The Design of a Modular, Multifunctional Workspace

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During and after the COVID-19 pandemic, Beltman Architecten – an Enschede based architectural firm with over 150 years of experience – has observed how a switch in the way of working (Duncan, 2023) introduced more peaks in the number of workers in offices. According to them, additional modular workspaces can be beneficial in times where the number of workers in an office peaks. Such workspaces would allow workers to temporarily focus and engage in specific work tasks. Moreover, they help increasing worker's productivity and well-being. Beltman Architecten sees potential in placing modular workspaces in the open areas that they usually fill up with sofas, table sets, and other furniture.

The aim of this assignment was to design a concept of a modular workspace for offices that fits different interior sizes and layouts. In addition, this study emphasized ease of manufacture and suitability for the most common office activities by being multifunctional. Based on this objective, the main research question was:

How can an effective modular workspace for offices be designed to accommodate various interior sizes, with a focus on ease of manufacture?

The relevance of answering this question lies in the opportunity to use the available office space more effectively. A modular design assures that the workspace can fit different office interiors and layouts. Moreover, its multifunctionality allows workers to use the workspace for different purposes. By emphasizing ease of manufacture, the need for any advanced fabrication processes are excluded. Additionally, integration of essential office equipment in combination with psychological and ergonomic design aspects support worker well-being and productivity.

Approach

A Design Thinking approach was used to help answering the main research question. Design Thinking is an iterative design process that designers use to understand end users, challenge assumptions, redefine problems, and find solutions that are prototyped and tested. This approach consists of the following phases: empathize, define, ideate, prototype, and test (Interaction Design Foundation, 2016). The emphasize phase focused on performing user research through a case study, interviews, and literature research. The information gathered in the emphasize phase were then organized and structured in the define phase. After additional literature research into characteristics, psychology, and ergonomics in office environments, a final design was realized in the ideate phase. And finally, a 3D CAD model was made in the prototype phase.

Results

The final design of the workspace – named ***Morph One*** – is modular by means that the size and interior of the workspace can be tailored to fit the needs of the specific environment it is placed in (see Figure 1). By putting together a combination of panels (see Figure 2) and roof tiles, one can make their own preferred size and type of workspace.

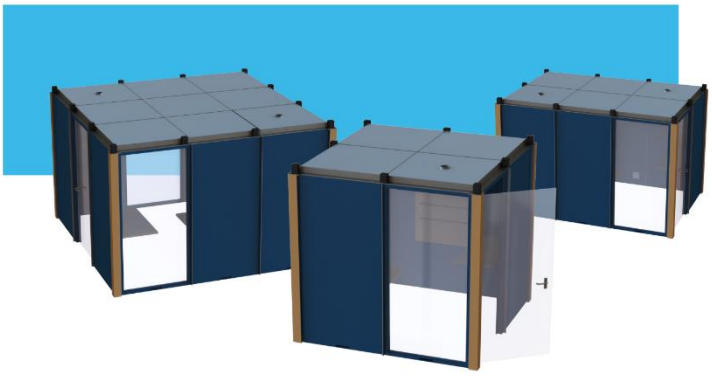

Figure 1: Showcase of three possible configurations of Morph One. (Author, 2024)

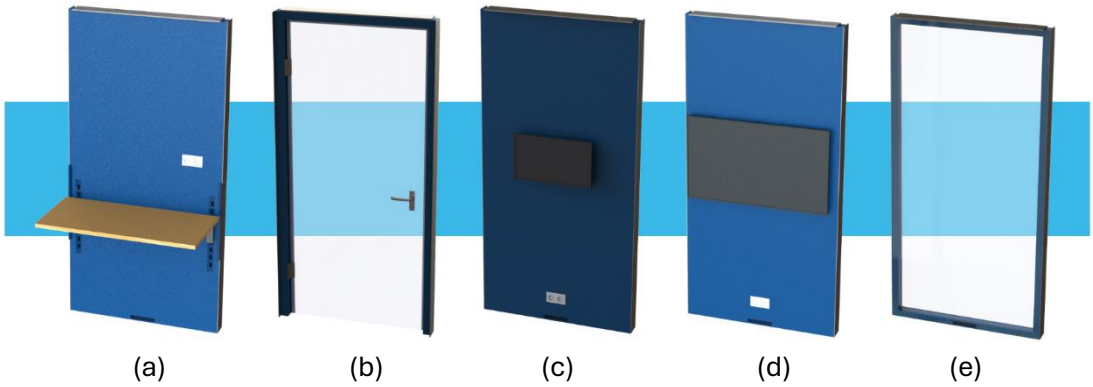

Figure 2: Panel variants from the 3D model: (a) Desk panel, (b) Door panel, (c) Wall mount panel with a monitor, (d) Wall mount panel with a TV screen, and (e) Glass panel. (Author, 2024)

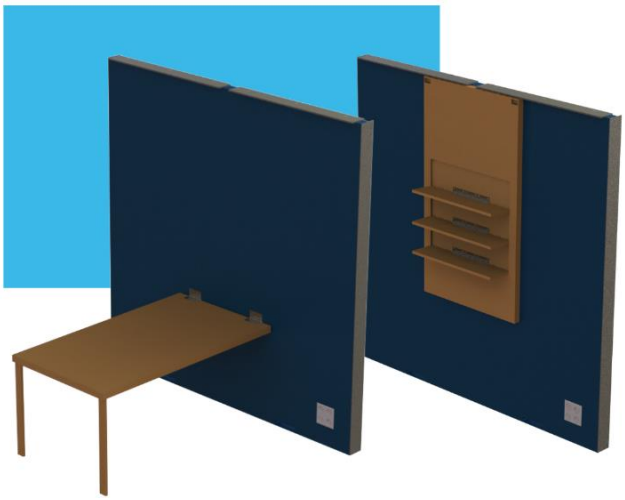

Figure 3: Consulting table panel from the 3D model. (Author, 2024)

A second form of modularity is achieved with adjustable furniture, and multifunctional elements. By using folding desks and consulting tables (see Figure 3), Morph One can serve two main purposes: consulting and individual work. In Morph One configurations, the consulting table can fold away to create space for the office desk, and vice versa, allowing the workspace to easily switch between consulting and individual work. Since the office desks can change height, the workspace is ergonomically fit for a wide range of office workers and tasks. The integration of electrical wire and power sockets into the panels and roof tiles make for a plug-and-play principle when it comes to providing the workspaces with electricity. With the use of corner support pillars, a complete structure (of 2,4m in height) can be assembled without the need for an external frame. Furthermore, Morph One consists of crucial elements that regulate its ventilation, temperature control, sound absorption, and lighting to support worker well-being and productivity. The main materials used in the
design, are wood, metal, glass, and rubber, for which sustainable material choices have been considered.

Conclusion and recommendations

Concluding, the effectiveness and multifunctionality of Morph One is reached with adjustable furniture that allows for transitions between individual work and meetings. Also, the workspaces feature interchangeable panels and roof tiles for easy assembly. With this, workspaces are modular in width and length to accommodate various interior sizes. Using common building materials and techniques, Morph One is manufacturable by interior builders, as requested by Beltman Architecten.

Alongside this answer, the main findings of this study consist of the added value of adjustable furniture, integrated electrical components, a robust design, psychological influences, and the considerations for reaching a sustainable and maintainable workspace.

This study provides a starting point for the development of a modular, multifunctional workspace. Further research into the plug-and-play principle, minimizing metal use, aesthetics, acoustics, ventilation, and psychological influence of Morph One would be relevant.

References

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