

Developing a framework to design assembling instructions for the Infectious Disease Treatment Module for the World Health Organization

Paula Santomé Lorenzo

BSc. Industrial Design Engineering
University of Twente

DESIGN CHALLENGE

In 2021, the World Health Organization (WHO), in collaboration with the World Food Programme (WFP), launched INITIATE². This initiative aims to develop solutions and training to improve readiness and response during health emergencies. A key development from INITIATE² was the creation of an inflatable Infectious Disease Treatment Module (IDTM) designed for rapid installation during epidemic outbreaks. This module consists of an inflatable structure that serves as a temporary space, adaptable for both outdoor and indoor use (Initiate2, 2024).

Despite the successful initial installation of the IDTM, WHO seeks to streamline this process further to achieve faster installation and reduce the number of required boxes. The assembly of these modules is often conducted by workers worldwide who lack prior experience in the IDTM set-up, presenting challenges due to their complexity, size, universality, and absence of installation knowledge.

The primary goal is to simplify and optimise the tent installation process, with a focus on ergonomics, clear instructions, inclusivity, and error reduction. This involves creating a framework for WHO to improve the comprehension of assembling complex structures through effective manual design. The central research question that steers this research is, “How to develop a framework to design manuals that enhance the understanding of Infectious Disease Treatment Module assembly process?”.

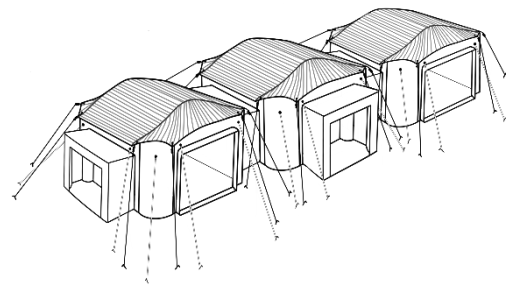


Figure 1: Infectious Disease Treatment Module © WFP/Photo Library

RESEARCH METHODOLOGY

The Design Science Research Methodology (DSRM) was implemented to achieve this objective, focusing on the creation of innovative solutions by building on existing parts of a solution while revising and expanding established design knowledge (Brocke et al., 2020). With this methodology, six steps are conducted with constant process interaction: problem identification and motivation, defining solution objectives, design and development, demonstration, evaluation, and communication. Constant feedback, ideation, and testing led to several improvements, leading to the final manual design.

RESULTS

The Design Science Research Methodology allowed the creation of the final manual design by contextualising the problem, defining the requirements, designing and refining the manual and testing the manual. The iterative process allowed frequent feedback and continuous improvements, resulting in a manual that successfully met the majority of the predefined requirements.

The final instruction manual design was evaluated to ensure the predefined requirements were fulfilled. The results demonstrate the successful development of a framework for designing manuals aims at improving the understanding of the IDTM assembly process. Furthermore, testing confirms the efficacy and usability of the manual despite encountering several limitations during the process. The final solution includes optimised packaging, a sequence of manuals, a detailed booklet manual, and a reverse-engineered framework for designing instructional materials that enhance understanding of the IDTM assembly process. This shows how important it is to develop user-friendly instructional materials to ensure the correct and efficient assembly of the IDTM, leading to more effective emergency health responses.

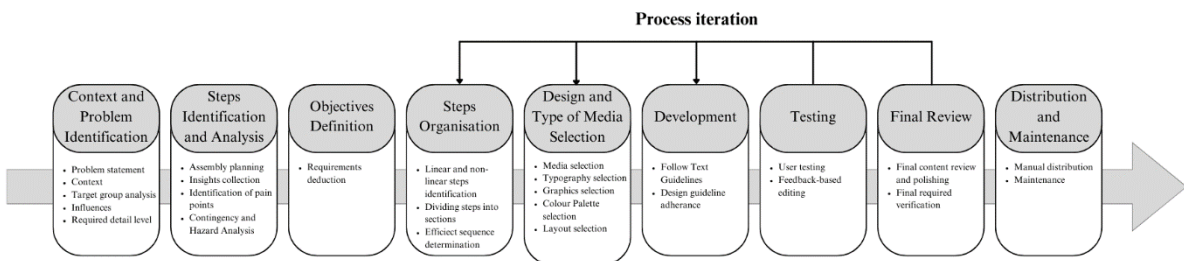


Figure 2: Framework for Designing Manuals that Enhance Understanding of the IDTM Assembly Process

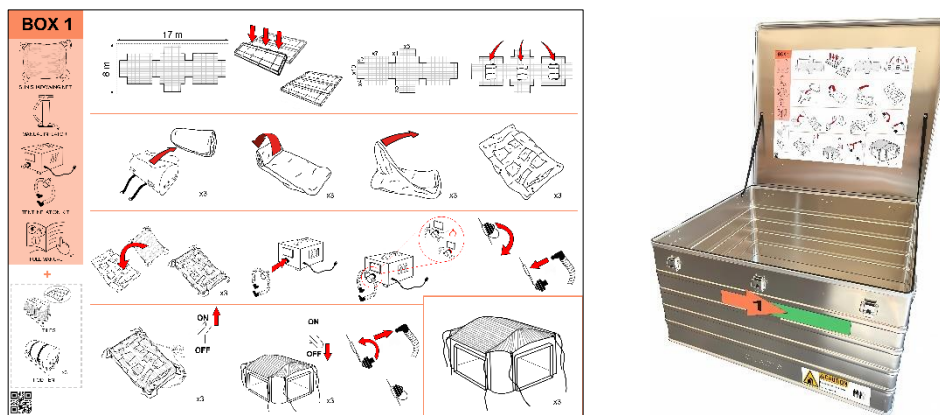


Figure 3: Labels from Box 1

FUTURE RESEARCH

Future research should include testing the current manual design in a real-life testing environment, studying users' behaviour with the manual and IDTM, and verifying if the unmet requirements can be addressed to improve the manual further. Overall, despite the challenges and limitations, the final design appears to meet all the testable requirements.

REFERENCES

Brocke, J. V., Hevner, A. R., & Maedche, A. (2020). Introduction to Design Science Research. In Progress in IS (pp. 1–13). https://doi.org/10.1007/978-3-030-46781-4_1

Initiate2. (2024, April 2). <https://www.who.int/initiatives/initiate2>