Center for Building Performance and Diagnostics

Executive Summary

Community Partner
Azizan Aziz
Bertrand Lasternas
Student Development Team
Brad Chin
Karen Segal
Maggie Yu

Background

The Center for Building Performance and Diagnostics (CBPD) is a part of the School of Architecture at Carnegie Mellon University that offers a PhD program to students and a leading research program. The mission of the CBPD is to conduct research, development, and demonstrations to increase the quality and user satisfaction with commercial buildings and integrated building systems, while improving cost, time, and energy-efficiency. The CBPD is currently comprised of about ten PhD students, fifty master's students, and six faculty members situated in the Robert L. Preger Intelligent Workplace, a "living" and "lived-in" laboratory located on the fourth floor of Margaret Morrison Carnegie Hall on Carnegie Mellon's Pittsburgh campus. The space is used to test and examine new ideas and methods of practice, and has won several national and international awards.

Project Description

Project Opportunity

In the spring of 2015, the CBPD partnered with an Information Systems student project team with the goal of addressing the lack of engagement within the CMU community to conserve energy on campus. The previous team conducted an extensive amount of research in order to determine the cause of the lack of engagement problem, and eventually chose to build a Django web application with the goals of improving the CMU Facilities Management Services (FMS) service request process and bridging the gap between the CMU community and FMS personnel. Through the application named ConnectFMS, members of the CMU community can make posts on energy conservation issues as well as utility problems they see around campus by taking a photo and writing a short description. After seeing the work produced by the previous team, the client hoped to have ConnectFMS deployed on their own server in order to support the collection of real usage data from the campus community. Furthermore, the client wanted to test the existing application in a realistic environment in order receive user feedback to evaluate the effectiveness of the application and make improvements and modifications.

Project Vision

Per the client's request, our main goals for the project were to deploy the existing web application developed by the previous student team, recruit members from the CMU community to use the

application, and improve the application based on user feedback. We also agreed to implement several essential features for ConnectFMS and planned on implementing "nice-to-have" features if time permitted. Through ConnectFMS, we hoped that the CMU community would be able to voice their concerns about sustainability and maintenance issues on campus more easily as well as learn more about CMU's building performance.

Project Outcomes

We improved upon the Django web application we inherited from the previous student team by conducting three rounds of user testing, incorporating user feedback into the application based on these results, and implementing requested new features for ConnectFMS. We were able to deploy our application on the client's server with the Andrew Shibboleth authentication system installed before we recruited real users to test out our application from the CMU community. In addition, we presented our work and findings from the semester to two representatives from FMS.

Project Deliverables

ConnectFMS is currently deployed on the client's server, and we have shared our code repository with the client on Bitbucket. We also created technical documentation containing important information needed to access and maintain the application in the future.

Recommendations

For future teams on this project, we recommend that they consider implementing new features for the project such as search functionality, social media integration, and integration with FMS's existing database. The application should be also made more responsive and desktop-friendly since it is currently only optimized for mobile use, and future developers should consider ways to optimize the database in order to increase the application loading speed.

In order to fully achieve CBPD's goal of engaging the campus community with energy consumption issues at CMU, we recommend that the client works with FMS closely to gain official endorsement of ConnectFMS in the future so that more members of the community will know of and use the application to report issues.

Student Development Team

Brad Chin served as the client relationship manager and database lead. He is a junior majoring in Information Systems. He will be interning at PNC Financial Services this summer and is looking toward a career in technical consulting and project management.

Karen Segal served as the quality assurance manager and design lead. She is a junior double majoring in Information Systems and Human-Computer Interaction. She is looking toward a career in application development and user experience design.

Maggie Yu served as the project manager and technical lead. She is a junior majoring in Information Systems and Human-Computer Interaction. She will be interning at Capital One this summer and is looking toward a career in application development.