Transportation Department Reorganization

PURDUE UNIVERSITY | School of Industrial Engineering

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Client Name & Location: Clinton Prairie School Corporation (Located in Frankfort, IN)
Client Contact: Scott Miller (CP Superintendent)

Problem Statement

Develop an effective digital transition system for the Clinton Prairie Transportation Department by documenting departmental knowledge in a dynamic process manual to reduce the required personnel in employee onboarding and enable efficacy of change management.
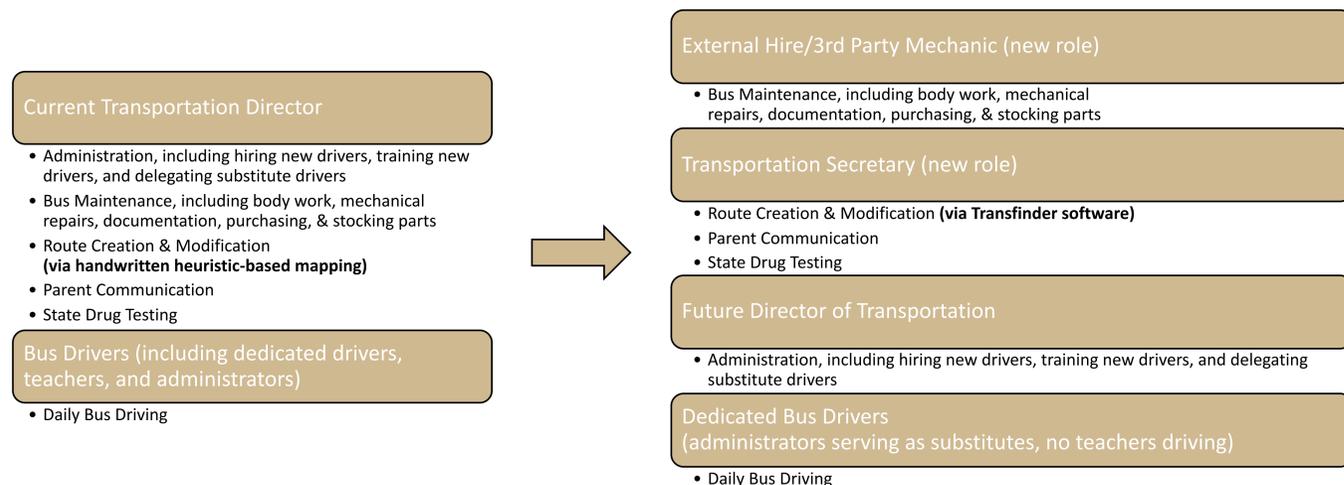
Client Background

Clinton Prairie School Corporation consists of an elementary school & Jr./Sr. high school. They serve over 1,100 students from K-12, and nearly 800 of those students use the buses. Clinton Prairie owns 18 buses that run 13 routes, as well as 2 additional extra activity routes. Each route lasts around 45-60 minutes each.

The Transportation Director at Clinton Prairie will be retiring soon. He currently handles equipment maintenance, driver training, transportation routing, economic reliability, administrative work, manually-created bus routes, and daily bus driving. Due to limited documentation of ongoing processes, there is a risk of knowledge loss after his retirement.

System Model

Current to Future Department Division of Responsibilities

Current Transportation Director
- Administration, including hiring new drivers, training new drivers, and delegating substitute drivers
- Bus Maintenance, including body work, mechanical repairs, documentation, purchasing, & stocking parts
- Route Creation & Modification **(via handwritten heuristic-based mapping)**
- Parent Communication
- State Drug Testing

Bus Drivers (including dedicated drivers, teachers, and administrators)
- Daily Bus Driving

External Hire/3rd Party Mechanic (new role)
- Bus Maintenance, including body work, mechanical repairs, documentation, purchasing, & stocking parts

Transportation Secretary (new role)
- Route Creation & Modification **(via Transfinder software)**
- Parent Communication
- State Drug Testing

Future Director of Transportation
- Administration, including hiring new drivers, training new drivers, and delegating substitute drivers

Dedicated Bus Drivers (administrators serving as substitutes, no teachers driving)
- Daily Bus Driving

Methodology

Mapping Relevant Topics: The team focused on digitizing documentation to be utilized throughout the onboarding and training process for Future Clinton Prairie Transportation employees; the district previously kept all documents and procedures manually. The team explored as many aspects of the responsibilities within the department as possible and documented them as necessary. The topics were identified to be relevant if they were upheld by the current director of operations, transportation, and maintenance.

Deliverable Format The goal for the future Director of Transportation is to digitize, utilize and update paperwork. With respect to this goal, the team digitized all maintenance paperwork and logging tools to assist with completing standard work, and identified high-impact documents that could benefit from transformation. The team focused on digitizing documents utilized specifically by the district (internal) and decided that governmental documents used by the school were out of scope.
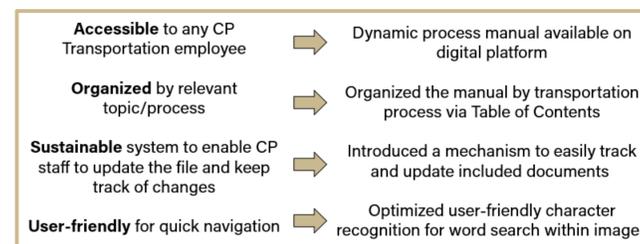The team created digital templates for:
- Accident Reports
- Bus Maintenance Tracking
- Entry Level Driver Training (ELDT)
- Performance Tests (for new drivers)
- Prehospital School Bus Accident Response School District Form
- School Bus Accident Release of Service
- Voluntary Statement Form (for accident reporting)

Obstacles, Risks and Mitigation The team anticipated obstacles such as the feasibility through which they can gather 50 years' worth of knowledge from one individual to create an effective transition system in a few months and modernizing current documents while maintaining continuity of knowledge. With this digital transformation, the team **risks a loss of information** between individual employees and the Transportation department which can lead to a lack of proper protocol information for different incidents and failure to make informed hiring decisions. To overcome these obstacles and risks, the team proactively engaged with the client to ask probing questions, obtain information, fill gaps and carefully populate a manual. Additional mitigation techniques that the team leveraged include implementing a **formal updating procedure** to accommodate the "dynamic" aspect of the manual and anticipated developments.

The team created a dynamic process manual available on digital platform to make it accessible to any Clinton Prairie Transportation Employee. It is organized by transportation department processes using a Table of Contents format. The manual introduced a mechanism to easily track, and update included documents to create a sustainable system to enable Clinton Prairie staff to update the file and keep track of changes. The file has been equipped with user-friendly character recognition for word search within images to enable easy and quick navigation.

Accessible to any CP Transportation employee	Dynamic process manual available on digital platform
Organized by relevant topic/process	Organized the manual by transportation process via Table of Contents
Sustainable system to enable CP staff to update the file and keep track of changes	Introduced a mechanism to easily track and update included documents
User-friendly for quick navigation	Optimized user-friendly character recognition for word search within images

Digital Process Manual Contents

Purchasing & Inventory	Parent Communications	Maintenance Documentation	Incidents & Accidents
Accident Procedure	Obstructed Routes	Delayed Routes	State Drug Testing
Indiana Traffic Safety Division Website	Recruiting New Drivers	Driver Training	Becoming a CDL Instructor
Transfinder	Bus Inspection	Investing in a New Bus	Pre-Trip Procedures

Results

- 30-page digital and dynamic process manual detailing all processes within Transportation Department
- Includes several sections outlining important information including accidents mitigation, closed routes, state drug testing, bus testing, and several required forms
- Created based on several discussions with the transportation department staff and previously existing manuals
- Client anticipates **time savings potential** due to the digital Process Manual created by the team

Discussion

Criteria for Benchmarking Success Metrics: The scope of the team's project addresses a complex systems management problem. Measurements for success were created to benchmark outcomes aligned with the deliverable.

Approach Assessment: The team developed an approach to enable a seamless transfer of knowledge to a new system of departmental management and digital transportation routing through continuous interview-style communications with the client. This will be measured by the client's assessment of **time savings potential** that is represented by having a living document like the process manual. The team used OneDrive software to allow for efficient collaborations from multiple users simultaneously while establishing a centralized platform to maintain continuity of documentation. The team shifted their delivery method to accommodate for the clients' preferred accessibility through which the "dynamic" aspect of the Process Manual will still be met, switching digital platforms from One Drive to Google Drive and transferring all documentation.