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Closer to Nature

Interactive Systems for Seniors with Dementia in Long-term Care

MSc. Y. (Yuan) Feng
dr. PDEng. MEng. Jun Hu, dr. Ir. Emilia Barakova,
prof. dr. Matthias Rauterberg

TU/e Technische Universiteit Eindhoven University of Technology

TU/e DESIS Lab
Department of Industrial Design
Eindhoven University of Technology
The Netherlands

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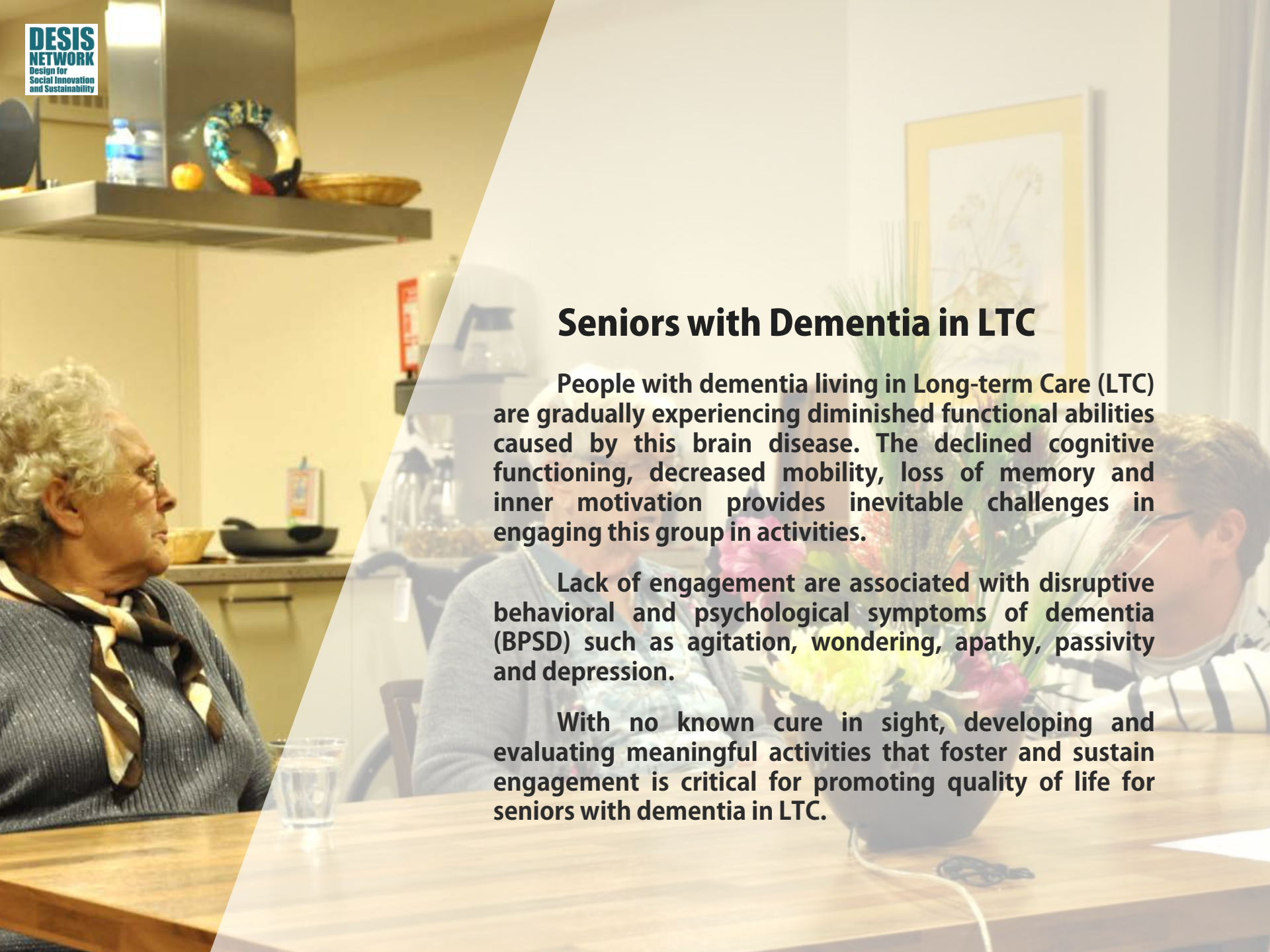

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Seniors with Dementia in LTC

People with dementia living in Long-term Care (LTC) are gradually experiencing diminished functional abilities caused by this brain disease. The declined cognitive functioning, decreased mobility, loss of memory and inner motivation provides inevitable challenges in engaging this group in activities.

Lack of engagement are associated with disruptive behavioral and psychological symptoms of dementia (BPSD) such as agitation, wondering, apathy, passivity and depression.

With no known cure in sight, developing and evaluating meaningful activities that foster and sustain engagement is critical for promoting quality of life for seniors with dementia in LTC.

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Diminished Cognitive Abilities of Dementia

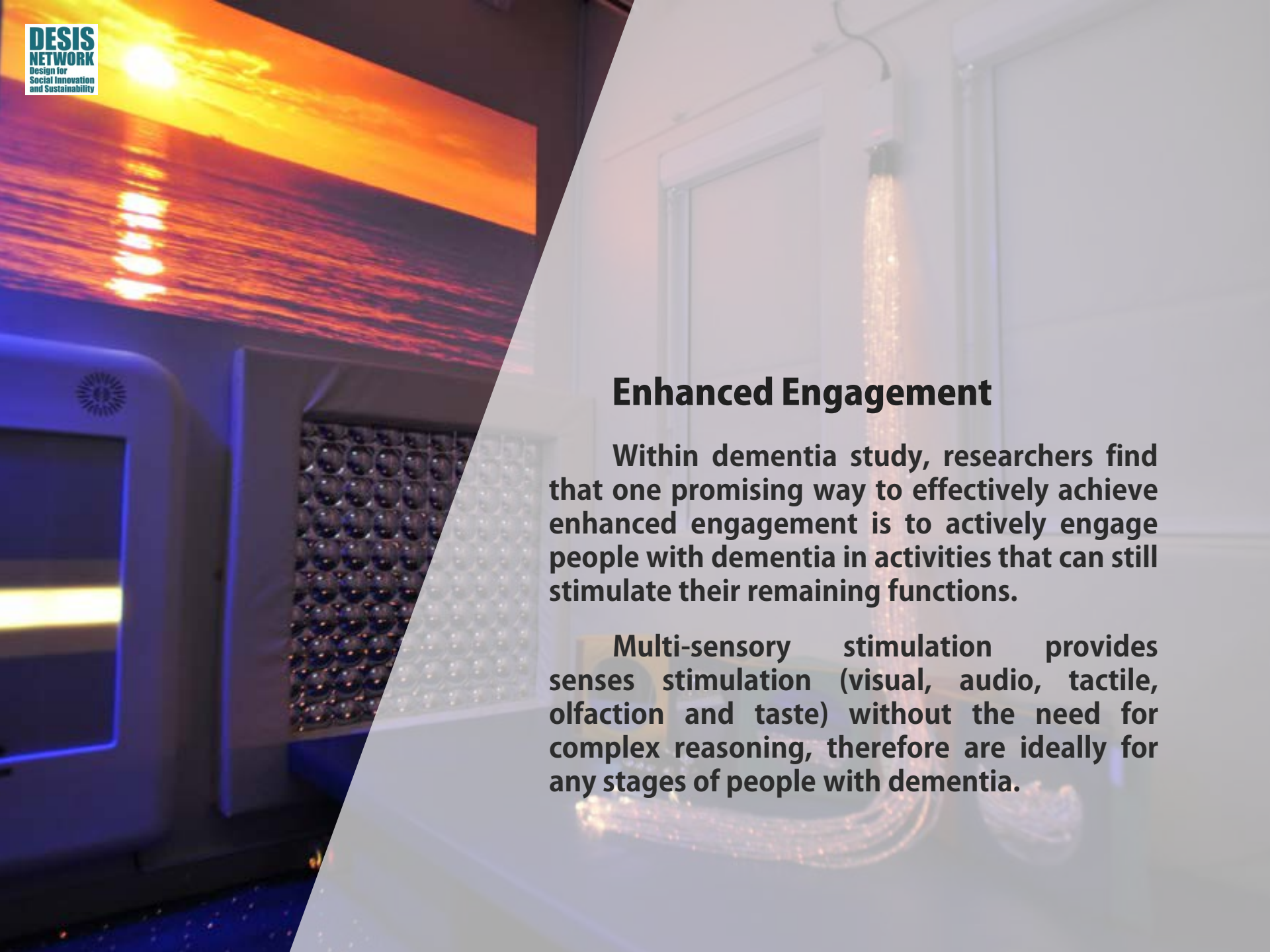
Deteriorated cognitive functions

Inhibited memory

Degenerated language skills

Reduced emotionality

1. James, I.A.: Understanding behaviour in dementia that challenges: A guide to assessment and treatment. Jessica Kingsley Publishers. (2011)



Enhanced Engagement

Within dementia study, researchers find that one promising way to effectively achieve enhanced engagement is to actively engage people with dementia in activities that can still stimulate their remaining functions.

Multi-sensory stimulation provides senses stimulation (visual, audio, tactile, olfaction and taste) without the need for complex reasoning, therefore are ideally for any stages of people with dementia.

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Multi-sensory stimulation

Relaxation

Calm and reduce agitation through gentle light, soothing sound, relaxing smell or touch.

Stimulation

Stimulating users by providing exciting visuals, music, sounds, smells and textures to explore.

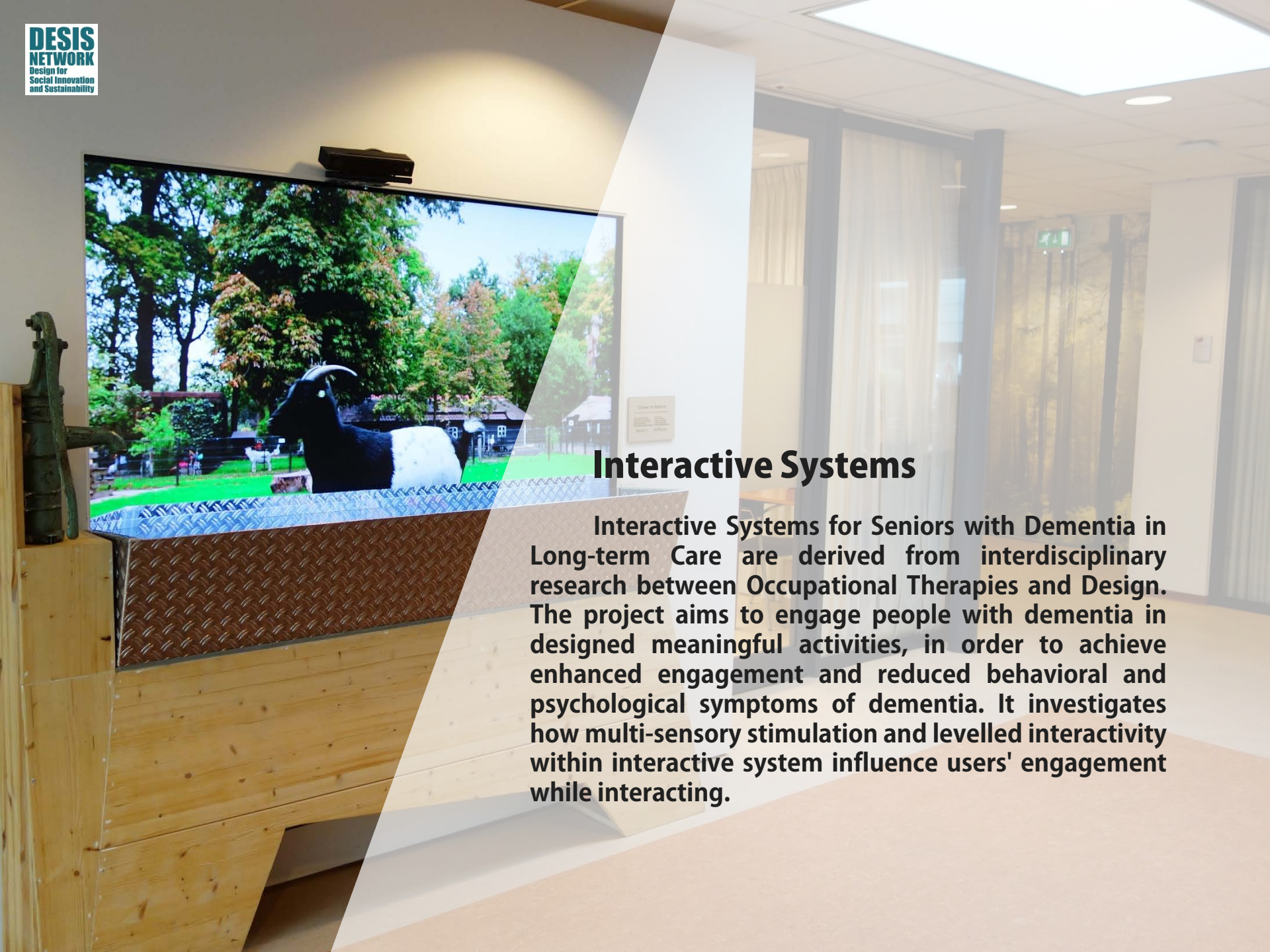
Development

Can be used as a learning and developmental tool for cognitive abilities.

Therapy

Help the users calm down, ease aggressive behaviors, find inner peace.

1. Jakob, A., Collier, L. (2017). Sensory enrichment for people living with dementia: increasing the benefits of multisensory environments in dementia care through design. Design for Health, 1(1), 115-133
2. Cruz, J., Marques, A., Barbosa, A., Figueiredo, D., & Sousa, L. X. (2013). Making sense (s) in dementia: a multisensory and motor-based group activity program. American Journal of Alzheimer's Disease & Other Dementias, 28(2), 137-146



Interactive Systems

Interactive Systems for Seniors with Dementia in Long-term Care are derived from interdisciplinary research between Occupational Therapies and Design. The project aims to engage people with dementia in designed meaningful activities, in order to achieve enhanced engagement and reduced behavioral and psychological symptoms of dementia. It investigates how multi-sensory stimulation and levelled interactivity within interactive system influence users' engagement while interacting.

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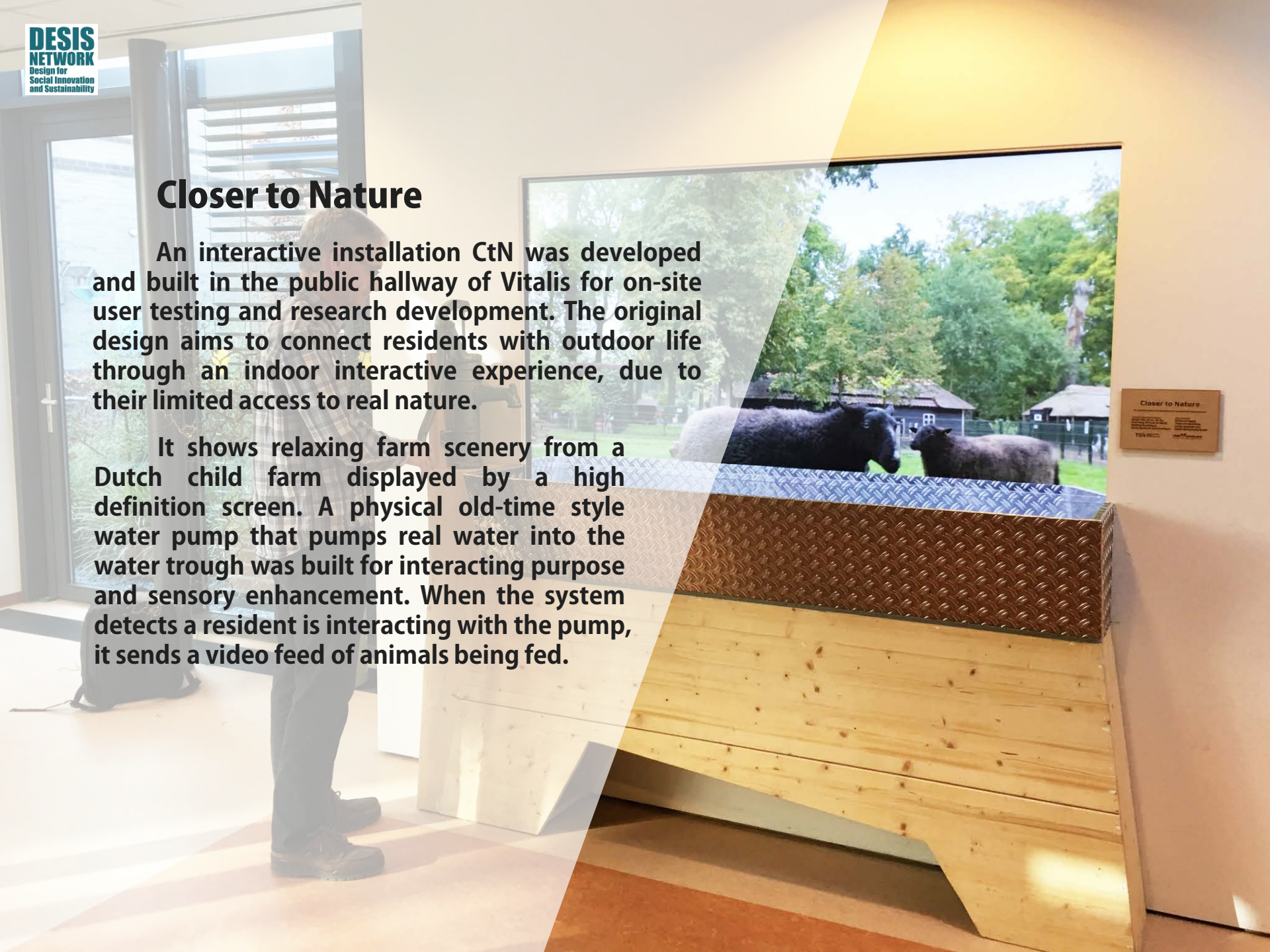
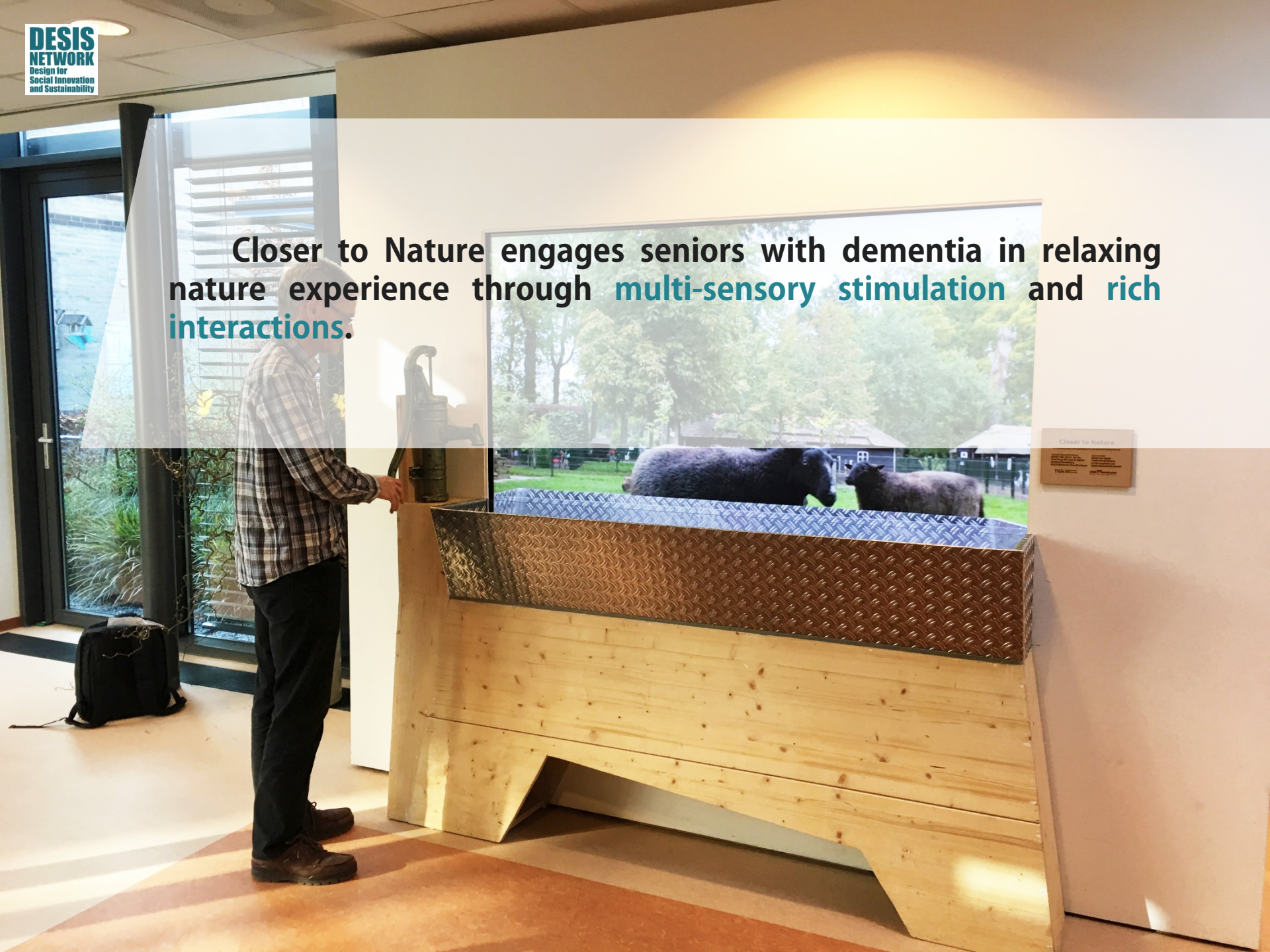
Closer to Nature

An interactive installation CtN was developed and built in the public hallway of Vitalis for on-site user testing and research development. The original design aims to connect residents with outdoor life through an indoor interactive experience, due to their limited access to real nature.

It shows relaxing farm scenery from a Dutch child farm displayed by a high definition screen. A physical old-time style water pump that pumps real water into the water trough was built for interacting purpose and sensory enhancement. When the system detects a resident is interacting with the pump, it sends a video feed of animals being fed.





Closer to Nature engages seniors with dementia in relaxing nature experience through multi-sensory stimulation and rich interactions.

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Desis.id.tue.nl

j.hu@tue.nl

References

Feng, Y., van Reijmersdal, R., Yu, S., Hu, J., Rauterberg, M. and Barakova, E., 2017, Using Observational Engagement Assessment Method VC-IOE for Evaluating an Interactive Table Designed for Seniors with Dementia. In *International Conference on Smart Health* (pp. 26-37). Springer, Cham.

Feng, Y., van Reijmersdal, R., Yu, S., Rauterberg, M., Hu, J. and Barakova, E., 2017. Dynamorph: montessori inspired design for seniors with dementia living in long-term care facilities. In 9th International Conference on Intelligent Technologies for Interactive Entertainment. Springer.

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