

Comparative Analysis of Usability Studies on PRIMS: Insights and Implications



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INTRODUCTION

The fastest growing neurological disorder globally is Parkinson's Disease (PD). Neurologists are struggling to manage the increasing prevalence of PD leading to clinician burnout and lengthy appointment wait times for patients. Digital health initiatives which can accurately monitor disease progression will help alleviate the strain on the healthcare system and lead to better health outcomes for patients. PragmaClin developed the Parkinson's Remote Interactive Monitoring system (PRIMS) to track disease progression. This research presents an evaluation of PRIMS through an in-house usability study conducted in Summer 2022 and 2023. Data from the usability investigation was used to redesign the system.

OBJECTIVES

The study aimed to assess and compare PRIMS' functionality, usability, and user experience between the past and current system for patients with Parkinson's.

MATERIALS AND METHODS

The PRIMS System

The Parkinson's Remote Interactive Monitoring System (PRIMS) developed by PragmaClin Research Inc. was designed on the premise that it will be an easy-to-use digital system which can accurately quantify motor and non-motor symptoms of Parkinson's Disease remotely.

Equipment

The current re-designed system used a HP desktop computer, 3 Intel RealSense Depth Cameras (D455, D435, & D435i), and a custom-built housing structure (Figure 1).

The previous PRIMS system was run on a laptop computer and Intel RealSense D435 (small) and D455 (large) depth cameras were used (Figure 2).

Data Collection

Data was recorded in the forms of Interviewer's notes, a semi-structured interview. Time to complete the Motor Examination (ME) was recorded along with the number of skipped motor tests during the ME.

Data Analysis

Thematic analysis was performed on interviewer's notes and interview responses.

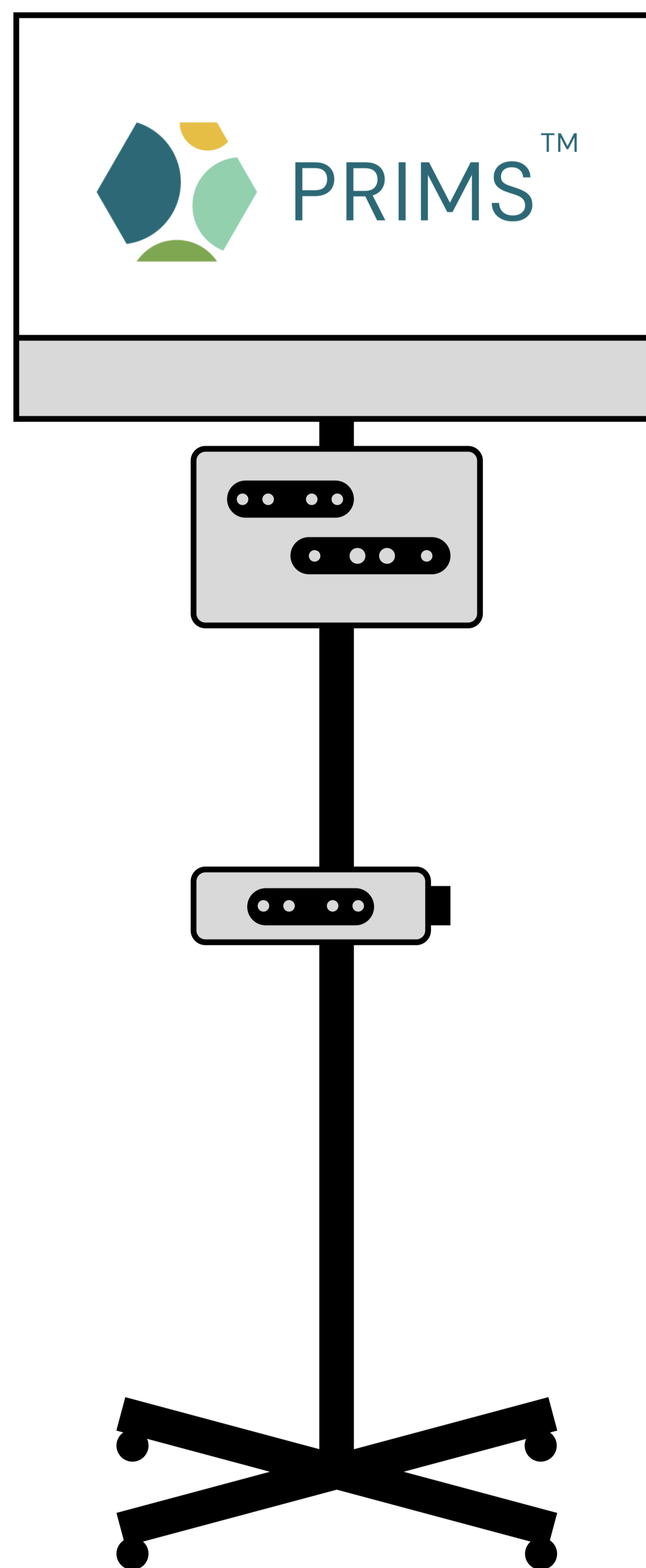


Figure 1: Updated PRIMS motor examination hardware device which shows screen and camera positions



Figure 2: Previous hardware system of PRIMS – shown here the laptop computer and cameras mounted to screen and stand-alone tripod.

RESULTS

PRIMS Model	Completion Time (mins)
Version 1	67.66
Version 2	16.26

Table 1: Mean completion time for the original (version 1) and redesigned (version 2) systems.

PRIMS Model	Total skipped tests
Version 1	29 (n = 10)
Version 2	9 (n = 8)

Table 2: Number of times participants skipped tests during the motor examination.

DISCUSSION

Summary of Key Findings:

- Video instructions are preferred over written.
- The automated voice prompts are confusing to participants.
- Large touch screen display is more user friendly than a standard computer mouse or laptop touch pad.
- The hardware housing unit eliminates the need to adjust cameras – rather calibrate before beginning.
- Participants are excited to have something like PRIMS available to improve their care.

CONCLUSIONS

In conclusion, the updated PRIMS version addressed issues identified in initial usability testing, delivering a user-friendly product tailored to Parkinson's patients' needs. The investigation's data will serve as a valuable reference for future researchers and developers working with digital systems for individuals with Parkinson's.

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