

Evaluating The Technology Acceptance Of A Daylight-simulating Lighting And Sensing Solution From Dementia-related Stakeholders



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Environmentally affective
circadian lighting and IoT
solution for healthy ageing

Challenge

Dementia negatively influences the 24-hour body clock leading to **disrupted sleep, low mood, sundowning** and **hormone imbalance**.

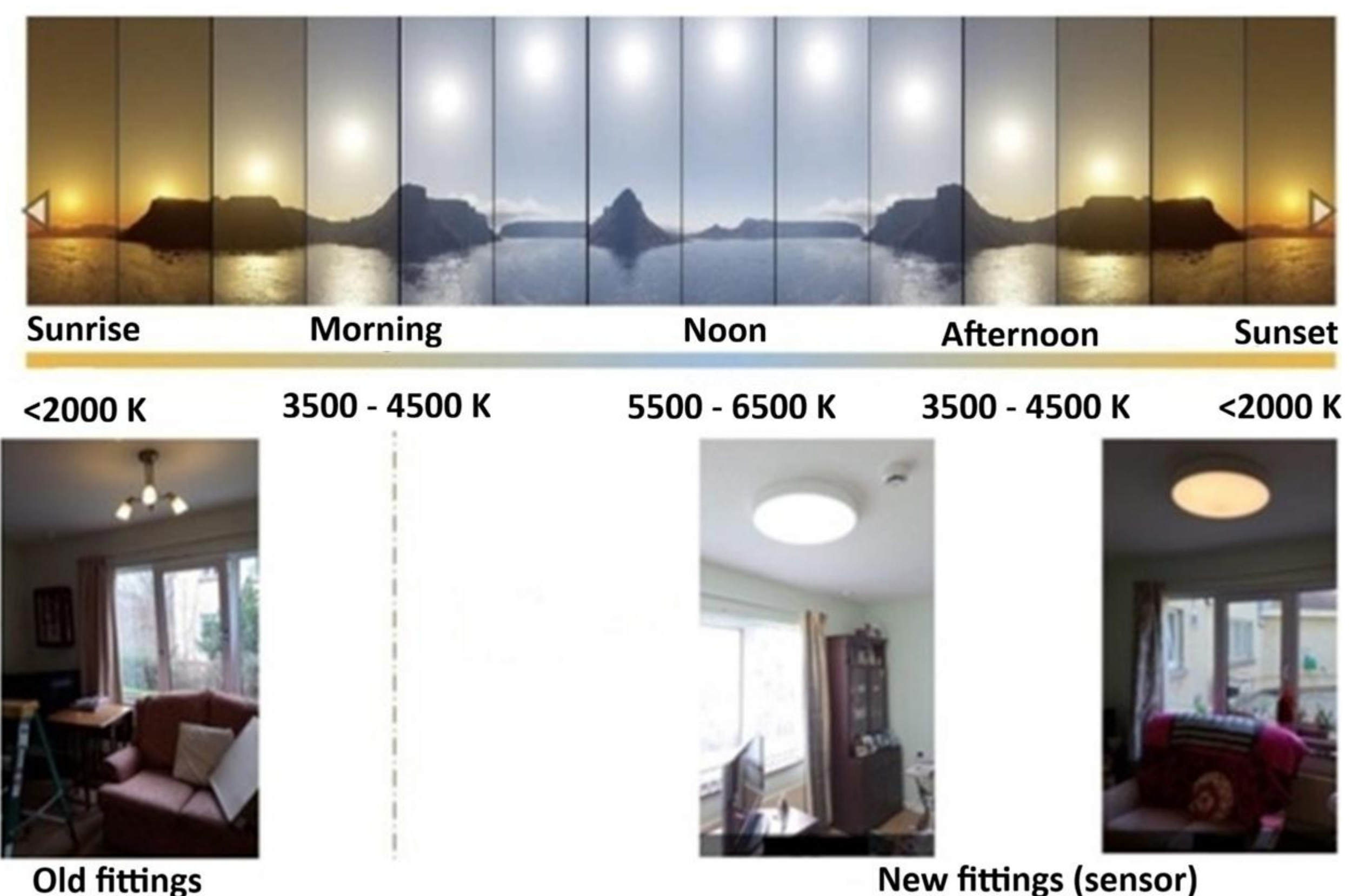
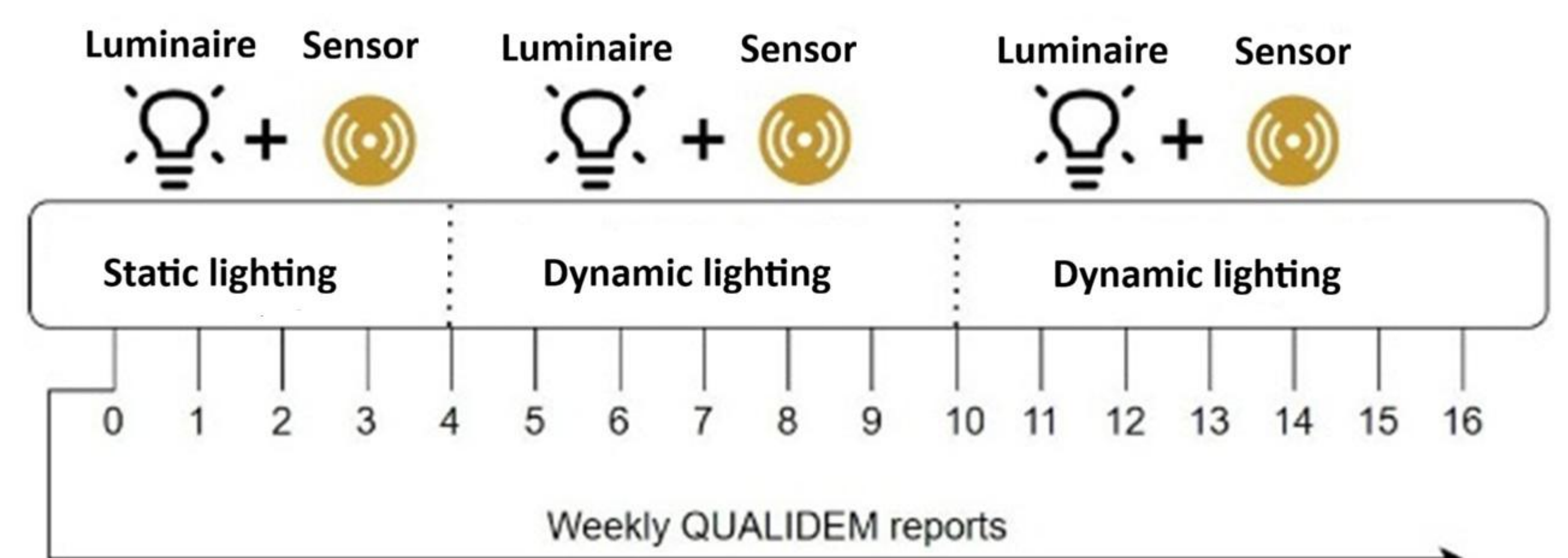
How can we address this?

Daylight is the primary stimulus for activating the circadian rhythm, so we need to harness **its dynamic properties for the indoors**.

How is this implemented?

An **integrated luminaire & sensing device** was developed and tested in a dementia care home with 11 residents. This enabled the monitoring of the response to lighting **so outputs could be tailored for each individual's needs**. The lighting simulates the **dynamic properties of daylight** to align with our **body clock demands**.

The radar **sensor monitors circadian-related response** to the lighting spectra.



Results

- ☐ Reduction in nightly disturbances
- ☐ Increased median sleep duration
- ☐ Rest-activity patterns better aligned with 24-hour light/dark cycle ($p < .001$)
- ☐ Improvement in positive affect ($p = .03$)
- ☐ Reduction in social isolation ($p = .048$)
- ☐ Improved sense of feeling at home ($p = .047$)
- ☐ No change in agitation

