

EPWP[®]
DIGITAL PLATFORM



Problem Statement

The Eastern Cape Department of Transport (EC DoT) currently relies on manual, paper-based systems to track the attendance, performance, and payment of over 30,000 participants in the Expanded Public Works Programme (EPWP). This outdated system is plagued by several issues, including inefficiencies in data collection, inaccurate records, and irregular audit. The lack of integration between attendance tracking and payroll systems leads to discrepancies and makes it difficult to ensure that participants are paid accurately and on time. Furthermore, the high volume of paper-based workflows across multiple districts introduces significant operational inefficiencies, inefficient reporting, and poor performance monitoring. These challenges not only hinder the Department's ability to make informed decisions but also result in adverse audit outcomes and a lack of accountability in managing public funds. A modernized electronic system is essential to streamline operations, ensure accurate data collection, and improve the overall management of the EPWP.

Solution Overview

The proposed solution is a robust and scalable electronic platform designed to modernize attendance, performance tracking, and payroll processes for the EPWP (Expanded Public Works Programme) participants. The solution leverages Microsoft Power Apps for a user-friendly interface that allows supervisors to easily manage employee check-ins and check-outs via ID scanning and biometric controls. It also integrates Azure Maps for geolocation tracking to ensure accurate site verification, even in remote areas, using reverse geocoding to convert latitude and longitude into a readable address. The system is built on Microsoft Dataverse for secure data storage and real-time synchronization of attendance records, while Power Automate provides seamless automation for key workflows, such as logging check-in/out timestamps, processing location data, and connecting with existing payroll systems. Additionally, Power BI enables the generation of real-time reports and dashboards, providing insights into attendance patterns, performance metrics, and SLA compliance.

This centralized platform ensures data integrity, reduces the risks associated with manual processes, and allows for easy scaling across multiple work sites. The system will not only improve operational efficiency but also ensure adherence to audit standards and streamline payroll operations for over 30,000 EPWP participants.

Personas

The **EPWP Digital platform** will serve 4 key personas involved in the EPWP management process.

1. **Supervisors** are responsible for managing EPWP participants at specific job sites. They handle the daily check-in and check-out processes, either by scanning IDs or manually entering participant details. They also monitor attendance, validate overtime, and submit final timesheets for payroll processing.
2. **EPWP Participants** are the contracted workers who are required to punch in at the beginning and out at the end of their workday. If necessary, they rely on their supervisor for manual check-ins, and they may need to justify overtime.
3. **Project Managers/Administrators** oversee the operations across multiple job sites, ensuring that supervisors follow protocols for attendance and performance monitoring. They review reports and resolve discrepancies in attendance data while approving payments based on validated work hours.
4. **System Administrators** are responsible for the overall system setup and maintenance. They manage user roles, configure permissions, monitor system health, and ensure the smooth operation of the platform.

How It Works / Process Flow

The platform streamlines the daily attendance tracking and payroll reconciliation processes for EPWP participants through an easy-to-use, automated system. At the beginning of the workday, EPWP participants check in by scanning their ID using a mobile device managed by the supervisor. This scanning retrieves the participant's details from the database, ensuring accurate record-keeping and timestamps their check in checkout times. If a participant forgets or lost their ID, the supervisor can manually enter the employee's ID number, with the system logging whether the check-in was performed manually or via scanning. The system captures the location's latitude and longitude through the device's GPS, which is then processed through Azure Maps to verify the site address. At the end of the shift, participants check out using the same method—scanning their. Supervisors also have the option to bulk log out all participants at once with a single click, or individually for those who leave early or require overtime approval. Attendance data is automatically synced to Microsoft Dataverse in real-time, ensuring accurate and up-to-date records for payroll processing. Additionally, real-time reports and dashboards in Power BI provide project managers with insights into attendance patterns, performance metrics, and compliance with labor standards, enhancing overall efficiency and decision-making.

Technology stack/Architecture

The Solution is built on a modern, scalable technology stack that ensures seamless integration, real-time data processing, and robust reporting. The key components of the architecture include:

1. Frontend: Microsoft Power Apps

- The user interface for the app is built using Microsoft Power Apps, providing an intuitive, mobile-friendly platform for supervisors to manage check-ins and check-outs. The app allows participants to check in by scanning their ID, making it user-friendly and accessible across various devices.

2. Data Storage: Microsoft Dataverse

- Dataverse serves as the central data storage layer, housing all the attendance records, employee data, and location tracking information. It provides a secure and scalable environment for managing large datasets, ensuring data integrity and easy integration with other Microsoft services.

3. Automation & Workflows: Power Automate

- Power Automate is used to automate key workflows within the system. This includes triggering the reverse geocoding process through Azure Maps, sending notifications, and ensuring the seamless flow of attendance data to payroll systems. Power Automate also handles the integration with external services and ensures smooth data exchange between the app and other components.

4. Location Services: Azure Maps API

- The app leverages Azure Maps API for reverse geocoding to convert latitude and longitude coordinates into readable addresses. This ensures accurate location tracking for remote work sites where formal addresses may not be available. The location data is captured when participants clock in or out, and processed via an HTTP GET request to Azure Maps, with the output parsed into a freeform address for reporting.

5. Integration & Data Pipelines: Azure

- Azure Data Pipelines are used to manage the flow of data between various components, ensuring that attendance and performance data are synchronized in real-time. Azure enables the secure transfer and integration of data from the app to payroll systems, performance monitoring tools, and reporting platforms.

6. Reporting & Analytics: Power BI

- Power BI is used to generate comprehensive reports and dashboards, offering real-time insights into attendance patterns, project performance, and SLA compliance. These reports allow supervisors, project managers, and payroll officers to track trends, identify anomalies, and make data-driven decisions.

7. Security & Compliance: Azure Role-Based Access Control (RBAC)

- The system implements Azure RBAC to enforce role-based access control, ensuring that only authorized personnel, such as supervisors, administrators, and payroll officers, have access to specific data and functionalities. This enhances security and ensures compliance with organizational and audit requirements.

Conclusion

The digital platform is a comprehensive solution designed to modernize the management of the Expanded Public Works Program (EPWP), replacing inefficient manual systems with an automated, scalable platform. By leveraging Microsoft Power Apps, Dataverse, Azure Maps, Power Automate, and Power BI, the solution ensures accurate and real-time tracking of attendance, streamlined payroll reconciliation, and enhanced reporting capabilities. Supervisors are empowered to manage check-ins and check-outs efficiently. The integration of location services and automation further ensures that the system is capable of handling the unique challenges of remote work sites and large-scale workforce management. This solution will not only enhance operational efficiency but also improve data accuracy, ensure compliance with audit standards, and streamline payroll processes, ultimately helping the EC DoT to better manage its EPWP participants and public funds.



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