Issues on Evaluating the Usability of a Pen-Tablet System Using Server-Based Computing

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Abstract. The purpose of this study is to define the issues in evaluating the usability of pen-tablet systems (PTS) with server-based computing (SBC) in hospital settings. For five subjects with PTS operation, we measured the delay of drawing under SBC environments and compared it with the results of questionnaires from subjects. It was found that the relation of the usability with the drawing velocity and the delay is the crucial issue for a further study.

Keywords. pen-tablet system, server-based computing, usability

Server-based computing (SBC) is a remarkable technology in that it contributes to management facilitation and security enhancement [1]. However, the introduction of pen-tablet systems (PTSs) to electronic patient records using SBC has not been evaluated yet. The purpose of this study is to define the issues in evaluating the usability of PTS with SBC in hospital settings. As the usability is influenced by the delay caused by the latency intrinsic to SBC technology, we quantified the difference of the positions between mouse-cursor by user’s operation and drawing by SBC software. Five subjects executed two tasks composed of writing signatures and drawing graphics, followed by five-grade usability questionnaires (1: worst to 5: best). The results of the delay under three SBC applications, GO-Global, Citrix and Windows Terminal Service, were 124.8±56.5, 110.3±67.0 and 98.1±77.1 (in pixels/sec, Mean±SD) respectively. The results of questionnaires were 4.4/5, 3.6/4.4 and 1.6/3.2 (signature/graphic) in average, respectively. From the results, the usability was affected by the difference of writing/drawing objects and SBC applications. Moreover, as to the delay of drawing, it appeared important to consider the degree of scattering (variance) in addition to the value of the delay itself, since GO-Global obtained the best usability with the largest average and the least deviation of the delay. The difference due to the drawing objects seemed associated with the speed of mouse-cursor. Therefore, clarifying the relation of the usability with the drawing velocity and the delay is the crucial issue for a further study.


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