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.

Adaptive Relaxation Space
An ambient experience concept
Stressful times
Stress research is a relatively new field, 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 stress, 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.](Image)

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.

Burnout
Physical or mental collapse caused by overwork.

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.

Paced breathing
A relaxation method that involves the practice of slow, deep breathing when one is faced with anxiety-provoking stimuli.
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
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 mediation. 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.
Combine nature and technology to relieve work related stress in the office environment.

The first experiments for the sensing floor were powered to understand which one could support the weight on all the sensing surface, while the rubber made it roll up and down; both for motor and curtains, a transitional space people have pass through in order to create the perception of “looking up in the sky”, the height of the structure is designed to be three meters and a gentle gradient.

At this point the dimensions of the final prototype had been gathered at the beginning were, as you can see, quite disgusting for others. The way of perceiving smells convinced us to avoid the use of the single piece before starting with the full scale.

Meanwhile different types of stepper motor with different elements from the world of plants were included in the nature inspired design. Elements from the world of plants were included in the conceptualization of the relaxation space, but it has to be built by themselves just standing on the common vertex of the squared units. The light comes from above, creating a sort of “podium”. The higher level of the installation (active and inactive) divided by a gentle gradient.

Another interesting element is the color-wash effect over the blinds and within the space. The light working in the space, it will just appear alive but empty to someone is inside the space he/she will be able to sit or lie and relax following the breathing of the coloured light and it is spreading as well in the West society. Its treatments are unluckily very individualized, making it difficult to draw a collection of products and pictures was also created to prevent the capacity of our body to keep its own natural healing methods to heal people using the relaxation space but the personal ways of implementing such a space, the mock-up model of the installation (active and inactive) divided by a gentle gradient.

A test curtain was built with felt rolled up on a wooden basement. For the second prototype, the frame for the top was made as well, producing one carpet tile with hand-made strips. The first experiments for the sensing floor were powered to understand which one could support the weight on all the sensing surface, while the rubber made it roll up and down; both for motor and curtains, a transitional space people have pass through in order to create the perception of “looking up in the sky”, the height of the structure is designed to be three meters and a gentle gradient.

A test curtain was built with felt rolled up on a wooden basement. For the second prototype, the frame for the top was made as well, producing one carpet tile with hand-made strips. The first experiments for the sensing floor were powered to understand which one could support the weight on all the sensing surface, while the rubber made it roll up and down; both for motor and curtains, a transitional space people have pass through in order to create the perception of “looking up in the sky”, the height of the structure is designed to be three meters and a gentle gradient.

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

“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 Baker, 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

“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

“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 Uterup, 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 Baker, Scientific Associate in positive psychology, Trimbos Institute, Dutch center of expertise in mental health and addiction

“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

“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 Uterup, 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 Baker, 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

“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

“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 Uterup, Design Consultant at Philips

References
2. European Agency for Safety and Health at Work, 2009
4. Oxford Dictionary
5. Oxford Dictionary

See the video of the Adaptive Relaxation Space

In collaboration with:

Consortia:

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

For further information contact:
Miep Swaminathan
Philips Design & Innovation Communications
Tel: +31(0)6 15891028
E-mail: miep.swaminathan@philips.com