

Asset Management UX Design Study

Final Report

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Table of Contents

<i>Introduction.....</i>	<i>3</i>
<i>Objectives.....</i>	<i>3</i>
<i>Research Scope and Focus Areas</i>	<i>4</i>
<i>Research Methods</i>	<i>4</i>
<i>Stakeholder Insight.....</i>	<i>4</i>
User Group 1: Maintenance Staff	5
User Group 2: Park Managers	5
<i>Recommendations</i>	<i>6</i>
Simplify the EAM Interface.....	6
Customize EAM for Different User Groups	7
Improve the Mobile Experience	7
Expand User Outreach.....	8
<i>Conclusion.....</i>	<i>8</i>

Introduction

Prince George's County Parks & Recreation (PGDPR) uses an enterprise asset management (EAM) system and work order processing system operated jointly with other jurisdictions. While the system has been in use for some time, user adoption has been a challenge.

To promote greater user adoption and data quality, the county asked the project team to perform a user experience (UX) design study to identify barriers in business workflows and the application interface. This report is a comprehensive summary of the team's findings and recommendations suggested for improvements to the EAM system to increase usability, user adoption, and data quality.

The client contacts that have served as the primary point of contact between the project team and PGDPR for the duration of this project are Todd Johnson and Michael Wigglesworth. Additional PGDPR staff who proved invaluable to the project's success are Greg Angus, Erica Castellon, and Lance Easley.

Through interviews with PGDPR staff who work with the EAM system, the project team found that the most common issue reported in the system's daily operations was inconsistent data quality and low user adoption in specific user groups within the Department of Parks and Recreation. Incomplete and unmaintained work orders are a major issue and other features included in EAM, such as labor assignment and scheduling, were often entirely unused.

With this perspective, the project team set out to perform a design study to identify improvements that would fit EAM more easily into the workflow of users at Prince George's County Parks and Recreation. In this study, the project team's goal has been to analyze the user interface (UI) and overall user experience (UX) of EAM and report how the system can be changed to improve usability, drive user adoption, and increase data quality.

Objectives

At the outset of the design study, the project team set a number of objectives to inform and direct their efforts.

- Identify the usability issues within EAM that impede data quality and user adoption.
- Formulate solutions for each usability issue, which can be implemented within the existing EAM framework.
- Gain insight into the needs of user groups that have struggled to fully adopt the EAM system.
- Ensure that recommendations enable PGDPR to collect and visualize data that can generate business insights and drive continuous improvement in the future.

Research Scope and Focus Areas

For this design study, the project team's work focused on the usability of EAM within the Prince George's County Department of Parks and Recreation. Interviews with PGDPR representatives who use the EAM system revealed that the Prince George's County system is also used in neighboring Montgomery County by Montgomery Parks to serve a similar purpose of managing park assets and work orders to enable data-driven business insights.

For this project, the team only worked with the Prince George's County side of the EAM system. However, the coexistence of the system in two counties posed a unique challenge to the project team. Any changes to the Prince George's County side of EAM must be implemented in a way that it doesn't interfere with the Montgomery County. With this restriction in mind, the project team performed their analysis and designed recommendations for the EAM system in Prince George's County.

Research Methods

To enable the project team's design study, the county staff who implemented EAM at PGDPR provided the project team with read-only credentials to access the EAM developer environment. This allowed the project team to directly analyze and engage with the EAM interface without influencing or interfering with its day-to-day operation.

This access and interaction allowed the project team to test, analyze, and assess EAM's overall usability. The tests included mock tasks like creating a work order, accessing an existing work order, and viewing the overall list of unfulfilled work orders. The EAM interface was evaluated on desktop, tablet, and mobile configurations to evaluate its overall UX across different devices.

Additionally, the project team interviewed several end users of EAM to better understand their needs and the problems they encounter in using EAM. These meetings were organized to include both users who have readily adopted EAM and users who have struggled to integrate EAM into their daily workflow. Through these interviews, the project team was able to gain significant insight to what is and isn't working in the current implementation of EAM.

Stakeholder Insight

A key aspect of a user experience design study are the users themselves. To gain insight on how end users worked with EAM, the project team organized interviews with park managers, maintenance staff, and the EAM team within PGDPR to better understand how the system is perceived and used by the department's varying user groups. The team's gained valuable insight

into the information is needed from specific user groups, and how their needs can be used to inform design improvements to EAM.

User Group 1: Maintenance Staff

Based on interviews conducted with maintenance staff, the team found that a significant number of reported issues stemmed from what was considered a confusing and overwhelming work order organization and entry system. In one interview, a candidate noted that they spent more time wrestling with the application to fill out a “cut grass” work order than they spent cutting grass. Maintenance staff interviewed often still used work orders on paper, and preferred manual data entry into EAM after the fact over direct data entry in the field through a mobile device or Wi-Fi connected laptop.

To prioritize information this user group needs to see, the project team built a shortlist of the most important information needed by maintenance staff in their day-to-day work.

- Fulfilling existing work orders
- Viewing existing unfulfilled work orders
- Viewing incoming work orders
- Creating new work orders

Additionally, the work order screen itself was a common “pain point” brought up by the users. They often struggle to navigate the large amount of text entry fields to find and enter the information they need. The maintenance group relies heavily on work order data and they reported that the work order creation/editing screen was a major problem. There were too many text entry fields spread across too large an area. Users often struggle to find the information they need, and commonly experience “information overload” as they navigate the work order pages. Park managers noted that a common response to this issue is that maintenance staff stops using EAM almost entirely and rely on work orders on paper to do their work.

A redesign of the work order creation screen should place three pieces of information front-and-center:

- What needs to be done
- Where it needs to be done
- Who needs to do it

User Group 2: Park Managers

The project team’s interaction and interviews with Park Managers provided significant insight. The most common complaints lodged by these end users were an overwhelming number of work orders, a confusing and overly complicated interface, and the amount of time required to complete basic tasks using the current EAM interface.

Additionally, the key features Park Managers would prioritize for a customized EAM redesign that provide core information they need to do their jobs.

- Organizing and managing large numbers of work orders
- Assigning labor hours among park staff
- Viewing incoming work orders
- Creating new work orders

The insights gained from the Park Managers aligned fairly closely with those of the Maintenance Staff. Both groups agreed that the current EAM interface needs an overhaul, and that the most commonly performed tasks within EAM for work order creation, editing, and completion were cumbersome and took too many clicks to complete. Despite having different roles within the organization, both groups hold similar opinions about the EAM interface and how it enabled them to do their jobs.

Through these interviews, the project team learned of an EAM customization feature that would enable the EAM Team to resolve most of these complaints with a few tweaks to the EAM interface.

Recommendations

After analyzing the EAM system's user interface as currently implemented at PGDPR, the project team formulated several changes and recommendations that could dramatically improve usability, user adoption, and data quality within EAM.

Simplify the EAM Interface

As it stands today, the EAM interface relies on a large number of text entry fields. This is most apparent on pages like the work order creation screen, with 85 fields for user input alone. Based on insights from end user interviews, this screen overly complicates the work order fulfillment process and significantly impedes usability. For instance, one interviewee suggested that the system was interfering with his productivity and time management.

The EAM interface should undergo a significant reduction in text entry fields. Fields that don't require direct user interaction should be removed, relocated, or hidden. Reducing the number of unused and unnecessary fields for user input will reduce the chance that a field is filled out incorrectly, inaccurately, or left blank. For example, relocating text entry fields not required for each work order to a drop-down menu that is collapsed by default will de-clutter the page without completely removing the entry field if it's needed. The project team is confident that simplifying the work order creation/editing screen would increase usability, user productivity, and data quality significantly.

Customize EAM for Different User Groups

An interview with Lance Easley, Bock Road Park manager, revealed that the team responsible for EAM deployment within PGDPR can customize the system's interface in a way that software usability and user productivity can be significantly improved.

The EAM client interface can be modified and configured differently for individual users and user groups, giving maintenance staff a set of shortcuts and features that are unique to their user group. For example, the modified EAM interface created by Erica Castellon for Lance Easley enables park managers to access labor hours, maintenance schedules, work orders, and asset information with a single click of a shortcut. This powerful feature can enable a significant portion of the recommendations listed in this report.

The project team recommends fully using this capability to simplify and improve the EAM interface. Creating and implementing customized EAM client interfaces for each user group (maintenance staff, park managers, etc.) can, with minimal effort, improve the experience of using EAM for the end user. Instead of creating bespoke EAM configurations for each individual end user, the EAM Team could apply an overhauled EAM interface for the entire PGDPR maintenance force simultaneously.

Improve the Mobile Experience

Early on, the project team noticed that it is difficult to work with EAM on mobile devices. The interface is cluttered, claustrophobic, and difficult to use on any mobile device smaller than an iPad. A separate application is used to interact with EAM on a mobile device. This application, called Transit, is as an effective mobile companion app to EAM but is limited due to licensing fees imposed by Infor. A more ideal and long-term solution would be to improve the EAM interface to the point where a separate mobile app is not needed.

Ultimately, the need for a separate mobile app would be negated if EAM were more accessible on a mobile web browser. After interviewing multiple users who work in the field, a common complaint was the difficulty of inputting accurate data in a timely manner without interfering with their work duties and productivity as park employees.

Optimizing the mobile layout of EAM for smaller screens, could alleviate or resolve many of these issues. Completing a job and then returning to the office to complete the work order on a separate system was reported to be a major hassle and motivation drain for end users. This lack of cohesion between the app and the daily work of maintenance staff is suspected to be a strong driver for user attrition and poor data quality

Expand User Outreach

To improve the EAM user experience and understand the needs of those who use the system, few things are more important than employee outreach. To better understand user needs and how to accommodate them, regular communication between the EAM Team and the end users is a must.

Regular training sessions have been an ongoing initiative by the EAM Team, and are critical to ensuring as many users as possible have a positive and productive EAM experience. That said, we encourage the EAM Team to continue reaching out to end users who struggle to incorporate EAM into their daily workflow as a way to better understand what these users are struggling with. The users themselves are the most important aspect of a software's user experience, and their needs must be understood and brought to the forefront of EAM's design for the system to succeed.

Leveraging user outreach and tailoring the EAM interface to accommodate the information needs of each user group can dramatically improve the overall usage of the system. EAM training sessions and user outreach are both critical in getting employees to effectively integrate EAM into their daily work. Regular communication with people who rely on EAM to do their daily work is one of the most important ways to improve EAM.

Conclusion

Despite flaws in its current implementation, nearly every person interviewed agreed that EAM is a powerful and effective piece of software, albeit with some caveats about the usability of its interface. The foundation for a strongly effective system is in place and has been for some time.

Based on the project team's conversations with EAM's end users and the PGDPR team that implements the system, we believe that Todd Johnson and his team are close to a breakthrough in improving the end user's experience. The organization is taking massive steps toward improving EAM. With some comparatively minor tweaks to the interface and a renewed approach to user outreach and understanding user needs, we believe that EAM can enable expanded data-driven business insight for the Prince George's County Department of Parks and Recreation.

To make this a reality, the effort to improve EAM requires support at multiple leadership levels within the organization. Support needs to come from end users, as well as from the manager, deputy, and executive level. Every level of leadership within the Department of Parks and Recreation must be committed and supportive of the ongoing effort to improve EAM for the benefits to be fully realized. Todd Johnson and his team are spearheading this effort, and to do their best work they need the full support of their organization.

The potential benefits of an improved EAM will massively outweigh the labor involved in making those improvements. Implementing the recommendations listed in this report, will allow PGDPR employees to more easily integrate EAM into their daily work.

Additionally, the data inputted into this system by end users can be used to analyze and visualize the costs and labor required to maintain park assets on a much broader scale, enabling PGDPR to make strong data-driven decisions that will benefit both the organization and the park-going public for years to come.