

2-WAY-AR TECHNOLOGY IN TELEMEDICINE

An exploratory research into the design of a medical product-service setup with 2-way augmented reality for the maritime sector

Executive Summary

Captains are responsible for the medical care of their crew-members. To do this, they receive one week of training every five years during which they study the knowledge and practice the skills and processes to handle medical incidents on board. The week of training is not enough for the captains to handle medical incidents confidently and they are in need of support.

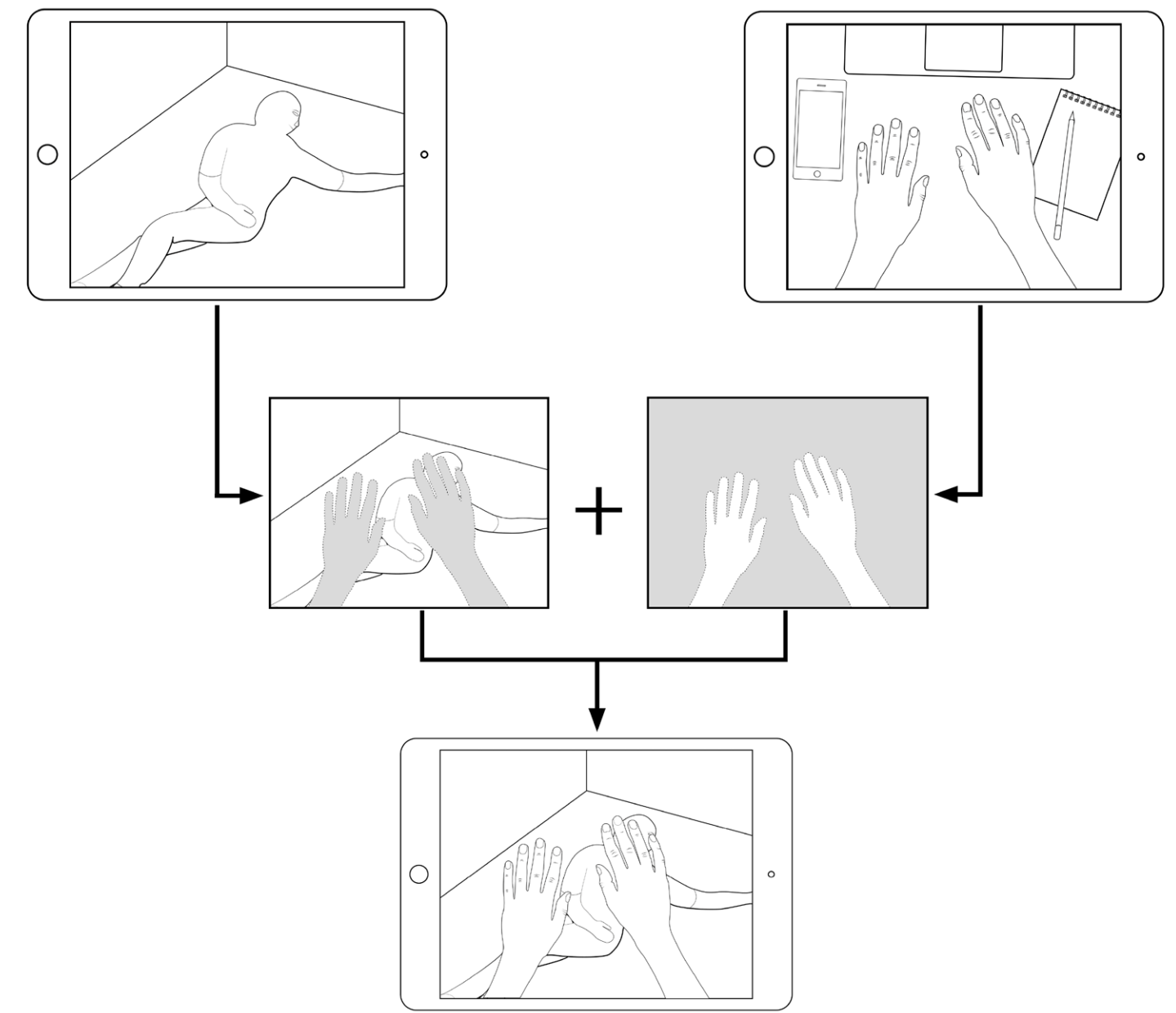
Currently, the support for captains is limited to phone calls and email with a doctor from the Radio Medical Services. MedAssist.online invented 2-way-AR technology, a unique method of merging two realities into one using tablets and a green screen. The merging of two realities creates the possibility to give instructions to the captain using hands as an overlay on the video. The 2-way-AR video function is put at the centre of a service which is designed to match the treatment journey and increase the number of interactions between a doctor and captain. A service which uses live video with the addition of 2-way-AR technology has the potential to become the telemedicine solution that boosts the confidence of the captains and their treatment performance.

Boosting confidence is essential to help the captain be decisive in his actions. However, the real value of 2-way-AR is in supporting the captain perform medical skills like stitching and abdominal searches. This thesis researched the tablet positions and camera positions on both sides of the communication. For the doctor set-ups for different tablet positions were designed and tested to give him optimal control over his hands to give instructions. On the captain side, the camera position and tablet position were explored, built and tested. The set-up is evaluated on the understanding of the doctor of the captain's situation, his ability to interpret and implement the instructions and the flexibility of the set-up for multiple medical scenarios.

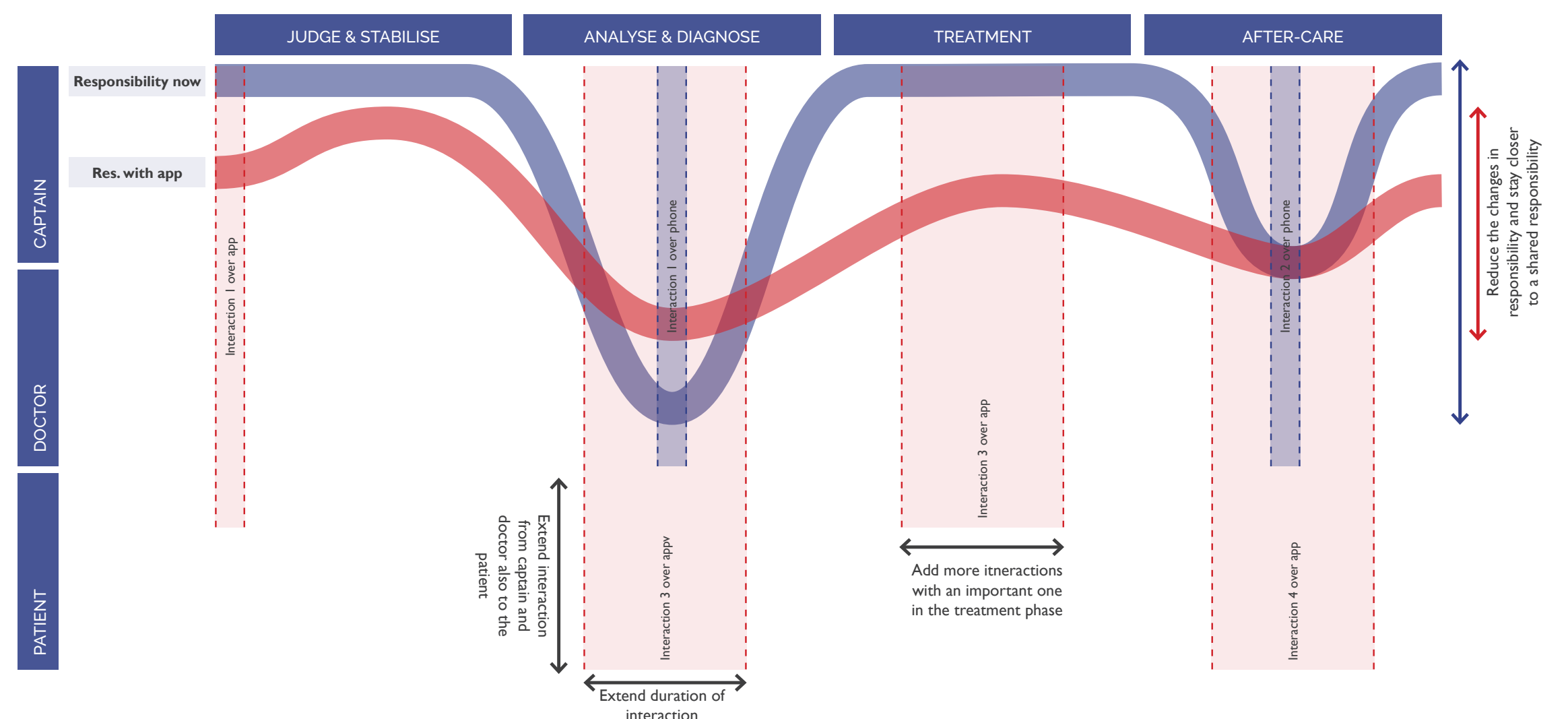
From testing various set-ups, it was concluded that an additional camera on the captain side improves the ease of understanding for the doctor and his ability to give instructions. At the same time, the captain can put the tablet in a position where he can easily switch between the patient and tablet to implement the instructions, without the tablet obstructing his work area.

This thesis has focussed on the physical set-ups of the tablet, camera and green screen on the captain and doctor side. The final test showed improvements in the new set-up design over the old, but there is an opportunity to improve the communication between the doctor and captain.

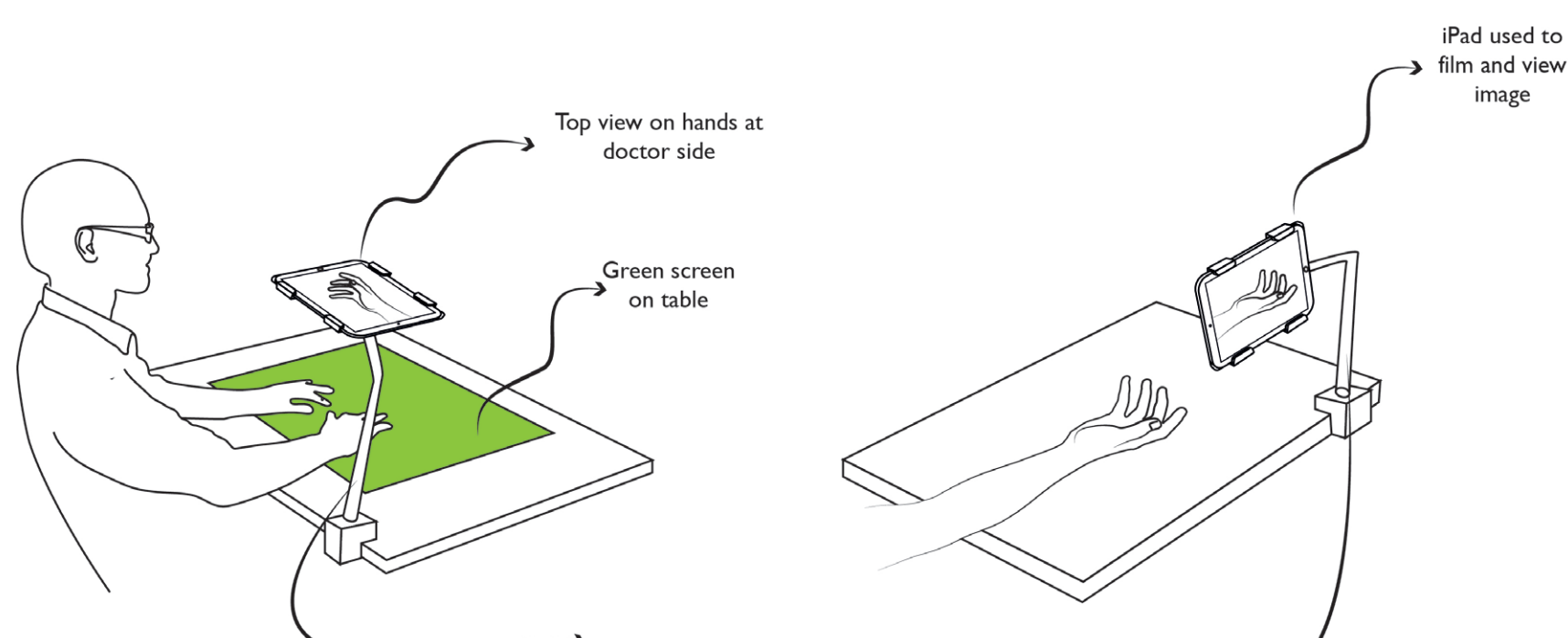
2-way-AR



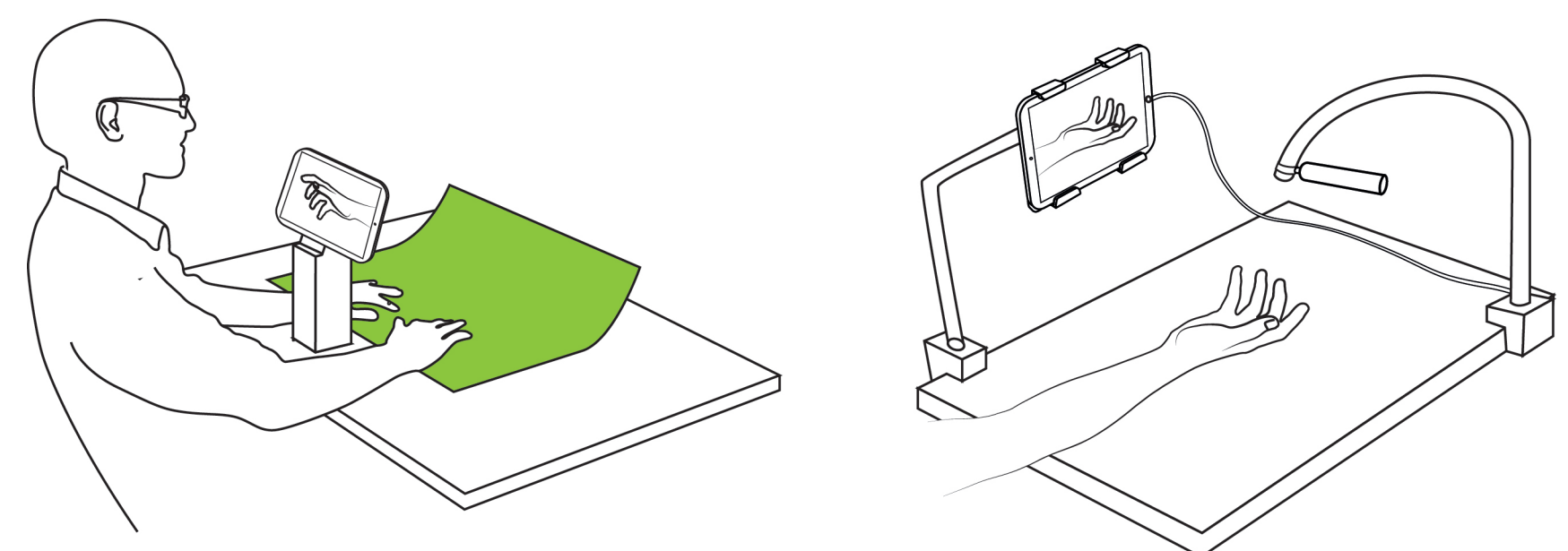
Contribution of research



Envisioned Set-up



Developed set-up



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