

Delivering a Comprehensive Tracking System and Interactive Dashboard for The Columbia Pike Partnership

A Professional Readiness Experiential Program (PREP) Project Effort

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---- Client Testimonial ----

“We were grateful for the prep team’s work, effort, and collaboration. Our students came ready to listen, share what they had worked on, and ask insightful questions. The final product was exactly what we were looking for and gave us something we could not have created on our own. Kudos to George Mason, Professor Ngac, And their amazing students.”

- Andrew Schneider | Executive Director | Columbia Pike Partnership

Introduction

The Columbia Pike Partnership (CPP) is a nonprofit organization focused on supporting the Columbia Pike community in Arlington, Virginia. CPP works with local businesses, residents, and community stakeholders to address issues and improve quality of life. As the organization receives a high volume of requests from multiple sources, managing and tracking this information has become increasingly complex. The current process lacks a centralized system, making it difficult to efficiently organize data and generate timely reports. This project aims to develop a more streamlined and data-driven solution to improve CPP's data collection and reporting processes.

Business Challenge

CPP's first challenge was the lack of a centralized system to track issues and business engagements. Issues were received through multiple ways of communication, such as emails, phone calls and in-person meetings. All of which resulted in a fragmented and inconsistent data collection process. This meant that staff had to manually input and sort data into Airtable, increasing the risk of errors and inconsistencies in data entries.

CPP's second challenge, alongside their data intake issues, is their reporting process. It was highly manual and time-consuming. CPP staff had to export data from Airtable into Google Sheets and recreate visualizations from scratch each month. This greatly limited their ability to identify trends and KPIs in real time. This also made it difficult to track issue progress and prioritize areas that needed attention. Overall, operational efficiency was degraded by the lack of automation between data collection and reporting systems. These challenges combined created a significant problem for the CPP staff and hindered the organization's ability to make data-driven decisions. Without a streamlined system, CPP could not effectively track community concerns and inquiries, analyze trends, and proactively respond to the community along the Columbia Pike corridor.

Activities Done to Address the Business Challenge

To address the business challenge, our team began by analyzing CPP's existing systems, including Airtable and Google Sheets, to identify issues with data organization, consistency, and tracking processes. Additionally, tools such as Power BI, Tableau, and Google Looker Studio were evaluated to determine the more effective solution for data visualization and reporting.

Our team then tested key features in Airtable and Power BI to better understand their capabilities. In Airtable, this included designing the database structure, creating fields and filtered views, and exploring automation features to streamline data collection and improve data accuracy. In Power BI, various visualizations, and dashboard layouts were evaluated to identify effective ways to present and analyze the data.

Building on these insights, our team developed a centralized solution within Airtable by creating a standardized issue intake form for both internal and external users. Airtable was then integrated with Power BI through a web-based connection, allowing data to flow directly into the interactive dashboards created. Within Power BI, dashboards were developed to provide

real-time insights, track key metrics, and support faster decision making. GIS mapping features were also incorporated to highlight geographic hotspots of issues along the Columbia Pike. Additionally, a consistent dashboard theme and layout were implemented to align with CPP's branding and effectively showcase newly submitted data.

The system was refined based on CPP's feedback to better align with their needs. Updates were made to the intake forms, data categories, and dashboard visuals to improve overall usability. End to end testing was also conducted to ensure that data submitted through the issue intake form was accurately captured in Airtable and reflected in the Power BI dashboards. This resulted in a more centralized and efficient system for tracking and analyzing CPP's key metrics.

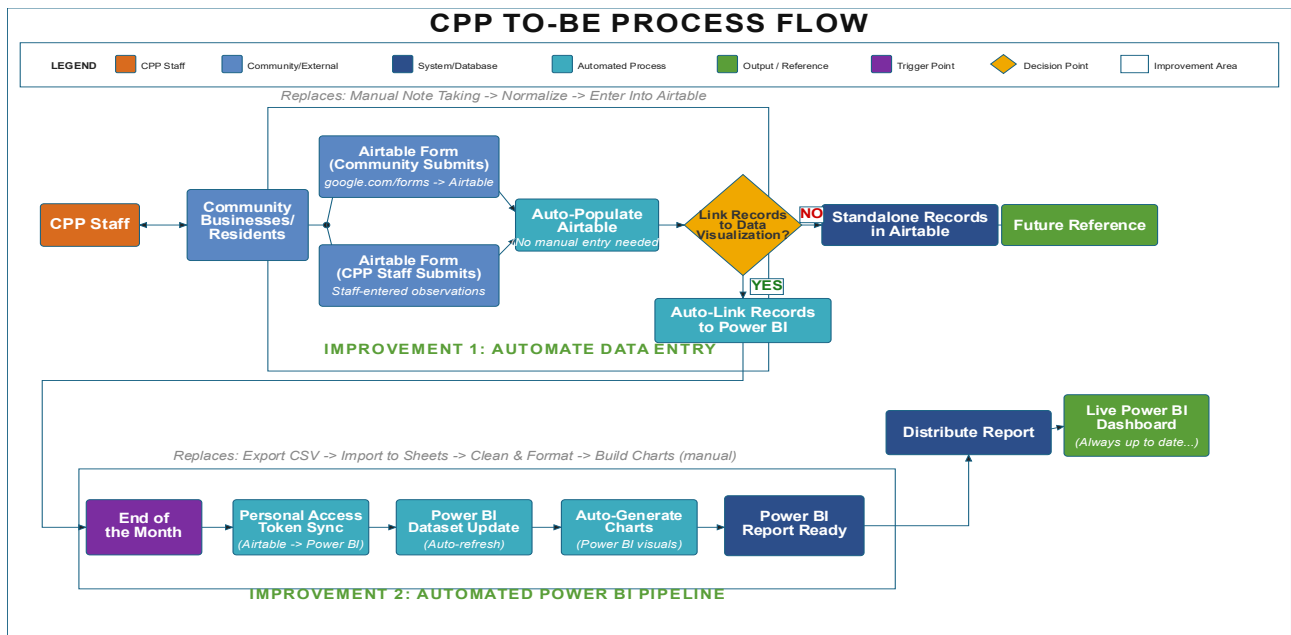


Figure 1: TO-BE Process Flow.

Shown above is our TO-BE process. The redesigned workflow centralizes data collection through standardized Airtable forms used by both the CPP staff and the community, eliminating manual entry and improving data consistency. Submitted data then auto populates in Airtable, where it is organized and linked to Power BI for visualizations. This enables an automated reporting system where dashboards automatically update, providing real time visibility into key metrics. Overall, the process streamlines both data intake and reporting, reducing manual effort and enabling faster, more informed decision making.

Results & The Positive Impact

The solution delivered a clear improvement to how CPP collects and manages community data. By introducing a standardized intake form in Airtable, all incoming issues were captured in a consistent format, reducing the risk of missing or incorrect information. This also made it easier for staff to search, filter, and organize without spending extra time fixing data quality issues. The direct integration between Airtable and Power BI also means that new submissions are reflected

The Power BI dashboards gave CPP staff a clearer, real-time picture of what is happening across the corridor at any given time. Key metrics such as issue volume, category breakdowns, and issue status could now be tracked in real time rather than reviewed once a month. The GIS mapping feature added an important geographic layer to this visibility, allowing the team to quickly identify hotspots. This level of insight was not available to CPP before this project. CPP can now respond to community concerns faster and with more confidence.

Overall, the project has helped CPP shift from a manual process to a more organized and timely way of managing community issues. Staff can now spend less time on repetitive data tasks and more time on direct engagement. The system was also built in a way that can grow alongside the organization, making it a long-term asset rather than a short-term fix. These improvements supported CPP's broader goals of being a responsive and informed partner to the Columbia Pike community.

Conclusion

This project resulted in the development of a centralized and automated system for managing community issue data. The solution reduces manual effort and improves the consistency and accuracy of data collection. It also enables real-time reporting, allowing CPP to monitor trends and respond more effectively. By improving data visibility, the system supports more informed decision-making across the organization. Overall, the solution provides a scalable and sustainable approach to enhancing CPP's operations moving forward.

PREP Student Reflection

Taking part in the PREP program and working with CPP was a valuable experience that helped us connect what we have learned through these past years to a real, agile project with a real client. We were able to apply skills in data management, system design, and data visualization in a setting where the work mattered to the people using it. It also pushed us to think beyond just building something that works technically and focus on whether it actually meets the needs of the people it is built for. Overall, it was both a thinking and learning process.