

# SENSE-SEAT: reimagining ergonomics for a creativity support workstation

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## ABSTRACT

We present an approach for improving creativity at the workplace based on reimagining office furniture and bringing subtle technological elements to persuade office workers towards more healthy, creative workstyles. SENSE-SEAT aims to shed light on how we can better design interactive furniture for the workplace.

## CCS CONCEPTS

• **Computer systems organization** → **Embedded systems**;

## KEYWORDS

Creativity support tools, Ergonomics, Interaction design, Interactive furniture

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## 1 CREATIVITY IN THE WORKPLACE

Creativity is the production of novel and potentially useful ideas for solving problems, developing new artifacts and accomplishing tasks. In organizations, employee's creativity can be translated into innovative products, services, processes, systems, work methods, etc. [3]. Workplace creativity is usually seen as a result of a creative personality or individual skillsets [4], dependent on intrinsic motivations, such as personal interest, satisfaction, or the challenge of the work itself.

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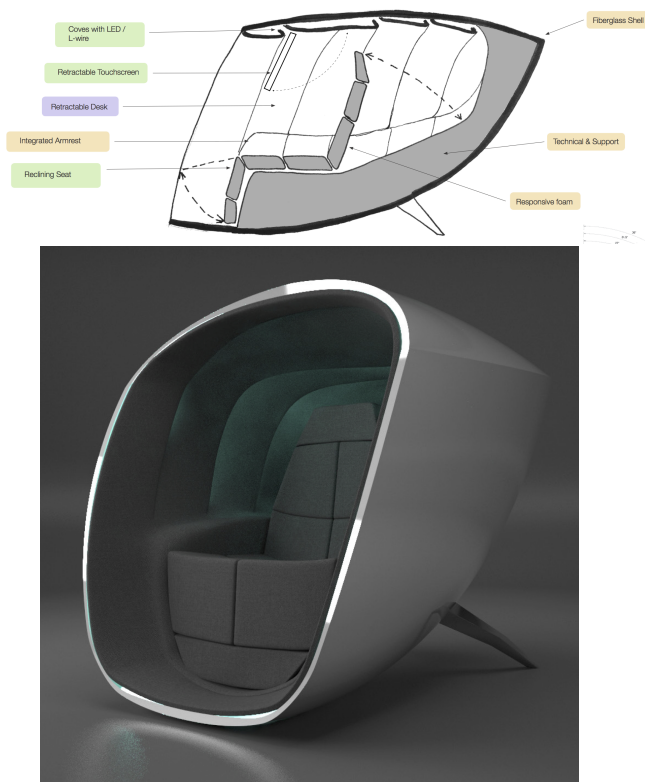
However, there are also studies that suggest that other factors, such as socio-organizational (e.g., job design, team work, rewards, time pressure, and leadership) are also factors in motivating creative work [3, 4]. These socio-organizational factors directly impact creativity both positively and negatively [4]. One known socio-organizational factor is crowding and interruptions, crowded environments negatively impact creativity and studies suggest that private workspaces could boost employee creativity. These findings have guided the SENSE-SEAT process, to explore how a pod-like workspace could support creative work in shared office spaces (See Fig. 1).

## 2 PRODUCTIVITY IN THE WORKPLACE

There are positive correlations between creativity-supporting work environments and product innovation [2]. Organizations therefore seek to engineer their workspaces to better support creativity through ergonomics, by including physical elements that can systematically improve employee creativity [3]. Productivity is the effectiveness of converting effort into useful outputs. In general, organizations seek to improve their productivity because it is a critical determinant of cost efficiency and better outcomes. Our approach is based on reimagining office furniture and designing it in such a way it becomes a place to relax, to regain focus and to conduct creative work. We are currently conducting pilot user studies at co-working spaces in three different locations: Malmo and Lisbon. In parallel, we have been prototyping in 3D (renders and also a physical prototype) a new workstation for improving creativity at work.

## 3 THE PHYSICAL WORK ENVIRONMENT

In this poster, we focus on the physical workspace aspects affecting creativity, proposing the creation of an open pod-like workstation unit that can help creativity by simulating a creativity-supporting work environment. Typical physical environment improvements, that affect employee's creativity in a positive way, as suggested by various researchers,



**Figure 1:** SENSE-SEAT concept sketch (top) and initial 3D renders (bottom).

are: a non-crowded workspace, presence of plants, the use of inspiring colors on the walls, a new carpet in the office, more pictures and posters on the walls, windows with outside view, privacy, dim lightning, etc. [1–3]. Aiello and his team [1977] did a research on the effects of workspace crowding over employee’s creativity, and they concluded that crowding could have negative effects, regardless of crowded subjects interpersonal distance preference, which showed a lower level of creativity than their non-crowded counterparts. Also, Stokols et al [2002] observed that high levels of environmental distraction, such as noise or prolonged exposure to crowded environments, were associated with less perceived support for creativity at work, and they furthermore suggested that private or non-overcrowded workspaces could have a counter effect, i.e. it could boost employee’s creativity.

#### 4 DESIGN APPROACH

The SENSE-SEAT project takes a multi-disciplinary approach of architecture, design, and engineering to explore how to create a better tool for the workspace. Our initial prototypes explore the goal of user focusing and the ability for temporary separation through the use of a pod-like chair (See Figure 1). The aim is a design that allows the user to remain in the office, and approachable if necessary

while also communicating that they are working on something that requires focus. Sensors and smart technology can detect and respond to the person seated, what they are working on (which software they are using, posture, or focus). Figure 1 (top) also details our design approach in terms of function, technology and form. While the function concerns are relatively straightforward (connected workspace, relaxing, personal), the form concerns we are addressing with the seat prototype include achieving a contemporary, versatile, modular piece of technological furniture that can also bring a timeless, elegant comfort to the workplace. In terms of technology, a reclining seat will provide body positions values that can provide ergonomic feedback to the user. Directional sound provides relaxing soundtracks according to the user’s preference, the same applies to the LED interior ”mood” lighting. In any workspace, there’s a dichotomy between the company and the private. How much time and effort does the employee owe the company, what loyalty? Personal calls during work hours are often frowned upon, but if the call is important the borders soften. If the employer supplies a phone, the employee may receive work email and calls even after hours. While there is no obligation to answer, it is common for employees to respond if they feel it’s urgent, or if not, the mere existence causes mental workload. In a co-working space, there is an added dimension of what is public. There are many aspects that can be explored; for example, which spaces may be used by anyone? Where is it appropriate to chat and to have coffee? To what extent should one share advice or thoughts with someone from another company? When creating technology for Smart Workspaces, the intent of various stakeholders shape the needs and requirements for new technology. Small changes in existing designs, sometimes drastically change the nature of the product. Thus, within collaborative workspaces, there’s a need to find the right balance between the need for privacy and support for social interaction. As such, collaborative work environments require spaces, furnishings and technologies that facilitate, not only for collaborative work, but also to focus work that fosters solo creativity and productivity.

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