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Philips Flash Ultrasound System 5100 Point of Care

Insights on usability and user experience

Summative evaluation of technical features

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Overview

The Philips Flash Ultrasound System 5100 POC delivers the latest Philips point-of-care ultrasound technological advances, informed by insights gained from physician users. This summative study provides a comprehensive evaluation of the usability and user interface (UI) of the Flash 5100 POC. The score for the system usability scale (SUS) was found to be 88, and the net promoter score (NPS) was 77. These high scores indicate strong user satisfaction. The evaluation confirmed that the UI is effective and efficient for its intended users, uses and environments. Respondents expressed favorable impressions of the system overall and its individual features.

Methods

The usability and UI of Flash 5100 POC were evaluated through a summative study that included decay time, which is a gap between training and use to more closely mimic the real-world lag time between learning the system and operating it. Clinician participants primarily had training in emergency medicine, critical care and/or anesthesiology.

This summative evaluation included critical tasks and hazard-related use scenarios identified in usability FMEA (failure mode and effects analysis) and use scenarios. A production-equivalent UI system was used for this study. All sessions were performed individually (one participant per session). The study used a simulated use environment for evaluation and was conducted in the United States.

This simulation study involved a total of 43 participants from across the US who took part in training and then completed the SUS questionnaire for Flash 5100 POC. The SUS is a respected, scientifically proven independent scale used to rate technological systems on their usability and learnability. Data was collected through post-session interviews, surveys to assess SUS and NPS and questionnaires about product features and other feedback. Philips analyzed the questionnaires and data.

Participant characteristics

Clinical users	**43**
Female/male	**13/30**
Clinical area	
Emergency medicine	**15**
Critical care	**12**
Anesthesia (regional and perioperative)	**13**
Advanced cardiac anesthesia	**3**
Experience (median/range)	**11 years/3-32 years**

Study set-up

Stage	Intro	Training	Decay time*	Usability test	Interview
Time (mins)	5-10	20-30	60	50-60	15-30

*Decay time refers to the interval between when a user receives training or instruction on how to use a product or device and when they are first required to perform critical tasks using that product or device.

Results

The clinical end users provided positive feedback on **Flash 5100 POC**. Study participants demonstrated a high degree of task success (97.2%) and a low incidence of task failure (2.8%).

Accelerated learning with next-step guidance

Flash 5100 POC features next-step guidance, providing step-by-step instructions to make it easier for users of varying skill levels to operate the device effectively. Clinicians reported that the next-step guidance effectively accelerated their learning process with the device. This highlights the system's ability to facilitate quick and efficient training for new users.

The streamlined interface supports quick navigation and is designed to reduce the cognitive load on users so that they can perform procedures accurately and efficiently. The system's visual cues enhance user confidence and help reduce errors. User guidance supports the accurate execution of the AutoStrain EF procedure, enhancing overall diagnostic confidence.

Participants were asked for their impressions about the system and features in a number of areas.

Clinician viewpoint

Next-step guidance benefits users of varying experience

91% of clinicians* believe the built-in next-step guidance benefits experienced users and users with less experience

Intuitive operation for everyday efficiency

93% of clinicians[1] believe the UI is designed for intuitive operation and everyday efficiency

Accelerated learning process

88% of clinicians[2] reported that the next-step guidance helped them to learn to use the device more quickly

Measurement ease with on-caliper guidance

95% of clinicians[1] reported on-caliper guidance supports ease of measurement

Clarity of visual cues

94% of clinicians[1] found the blue highlighted controls are clear in successfully directing users through various tasks

Usefulness of highlighted controls

93% of clinicians[1] reiterated that the clarity provided by the blue highlighted controls in the UI helped them become familiar with the interface more quickly and believed it would reduce the likelihood of errors

Clarity of guidance for AutoStrain EF

88% of clinicians[3] found the user guidance steps for AutoStrain EF made it easier to understand the steps involved

Successful task completion

90% of clinicians[1] felt that the next-step guidance was instrumental in completing tasks

1. Based on responses from 38 respondents.
2. Based on responses from 37 respondents.
3. Based on responses from 29 respondents.

* Based on responses combined from 1, 2 and 3.
Note: Initially a few participants were not included in the claim survey.

Intuitive operation with enhanced results

In a simulation study, a total of 43 participants from across the US completed the SUS questionnaire for Flash 5100 POC. Flash 5100 POC achieved a very high SUS score of 88, which is better than the score for 90% of more than 500 diverse technological systems measured across software, household appliances, high-tech systems and health tech solutions.

Perceptions of usability are influenced by system complexity and the tasks users perform before taking the SUS. Scores range from 1-100, and a score of 68 is considered average.

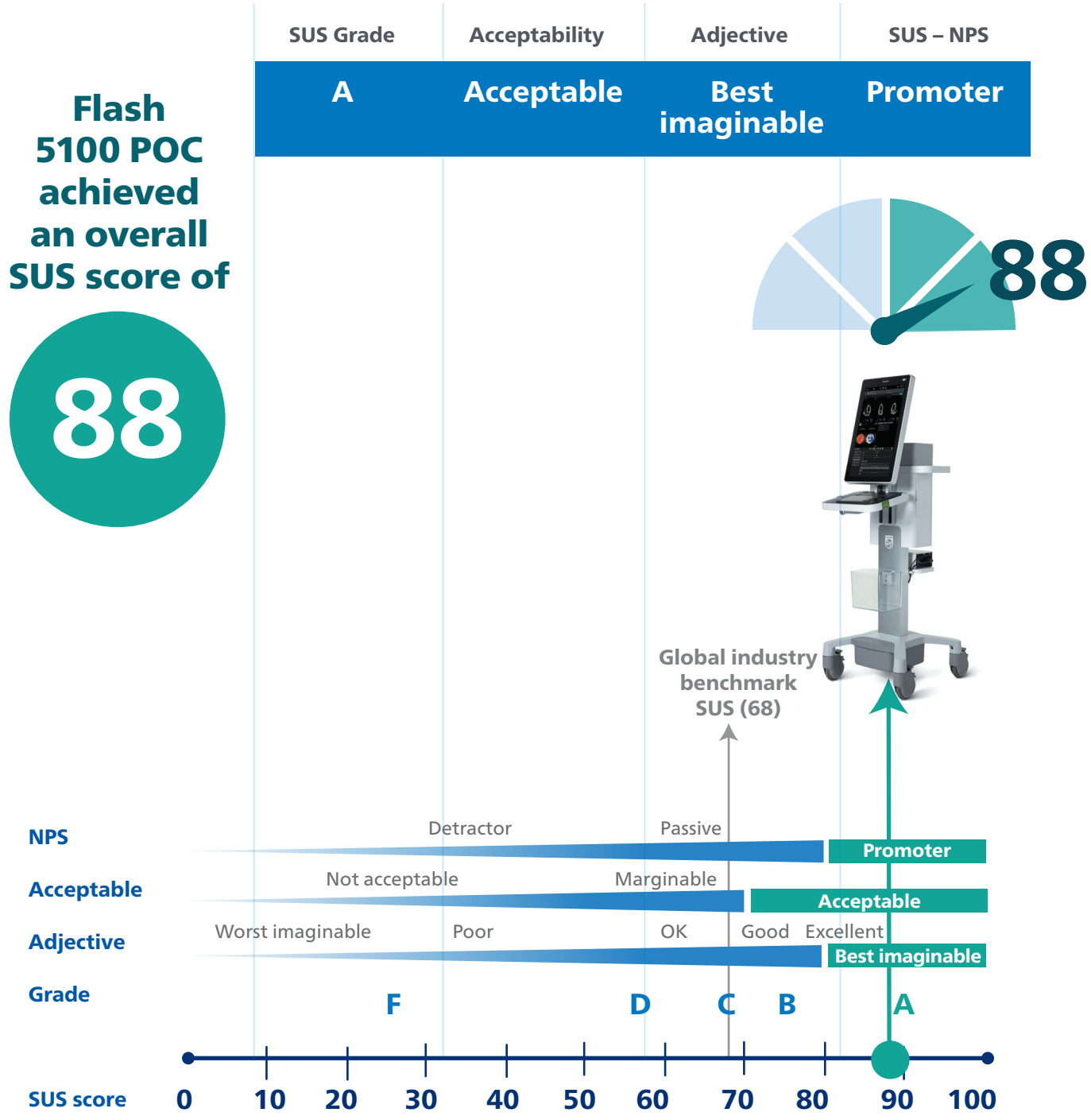
" Easy to use, liked the IQ and large screen, more useful functions are accessible easily on the touchscreen. Needle vis works well; measurement is easily accessible ..."

—(Participant 19)

System usability scale (SUS)

Flash 5100 POC achieved an overall SUS score of

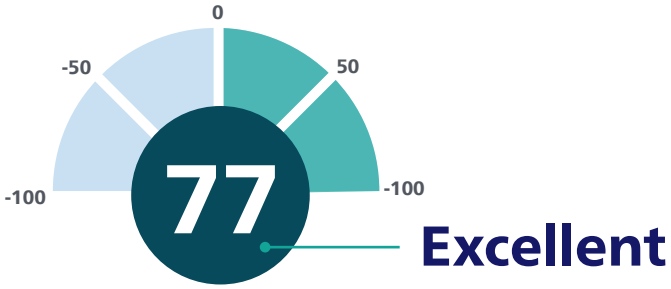
88



Net promoter score (NPS)

NPS is a measure of customer satisfaction and loyalty, ranging from -100 to 100.
A score of 77 indicates that a large majority of respondents are promoters (they would highly recommend the product or service), with very few detractors (those who would not recommend it).

Flash 5100 POC achieved an overall user satisfaction score/ Net promoter score (NPS) of 77



" One of the best POC systems I have come across so far ... "

—(Participant 30)

" Really liked it ... Multimodality inputs, touchscreen and pad were very nice. Pretty easy to use the system and liked the sturdiness ..."
— (Participant 2)

" It's futuristic, sleek, bigger screen size, good control on one screen, bigger image area, good footprint (small) and good looking ..."
— (Participant 12)

" It's a great ultrasound system. Happy to have it in my hospital. Liked the mobility ..."
— (Participant 38)

" Happy to have this machine. Probably would enjoy using the machine. Liked it ..."
— (Participant 31)

Summary

The Philips Flash Ultrasound System 5100 POC was put to the test in a summative study that provided a comprehensive evaluation of the system's usability and user interface (UI). Participants experienced 97.2% task success and rated the system very highly for usability and user satisfaction, with a system usability score of 88 (average is 68) and an excellent net promoter score of 77. The evaluation confirmed that the UI is effective and efficient for its real-world intended users, uses and environments and that the user experience is positive and likely to be beneficial for experienced ultrasound users and those with less experience.

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