

Integrating Modern Front-end Methodologies and Workflow in The Context of E-commerce Systems

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Workflow optimization in the development teams

This thesis was commissioned by Vaimo Finland Oy, the omnichannel e-commerce solution provider. It investigates modern front-end development methodologies and development workflow in the context of e-commerce platforms. It aims to improve the development cycles in the agile team's workflow and overall quality and efficiency of delivering e-commerce solutions.

The supporting goal of the research was to investigate potential improvements in the current workflow with the help of modern web technologies, such as PWA and headless architecture. Automated web testing, accessibility and performance evaluation, a realization of the design system for developing sustainable component library were tested, and their effects on the collaboration of developers, QA and UI/UX engineers were studied and compared with traditional workflow.

Vue Storefront and Magento

Magento was used as an e-commerce platform, and Vue Storefront was used as a PWA solution (Figure 1).

Monolithic nature of Magento results in interdependent application processes and the development workflow that is not optimized for

front-end development. Magento MVC, while enhancing code structure, fails to separate back-end from front-end due to tight coupling. The change towards PWA could result in a positive effect on the development of the applications, allowing developers to create platform-agnostic solutions with a single codebase, along with bringing native experiences to the web.

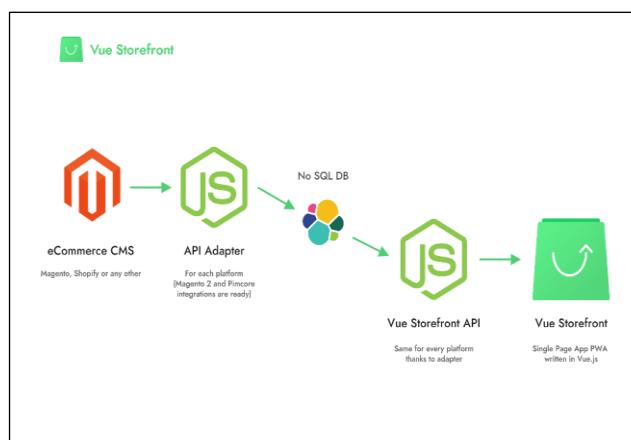


FIGURE 1. Headless architecture in PWA solutions (Kwiecień, 2018).

Improving the workflow with modern front-end technologies

Evaluation of Jest for automated unit testing and Cypress for E2E testing was done. Axe Accessibility Testing engine integrated to Storybook was used for assessing accessibility.

Design systems integration based on Storybook was tested for improving collaboration between developers and UI/UX engineers.

Evaluation of the end result

The speed of front-end development has increased due to PWA being

lightweight, single-page application loosely coupled with Magento logic. Features, such as hot reload, state management and Vue Devtools, have positively influenced the styling and debugging processes.

Automated web testing was found to be helpful in increasing the awareness of quality engineering principles for developers working on front-end components.

Integrating Storybook into the workflow enabled development of components in isolation and proved to bring control to the testers for evaluating various use cases of the component. Atomic design principles were easy to follow and allowed implementing reusable components with the defensive UI.

Headless architecture allowed building and deploying front-end, API and back-end separately, improving the separation of concerns and CI/CD time.

References

Kwiecień, Aleksandra 2018. Vue Storefront, a powerful PWA frontend for various eCommerce platforms. [Web log post], November 27, 2018. Cited 18.12.2019, <https://divante.com/blog/vue-storefront-integrated-platforms/>.