Reducing the lifecycle duration of manifests through technology to improve efficiency, provide transparency, and increase compliance.

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PAYLOAD™

AN EZ OPS COMPANY

REDUCING THE LIFECYCLE DURATION OF MANIFESTS THROUGH TECHNOLOGY TO IMPROVE EFFICIENCY, PROVIDE TRANSPARENCY, AND INCREASE COMPLIANCE.

INTRO

Companies, especially those facing downward economic pressures like in Oil and Gas, are looking to convert manual paper-based processes to digital ones for the benefits of lowering costs and improving the efficiency and efficacy of their day-to-day business activities. PAYLOAD's solutions digitize paper-based processes and in doing so enable new business models and value-producing opportunities. The result is the creation of greater transparency into, and control of, field operations to help make more informed, data-driven business decisions. An area needing digitization is the tracking and reporting of hazardous/dangerous waste, which has been a government requirement for nearly 30 years. The process has been entirely manual since inception, with digitization efforts only surfacing in the last few years. The existing paper-based process is rife with issues including:

- waste misclassification
- high costs and paper consumption
- incomplete/missing forms
- long, costly audit process
- high storage costs
- does not fit ESG goals of reducing paper usage

The major issue shared by Generators (Consignors) is the significant lag time from when a manifest is sent with a driver to when they get the reconciled form back from Receivers (Consignees); this is the primary focus of this paper. We will analyze the data captured through PAYLOAD's (PL) Manifest system, particularly the almost 4,000 manifests created in 2021, to compare the digital reconciliation time to that of the existing paper process and look at the intrinsic and complimentary benefits of implementing PL Manifest.

THE PAPER PROCESS

Let's first examine the existing manifesting process. During work at a job site hazardous waste is generated and needs to be trucked for disposal. Staff on site classify the waste, complete a manifest by hand, and give 3 copies to the driver (keeping the original for themselves). The driver takes the load to the receiver, unloads, and hands 2 copies to the Receiver operator (keeping one for their trip back). The Receiver meters and classifies the waste, fills out their manifest section reconciling the load, and mails back the completed form to the generator, typically near the end of every month. Only when the completed forms are received can the

Generator confirm the reconciliation and gain insight into what happened. During interviews with PL Manifest users, we confirmed the standard procedure prior to using PL Manifest was for Receivers to send paper forms back at the end of each month, meaning at best, a manifest would be returned within a couple weeks and at worst, a couple months from creation. While this process sounds long and extremely manual, it's important to note that historically there has been no alternative and therefore no pressure to change. Tech companies have only recently identified regulatory compliance as an addressable market. Now that the technology exists, let's examine the PL Manifest process and how it impacted our client's business to illustrate that digital solutions not only meet and maintain regulatory compliance but save money and time as well.

DIGITAL TRANSFORMATION

We implement PL Manifest with Generators and Receivers to digitize manifests from cradle to grave. Since we maintain the structure and appearance of the paper manifest, the digital process is very familiar to end users which lends itself to easy adoption. The overall manifest process is much the same, with improvements to the creation, distribution, and reconciliation of forms: Hazardous waste is still generated during work, but now Site staff fill out a manifest digitally and print just one copy for the driver. The driver takes the load to the Receiver, hands off the paper manifest, and unloads. The Receiver operator still meters and classifies the load, but now reconciles the form digitally, eliminating the need to store the paper manifest. The Generator can see the reconciliation as soon as the Receiver hits 'Save'. No more waiting for mailed back forms, no more chasing down site staff to explain issues that happened weeks ago, no more missing forms. The entire process is digital and auditable. As might be expected the digital process is faster, but how much faster? Another benefit of digital manifests is easy access to data collected which in turn yields more informed decision making and quicker problem resolution.

WHAT DOES THE DATA TELL US?

We analyzed data from AER manifests created in 2021 to derive our numbers. The dataset consists of nearly 4,000 manifests covering movement of 36 hazardous waste products across 8 areas of operation within Alberta. Key amongst the data for this analysis are the manifest status change data points, which allow the user to see the timestamp of when each step has been completed and by whom.

For reference, the statuses being used are:

- Shipped: when a manifest is printed and handed to a driver for transport.
- Received: when a manifest has been reconciled and signed off by the Receiver.
- Completed: when a Generator user has done their reconciliation and review and locks the manifest.

By calculating the time difference between the status updates we arrive at an average time of 81 hours from the Generator shipping a load to having completed reconciliation, with a median of 39 hours. In contrast, data gathered from client interviews, the existing paper process takes at minimum 30-45 days (720-1080 hours). This represents an average time saved of 89-92% and median time saved of 95-96%. Experience tells us these numbers will improve as industry continues to familiarize themselves with digital processes, most notably at Receiver facilities, and as the technology becomes more robust.

Form Count	Average Reconciliation Time	Median Reconciliation Time
3876	**81.05**	**39.00**

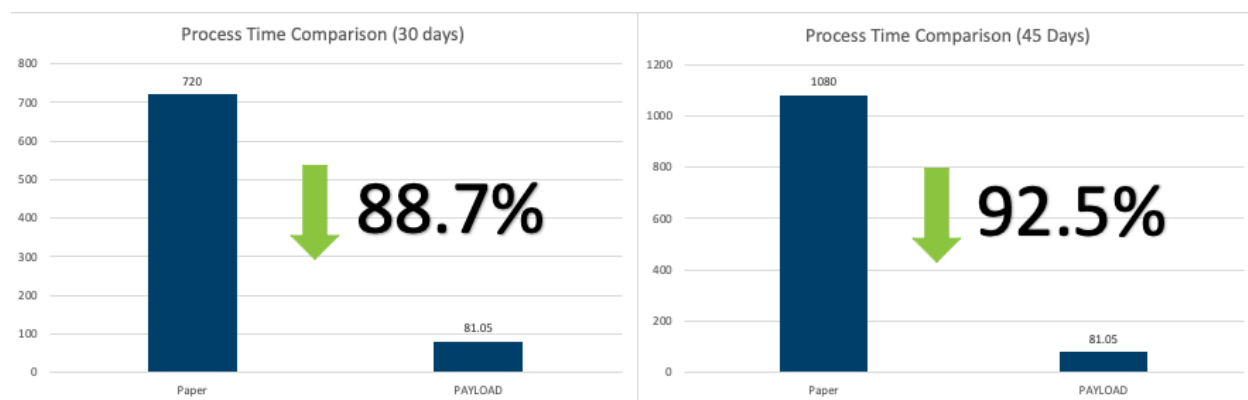**Figure 1 – data summary; form count, average and median reconciliation times.**

Figure 2 – visual representations of time saved paper vs PL Manifest.

IMPACT TO BUSINESS

Clients who implement PL Manifest see immediate improvements to the lifecycle timeline of their manifests. The drastically faster reconciliation process unlocks a host of benefits for both Generators and Receivers, one of which is well illustrated by this anecdote from an Admin user working for a global Oil and Gas producer:

> *"Receiver A had a manifest appear in their PAYLOAD system, but the load never showed up. They contacted the Generator about the missing load. An admin was able to go into PL Manifest, quickly identify who created the form, and contact the field operator. After some discussion it came the reason for the missing load was uncovered: the truck had taken on little volume so they decided in the moment to not ship to the Receiver A with the current manifest, instead they would fill the truck the next day with more volume. They had created a fresh manifest for this new load sending it to Receiver B instead. They had forgotten the original manifest for Receiver A from the day before had already been made. The issue was resolved within 24 hours of it being brought to the Generator's attention, where in the past they would not have even realized there was an issue until 30+ days after the event; the likelihood of people remembering the details of that specific shipment after that long are quite low. If they hadn't had complete visibility into forms being created there would have been a gap in the manifest sequence that would have caused problems had the AER performed an audit. Instead, now they have the completed form and a voided form, maintaining sequence and a digital record of what transpired."*

Without the 89-96% time reduction in manifest lifecycle that anecdote and many others like it would not be possible.

Beyond the ability to quickly diagnose and solve issues there are a other benefits to highlight. One of our clients gave us insight into the effort involved auditing the paper process. It took one Full-time Employee (FTE) two full weeks to gather, organize, and reconcile manifests for submission to the AER. This included needing to recreate manifests from truck tickets as they realized there were a significant amount that had been misplaced. Digitizing the process means manifests are 100% complete every time and there is an easily accessible digital repository containing every manifest, eliminating the need to recreate missing manifests as well as nearly all the manual effort involved in the audit process. The effort shrinks from 80+ hours to less than 8, a minimum 90% decrease, making audits significantly less impactful to operations and the bottom line and removing the need for physical storage, resulting in considerable cost savings.
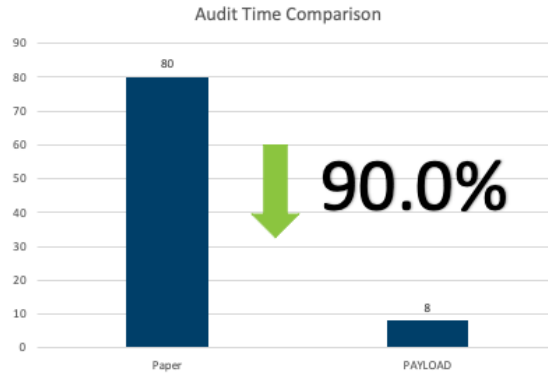
Figure 3 – Visualization of audit time savings.

We also gathered numbers to paint a cost-benefit picture for the reduction in manual effort. In a previous case study (found here) we found there was a 0.75 FTE worth of time savings comparing our process to the paper process since creating digital manifests takes about one-tenth the time. That translates to roughly $60K annually for Environmental Coordinators (average $80K salary) or $75K annually for Plant Operators (average $100K salary). Those dollar values may not actually be realized as savings, instead what can happen is the roles that used to deal heavily with paper manifests are now free to expend their effort on other higher-value aspects of operations. Either way, the company that implements PAYLOAD solutions is reaping the benefits.

Summary of additional benefits:
- Receivers get manifests 100% of the time. This happens more often than Generators think and has become a major issue for Receivers when dealing with regulators.
- Significantly better insight into expected vs. actual costs. Updates to quantity and waste classification are communicated faster, allowing admins to keep on top of costs throughout the month instead of trying to catch up at month end.
- Centralized data collection with built-in reporting and analytics, allowing easy identification of inefficiencies in your process.
- Streamline regulatory reporting through our app generated DDS and Waste reports.

CONCLUSION

Digitization in the Oil and Gas space continues to be a priority as companies look to reduce OPEX and streamline their business. Unlike some other technologies that need to be implemented then have the generated data drive decision-making, the primary benefit highlighted in this white paper is intrinsic upon implementation. This means immediate dramatic improvement to operations along with an easily measurable ROI. The cascade of additional benefits generates even more value and frees up employees to do other, higher value add tasks. PAYLOAD Manifest creates positive, immediate returns with minimal disruption to operations because of our effective solution and strong working relationship with clients. Embarking on the digitization journey with a strong software partner increases the chance of success dramatically.

After implementing our solution, our clients saw their manifest lifecycle time and audit efforts reduced by 89-96% without making any other business decision. They also immediately reduced their paper usage for this process by 75%. Perhaps most importantly they get quick, effective feedback from Receivers when what is on the manifest doesn't match what is in the truck, allowing follow up with the right parties to improve processes. These and the other benefits highlighted will continue to improve as the technology becomes more robust and the user base grows, especially across the Receiver facilities.. With the AER recently starting to crack down on improper manifesting practices and handing out hefty fines, it has never been a better time to look at digital solutions to create efficiencies and increase compliance.

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ABOUT PAYLOAD

Payload is a logistics software platform that connects companies with their service providers giving them the tools they need to optimize transportation activities and maintain regulatory compliance. How do we do it?

WORKFLOW MANAGEMENT
• Built-in waste code, Consignor, Carrier, and Consignee details to reduce human error.
• Pre-built digital copies of recommended regulatory forms
• Built-in workflows.

EASY RECONCILIATION
• Real-time visibility into volumes delivered to Consignees and waste manifests status at any stage in the process

AUDITABLE REPORTING
• Digital repository of all documents and their status accessible at any time.
• Suite of reports designed to allow users at any level to keep tabs on operations and identify issues.

SOURCES/REFERENCES

-   Glassdoor.com for average salaries for Environmental Lead and Plant Operator.
-   PAYLOAD case study: **"A Digital Manifest Case Study".**
-   Data captured in the PAYLOAD Manifest system in date range January 1 to December 31, 2021.