

Adaptive Relaxation Space

An ambient experience concept

Imagine a calming space that adapts to whoever's inside it, breathes as they do, and changes shape and sound to fit their needs. This unique prototype from Philips and a co-creative team of experts and academics aims to reduce work-related stress by altering people's behavior naturally to encourage mindfulness. By walking around the space, a person intuitively chooses their own personalized experience. The concept is based on in-depth studies that show how reactive environments can help promote calmness. As well as in workplaces, this concept has potential for use in airports, hospitals, mental healthcare and other care facilities.

Stressful times

Stress research is a relatively new field¹, and yet the effect it has on our lives can be immense. The cost both emotionally and financially on individuals, the businesses they work for, and the healthcare systems that care for them is huge. At least half of all lost working days are related to stress², which at its worst can cause burnout or coronary heart disease. Yet many employers report not knowing how to help the people who work for them.

Designers at Philips have been exploring stress and the effect it can have on our well-being and work for some time. A selection of projects around how a young workforce and certain professions experience stress led to concepts like the Rationalizer, a bracelet for online investors developed with Dutch bank ABN AMRO. It detects if the wearer's emotions are too charged to make rational decisions.



The Rationalizer mirrors emotions to reflect stress levels.

New project

So when the Dutch government put out a call to the Creative Industry Scientific Programme (CRISP) to develop a pioneer research program, Philips decided to focus on the development of Product Service Systems. Choosing the topic of work-related stress, designers from Philips teamed up with Delft University of Technology (TU Delft) and Eindhoven University of Technology (TU/e) to put together a successful pitch for an exploratory co-creation project.

“Stress is both a taboo subject and a vague field for which there aren't many clear solutions,” explains Luc Geurts, Creative Director and project lead for Philips. “We wanted to use design to change people's behavior to help them become more aware of stress and how to deal with it.”

Co-creative team

This CRISP-funded project achieved a great collaboration between the different scientific, public sector and industrial partners. In addition to the technology universities of Delft and Eindhoven, Philips also partnered with the Design Academy Eindhoven. To gather essential insights from the field, they also worked closely with a group of experts in mental health and well-being, as well as people who had experienced burnout through stress at work.

“The aim was to create a perfect blend of skills and synergies to combine long-term knowledge building

with short bursts of inspiration,” says Geert Christiaansen, Senior Director at Philips Design Innovation, who helped build the project team.

As part of the pitch, the team decided to explore not only the new innovation, but also the design process they needed to get there. They started from the principle that the designer in such a project – which involves a huge and hugely diverse group of people – should not have total control over the team. Nor should the team be so flexible as to lose focus.

They chose an approach that let each person in the group alternate in taking center stage in the different phases of the project. “No one had set roles, which was part of the beauty of our collaboration,” explains Luc. Instead, the designers would act as guides throughout the process.

Expert sessions

To kick off the project itself, the team invited a group of stress coaches to a workshop, along with a colleague who had experienced burnout from stress. Together they discussed how the body is affected when the brain becomes overstressed and cannot make more decisions without making the situation worse.

“It was a real eye-opener to discover how impaired we are when we're stressed and how coping methods like paced breathing are very effective in preventing stress,” says Helle Ullerup, Design Consultant at Philips.

They also pinpointed which professions are more prone to work-related stress and burnout. According to the experts, caregivers like teachers and healthcare workers tend to take on too much and find themselves unable to say no.

Work-related stress

Work-related stress is experienced when the demands of the work environment exceed the employee's ability to cope with or control them.³

Burnout

Physical or mental collapse caused by overwork.⁴

Mindfulness

A mental state achieved by focusing one's awareness on the present moment, while calmly acknowledging and accepting one's feelings, thoughts, and bodily sensations, used as a therapeutic technique.⁵

Paced breathing

A relaxation method that involves the practice of slow, deep breathing when one is faced with anxiety-provoking stimuli.⁶



Workshops where concepts were co-created with project partners and students



Next, the experts taught them methods of coping. They explained how linking an action, such as a specific hand movement, to a calming moment in time can help train a person to deal with or prevent stress in future situations by using the same motion. They also introduced the team to paced breathing, which slows the heart and stills the mind. While making lots of conscious decisions during stressful periods can make things worse, some control over the situation can calm matters down.

Shadowing and contextual research

Armed with these insights, the team decided to study healthcare workers more closely. To understand the people they would be designing for, they needed to see them in context – at work. For this, they chose employees of the psychiatric healthcare institution GGzE in Eindhoven, who often care for clients with severe mental health problems.

The research team shadowed eight people, following them throughout the day as they led therapy sessions, traveled to offsite visits, and tried to relax at lunch or on breaks. To gather as many insights as possible, the researchers gave the employees three other tasks. One, set up in the canteen, asked them to put sticks in jars to answer questions like “When did you have your last break?”

The second was a diary the team asked them to keep about their feelings and thoughts over the test period.

And the third asked them to trace their breathing pattern on a piece of paper – the idea here was to encourage them to be more conscious of their breathing and how it made them feel.

“What we discovered is how little attention caregivers pay to how they’re feeling,” says Evelien van de Garde-Perik from the Eindhoven University of Technology, and the project’s lead researcher. “So we thought right then that we wouldn’t necessarily need a stress solution, so much as a simply a means of holding up a mirror to people’s emotions.”

50 concepts

Armed with the research, the team then challenged design students from the Design Academy Eindhoven, TU Delft and TU/e to devise products or services that could help people to cope with work-related stress.

They asked the students to follow the principles of the Nature Inspired Design consortium, of which Philips is a member. As the name suggests, the collaboration aims to create new solutions inspired by nature and biomimicry.

The results were encouraging. “The beauty of having so many students was that we ended up with an incredibly rich selection of basic prototypes that our experts could touch and try out,” says Geert. Together with results from co-creation sessions with GGzE employees, around

50 concepts were created. The team presented them at the GGzE facility and then invited the busy experts to drop in and give feedback. To everyone's delight, despite initially saying they could only spare five minutes, many experts were often so intrigued they stayed five times longer.

Three key themes

Together, the team filtered out the weaker ideas and honed the stronger ones into three key themes, all of which started with the principle that by changing a person's perception and giving them some kind of control (much like Philips' earlier Rationalizer concept) you can change their stress levels.

These themes were: **paced breathing**, which explores physical or digital products to help people re-establish a connection between their mind and body; **personal balance**, where devices monitor a person's stress levels then suggest activities to help recharge their emotional battery; and **ambient experience**, in which reactive environments help the person stay more mindful in order to cope with stress.

In their own words: what the different team members thought about the design process

"In the end, the process has two different purposes. The first was what we'd initially planned, which was to collect data about stress. The second was that in doing so, it made our participants reflect on those stress levels and start changing themselves."

Evelien van de Garde-Perik, lead researcher from the Eindhoven University of Technology

"I'd never worked with designers before. What struck me was their open mind. Unlike some other people, they listen and absorb as much as possible without judgment or qualification, then they come back with great new ideas."

Hans van Os, relaxation expert

"I liked exploring how to use design and technology to change people's behavior, which is something that fits well with my line of work."

Spike Ebbing, Project Manager for healthy lifestyle at GGzE

"The collaborative process was at the core of the project. As designers, we thrive on the passion of other people who all contribute to finding the best solutions."

Luc Geurts, Creative Director, project lead for Philips

The prototype

With three clear themes in hand, the core team of researchers, designers and two key students spent a few fast-paced days filtering their ideas into one. They decided to try to combine elements of all three themes in their solution, but took the main structure of the solution from ambient experience.

They were particularly mindful of how the solution would fit into a busy office or hospital. "We wanted to give people a new space they could go to that took them away from their impersonal work environment into a more personal, comfy area with natural elements and bio feedback," explains Federico Trevia, product design student at Delft who created the final prototype.

The team quickly mocked up such a space, using basic furniture, a Philips LivingColors lamp and a mobile phone app with guided meditation. Then they asked Philips colleagues to visit the space and give their feedback. Despite its rough-and-ready appearance, people already seemed impressed with the idea.

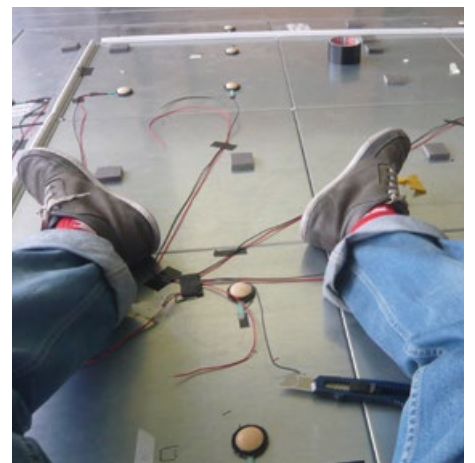
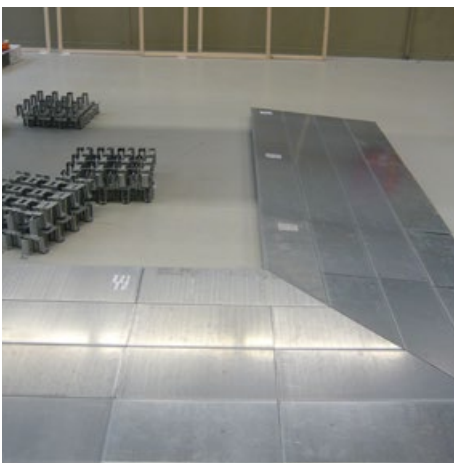
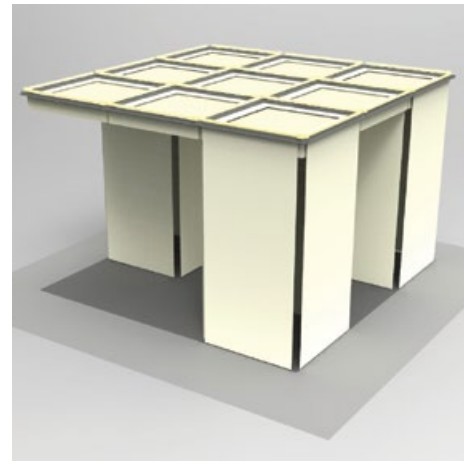
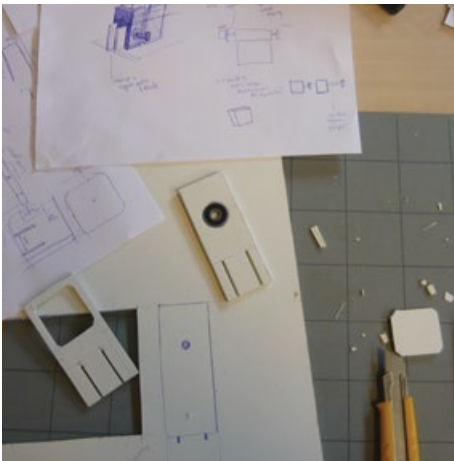
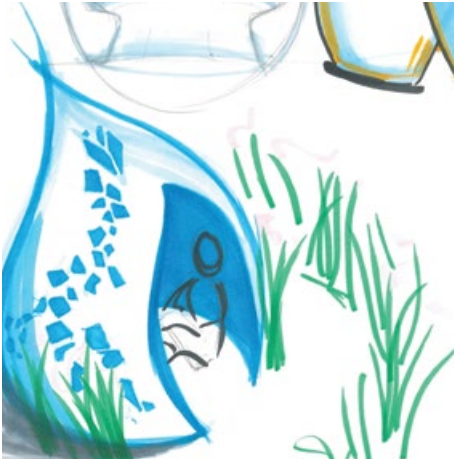
Knowing they were on to something, Federico and Adam Henriksson, interaction design intern at Philips, interviewed Philips employees about what other features they might like in the space and how they might use it. "They told us that being in an open office means that nobody has their own space any more, that everybody is on top of one another. So we came up with the idea of a space that adapts to the presence of people," explains Adam.

The two designers set about building an experience prototype, bearing in mind the key findings. The space had to be an interactive environment that mimicked nature and the experience this delivers, in order to stimulate mindfulness. And it had to offer the user control over their surroundings, but not too many conscious choices so as to increase stress levels.

How the adaptive relaxation space works

The relaxation space they created is designed to offer the user intuitive control over their surroundings in order to alleviate stress and promote mindfulness. When a person walks into the space, sensors under the soft flooring make the room light up then trigger partitions that slowly enclose different areas, or lift up to make larger spaces.

As the person explores, they intuitively create their own individual space. The sensors also control an ambient soundscape from four speakers around the area, which becomes complex or simple in tone depending on where the person stands. The soundscape is also generative, meaning that nothing is pre-recorded; the sounds are created by the person or people in the room at the time.



Rapid prototyping - from sketch to final experience in several iterations



To help users pace their breathing, the designers installed dynamic Philips Hue lights in the ceiling creating soothing colors that glow slowly brighter then dimmer. Although the lights are initially triggered by a person walking over the sensors, they do not adapt as they walk around. Instead, they follow a fixed preset rhythm of around eight breaths a minute.

The space can be used by one person, but is big enough for four people to use it comfortably. It includes light globes on the floor that follow the same color behavior as the ceiling, and serve as focal points, and relaxation chairs to trigger separate or shared experiences.

Federico, Adam and the design team honed the prototype over three iterations with the help of 23 stress experts and Philips colleagues who visited the space and gave their feedback. One of the ways they improved the design was by adding a random element to the way in which the curtains come down from the ceiling. Instead of descending together, perfectly aligned, Adam explored how he could reprogram them to create a more dynamic and organic feel.

Designing triggers

The final issue the team faced was how to trigger people to visit the space in the first place. Initially, they considered the idea of a device that would sit on peoples' desks and sound an alarm if stress levels get too high. This was discarded for being too obtrusive and potentially stress-inducing itself.

Instead, the team devised a trigger more in keeping with the ambient nature of the relaxation space itself. They attached playful stickers to floors and walls in the Philips Design building in ways that followed the contours of existing furniture or wooden floorboards. The stickers contained short teaser messages and pointed the way to the relaxation space. "We wanted to raise awareness for the space, but ultimately leave the person in control of whether they visited it or not," says Helle, who designed the campaign.

Future uses

Since being unveiled as a working prototype in the Philips ExperienceLab at the High Tech Campus in Eindhoven, a variety of people have used the space. One group of 15 people held a meditation class there, using just the outside curtains with no internal divisions. Others visited it individually for solitary relaxation, or simply as a time out from work.

In late 2013, the prototype will be installed in a Danish hospital for further experimentation. Beyond this, Philips hopes that the concept will trigger debate and create a platform for shared learning that could lead to new propositions in the field of work-related stress or other work environments. Philips has already filed a patent on the way the space tailors an experience to the people inside using moving elements, and changing light and sound.

Ultimately, the team hopes that spin offs from the concept could be applied to all kinds of different environments beyond offices, such as in mental healthcare facilities, or in airports where a calming space could help reduce the stress of busy travelers.



In their own words: reactions to the relaxation space

"Before I tried the space, I had all kinds of questions about how it would work and why. But after I experienced it those questions went away – it's quite wonderful."

Erik Kuijpers, research and innovation at mental healthcare institution GGzE

"I like how you slowly discover how to change the room by changing your own behavior."

Spike Ebbing, Project Manager for healthy lifestyle at GGzE

"For all of us, I think it's been very nice to see how our own bodies react to what we created. If I'd worked on an oncology project, I wouldn't be able to use the product I designed, but we can try these methods like paced breathing ourselves. I now use them regularly."

Helle Ullerup, Design Consultant at Philips

"Sometimes it's very difficult for people to stick to healthy guidelines from their doctors or coaches, like eat an apple a day or meditate. I think combining appealing technology and design like this can help to naturally motivate people."

Linda Bolier, Scientific Associate in positive psychology, Trimbos Institute, Dutch center of expertise in mental health and addiction

"The soft sounds contribute to thinking less and experiencing more."

Philips colleague

"Our healthcare workers deal with psychiatric clients in crisis. This space could work for both groups because both deal with high levels of stress. It helps to take down some of the walls between the two worlds, literally and metaphorically."

Erik Kuijpers, research and innovation at mental healthcare institution GGzE

"It's almost perfect – I saw a group of people calm down surprisingly quickly after only 10 minutes and then found it calmed and inspired me too. I even thought up new ideas for my work. After that, I told the Philips team that they should change the name of the space to The Inspiration Room."

Hans van Os, relaxation expert, Ontspanningstraining

References

¹ Selye, H. The Stress of Life, New York, McGraw-Hill, 1956

² European Agency for Safety and Health at Work, 2009

³ Research on work-related stress. European Agency for Safety and Health at Work, 2000. Luxembourg, 2000

⁴ Oxford Dictionary

⁵ Oxford Dictionary

⁶ <http://medical-dictionary.thefreedictionary.com/paced+respiration>



See the video of the [Adaptive Relaxation Space](#)

In collaboration with:



Consortia:



Interface¹

With thanks to Interface who supplied the carpet for the prototype.



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