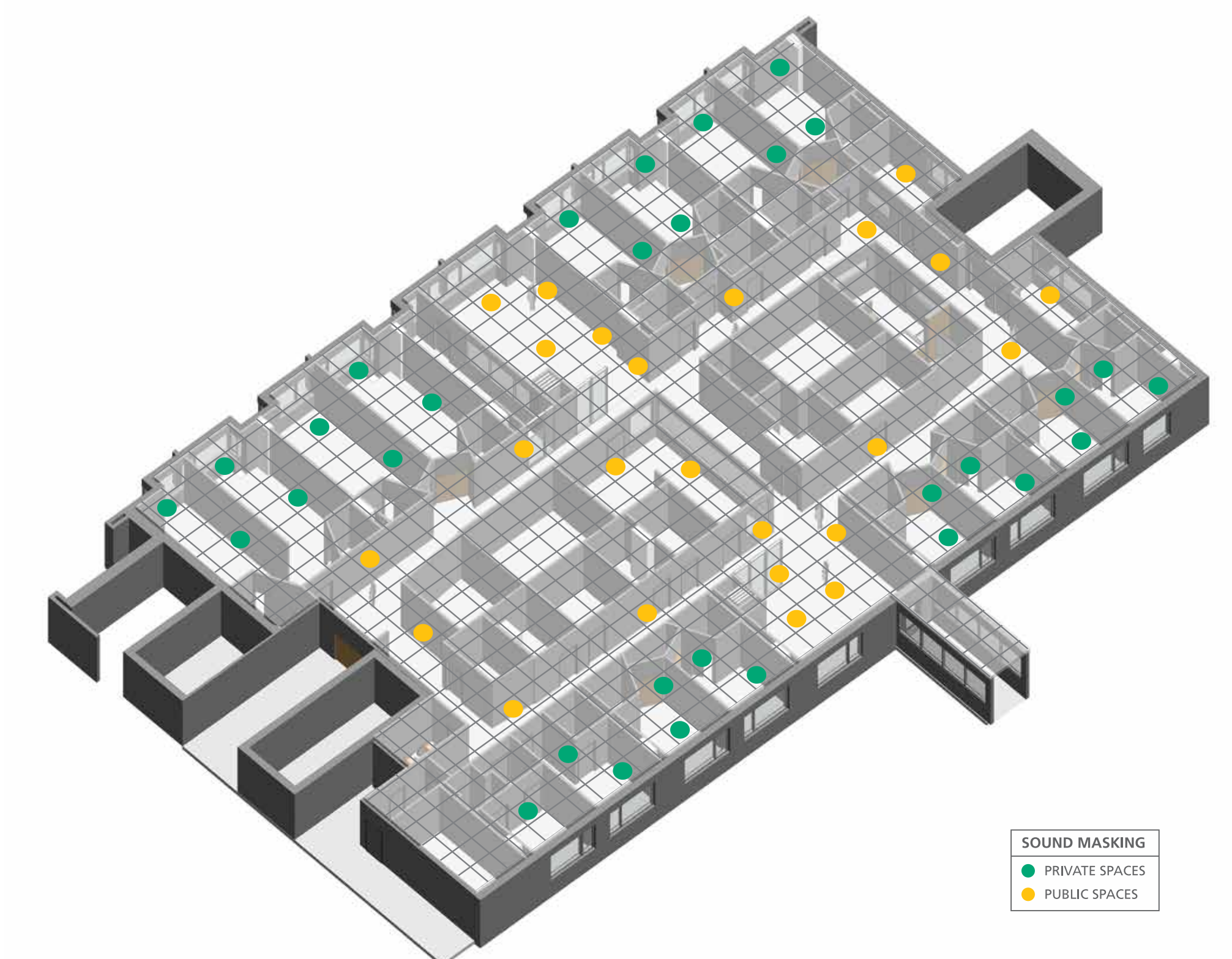
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