

ABSTRAK

Bangunan berfungsi sebagai pelindung manusia dari kondisi panas dan dingin yang ekstrem, namun peningkatan suhu lingkungan luar akibat radiasi matahari menyebabkan suhu udara di dalam bangunan turut meningkat dan berdampak pada kondisi kenyamanan termal di dalamnya. Sistem monitoring kenyamanan termal yang telah dikembangkan sebelumnya masih berfokus pada satu ruangan sehingga belum mampu memantau bangunan yang memiliki banyak ruangan secara terintegrasi. Penelitian ini bertujuan mengembangkan sistem informasi monitoring kenyamanan termal multi-room berbasis web menggunakan metode Agile dengan pendekatan Scrum. Sistem dikembangkan melalui enam Sprint yang mencakup fitur autentikasi, manajemen ruangan, penerimaan data sensor melalui REST API, dashboard multi-room, data historis, pengaturan parameter kenyamanan, serta pengelolaan perangkat monitoring (Device Discovery). Parameter kenyamanan termal yang dipantau meliputi suhu, kelembapan, kecepatan angin, dan kualitas udara mengacu pada SNI 03-6572-2001. Pengujian sistem dilakukan menggunakan Black box Testing dan Usability Testing dengan metode System Usability Scale (SUS). Hasil Black box Testing menunjukkan tingkat keberhasilan 100% pada seluruh functional requirement, sedangkan pengujian SUS memperoleh skor rata-rata 75,83 yang termasuk kategori good dan rentang acceptable. Hasil ini menunjukkan bahwa sistem yang dikembangkan mampu memantau kondisi kenyamanan termal beberapa ruangan secara terintegrasi dan mudah digunakan oleh pengguna.

Kata kunci: Agile Scrum; dashboard multi-room; kenyamanan termal; sistem informasi monitoring; System Usability Scale

ABSTRACT

[Development of a Web-Based Multi-Room Thermal Comfort Monitoring Information System Using the Agile Method with a Scrum Approach]

Buildings function as a shelter for occupants from extreme heat and cold, but an increase in outdoor temperature caused by solar radiation raises the indoor air temperature and affects thermal comfort inside buildings. The previously developed thermal comfort monitoring system still focuses on a single room, so it is not yet able to monitor buildings with multiple rooms in an integrated manner. This study aims to develop a web-based multi-room thermal comfort monitoring information system using the Agile method with a Scrum approach. The system was developed through six Sprints covering authentication, room management, sensor data reception through a REST API, a multi-room dashboard, historical data, comfort parameter settings, and monitoring device management (Device Discovery). The monitored thermal comfort parameters include temperature, humidity, air velocity, and air quality referring to SNI 03-6572-2001. System testing was carried out using Black box Testing and Usability Testing with the System Usability Scale (SUS) method. The Black box Testing results showed a 100% success rate on all functional requirements, while the SUS testing obtained an average score of 75.83, which is in the good and acceptable category. These results indicate that the developed system is able to monitor the thermal comfort conditions of several rooms in an integrated manner and is easy to use.

Keywords: Agile Scrum; multi-room dashboard; monitoring information system; System Usability Scale; thermal comfort