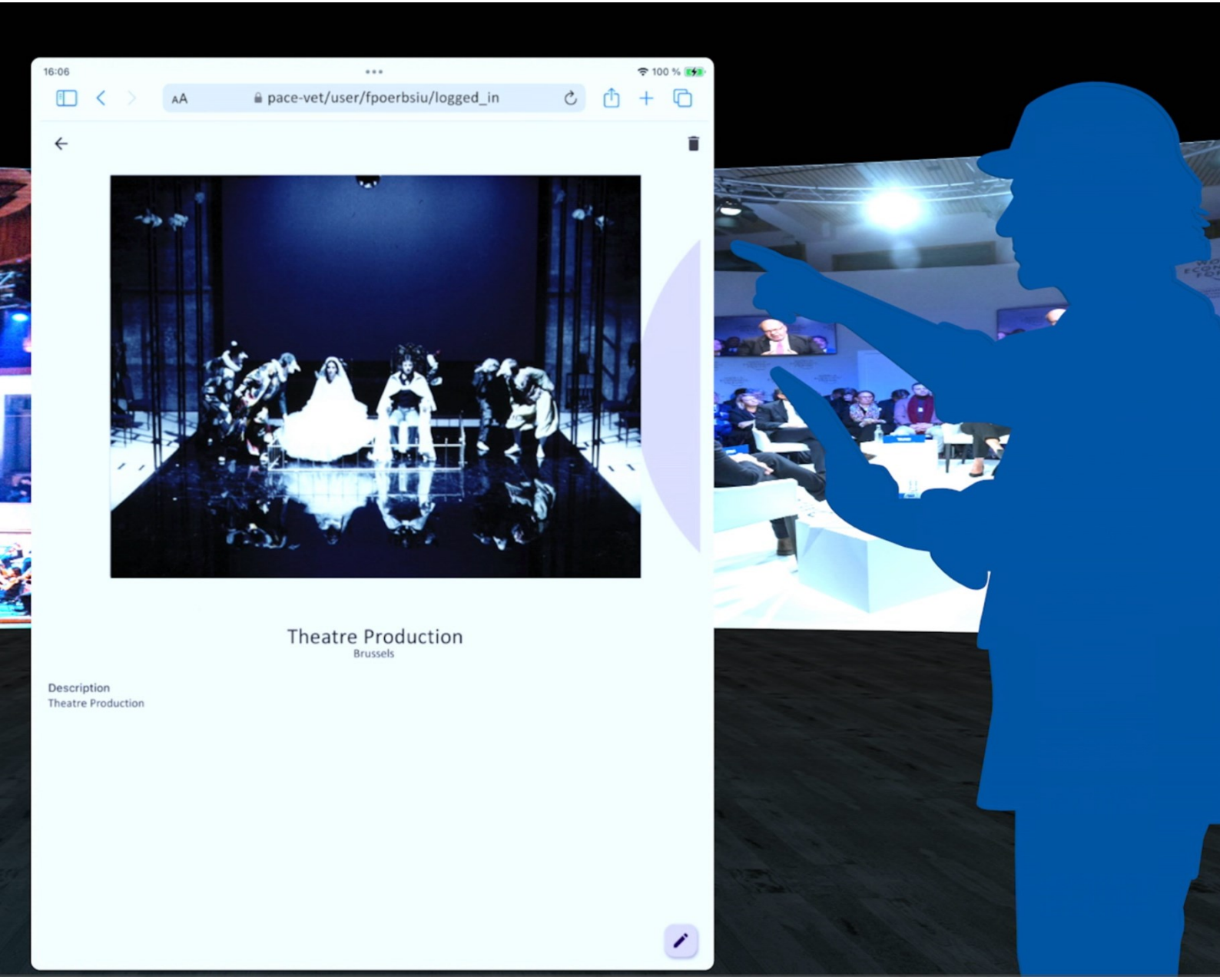

Learning Record Store - Application Development

WP 2.3 · Software Usability Test

Co-funded by
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PACE VET
Digital Credential

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Table of content

1. Methodology

The project partners discussed different methods to test the usability of the application (ff: "app"). As is stated in the ISO 9241-11:2018-03 (Ergonomics of human-system interaction - Part 11: Usability: Definitions and Concepts), "usability" is a combination of effectiveness (can users successfully achieve their objectives), efficiency (how much effort and resource is expended in achieving those objectives), and satisfaction (was the experience satisfactory).

Usability is of course only one aspect of the user experience with the PACE-VET app. Acceptance and use of the app involves other factors such as trust and market viability. It was decided that appearance and communality should not be included as the purpose of the usability study was to report results of measuring critical aspects of the app user experience and features related specifically to the PACE-VET project. It was also clear that securing the availability of a test group for sampling would not be a simple task. The average online survey response rate is 44.1%[1].

For the questionnaire to be useful, it needed to be short enough not to be a burden on participants and also include two questions specific to the PACE-VET project goals. It was agreed that sending the survey to a clearly defined group (participants in the focus groups from 2022) would positively impact the online survey response rate. Four attributes were considered regarding the survey: survey length, incentive level compared to a conventional survey, invitation lifetime (maximum time allowed to start the survey after the invitation is sent), and triggering activity (the activity that triggers an invitation to participate in a

[1] Wu, Meng-Jia, Zhao, Kelly, and Fils-Aime, Francisca, Response rates of online surveys in published research: A meta-analysis, May 2022, Computers in Human Behavior Reports

survey).[2] Participation was possible during a specific time frame. This allowed participants to choose their own timeline for completing the survey.

Standardized usability questionnaires, as opposed to self-designed questionnaires, have been shown to provide more reliability when measuring usability.[3] The project partners agreed to base the study on the 10-item System Usability Scale (SUS), developed by Brooke[4], The SUS is probably the most used questionnaire to measure perceived usability across products and websites[5]. Generally, the scale has been seen to provide a high-level subjective view of usability. The typical minimum reliability goal for questionnaires used in research and evaluation is .70. In a study of 2.324 cases the coefficient alpha of the SUS as a questionnaire proved to be .91[6]. The partners agreed to carry out the single variable SUS usability evaluation using the open-source software from the "Association for Computing Machinery". Their "SUS Analysis Toolkit" is available under an MIT license and can be used, extended and redistributed for commercial and non-commercial applications without attribution.[7]

2. Feedback Forms

To keep the survey process as simple as possible, it was decided to create AdobeAcrobat® forms that could be downloaded in the three project languages. English, German and Dutch (see annex). The software allows for an easy compilation of the results and includes an export feature for the CSV format, which is a prerequisite for the analysis tool. The completed forms could be returned for analysis through a simple "drag and drop" function on the PACE-VET-Website (https://pace-vet.eu/app-usability-test/). Further comments (400 characters) could be directly sent through a commentary feedback window. Since the

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[2] Ochoa, Carlos and Revilla, Melanie. (2022). Willingness to participate in in-the-moment surveys triggered by online behaviors. Behavior Research Methods (2023) 55: pages 1275–1291: online: https://doi.org/10.3758/s13428-022-01872-x (accessed October 17th, 2024)

[3] Hornbæk, Kasper, Current practice in measuring usability: Challenges to usability studies and research, International Journal of Human-Computer Studies, Volume 64, Issue 2, February 2006, Pages 79-102, online: https://www.sciencedirect.com/science/article/abs/pii/S1071581905001138 (accessed October 14th, 2024)

[4] Brooke, J. ,SUS: A "quick and dirty" usability scale, In P. Jordan, B. Thomas, B. Weerdmeester (Eds.), Usability Evaluation in Industry, 1996, Pages 79-102, London, UK: Taylor & Francis

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[6] Bangor, A., Kortum, P. T., Miller, J. T.: An Empirical Evaluation of the System Usability Scale, International Journal of Human-Computer Interaction, 24, 2008, Pages 574-594

[7] Blattgerste, Jonas and Behrends, Jan and Pfeiffer, Thies, A Web-Based Analysis Toolkit for the System Usability Scale, Association for Computing Machinery, New York, NY, USA, 2002, https://doi.org/10.1145/3529190.3529216 (accessed October 14th, 2024)

SUS was originally created as a "system" usability questionnaire, the partners agreed to slightly change the wording to avoid confusion regarding the term "system". The goal was to survey "app" usability (which is based on a software "system"). Research on the SUS and similar questionnaires has shown that slight changes to item wording most often lead to no detectable differences in factor structure or reliability.[8]

The ten standard SUS items are structured so that odd-numbered items are worded positively and even-numbered items are worded negatively. The standard items are listed below. Directly following each standard item, the changed wording used in the survey questionnaire is shown:

01. I think that I would like to use this system frequently.
    I think that I would like to use this app frequently.
02. I found the system unnecessarily complex.
    I found the app unnecessarily complex.
03. I thought the system was easy to use.
    I thought that the app was easy to use.
04. I think that I would need the support of a technical person to be able to use this system.
    I think I would need the support of a technical person to be able to use this app.
05. I found the various functions in this system were well integrated.
    I found the various functions in the app were well integrated.
06. I thought there was too much inconsistency in this system.
    I thought there was too much inconsistency in this app.
07. I would imagine that most people would learn to use this system very quickly.
    I would imagine that most people would learn to use this app very quickly.
08. I found the system very cumbersome to use.
    I found the app very cumbersome to use.
09. I felt very confident using the system.
    I felt very confident using the app.
10. I needed to learn a lot of things before I could get going with this system.
    I needed to learn a lot of things to use this app.

[8] Lewis, James R. and Sauro, Jeff, The Factor Structure of the System Usability Scale, online: https://measuringu.com/wp-content/uploads/2017/07/Lewis_Sauro_HCII2009.pdf (accessed October 14th, 2024)

It should be noted, that while the items 1, 2, 3, 5, 6, 7, 8, and 9 are closely aligned with the factor "usability", the items 4 and 10 are more aligned with the factor "learnability".[9]

As the project could provide effective assessment methods for the sector, two questions regarding the acceptability, viability and purpose of the PACE-VET process were added.

11. I would upload my portfolio documents to this app.
12. I want a European assessment and documentation opportunity like this app is offering.

The project partners decided to perform the survey in November of 2024.

3. Annexes

Annex 1: The feedback forms in English, German and Dutch – PDF documents

Annex 2: Website page for the usability test – PDF document

4. Bibliography

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Strategic Report

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