CASE STUDY

The importance of material visibility for owners/operators

Key facts:

Project: Refinery with multiple EPC firms and a complex, global supply chain

Industry: Oil and Gas

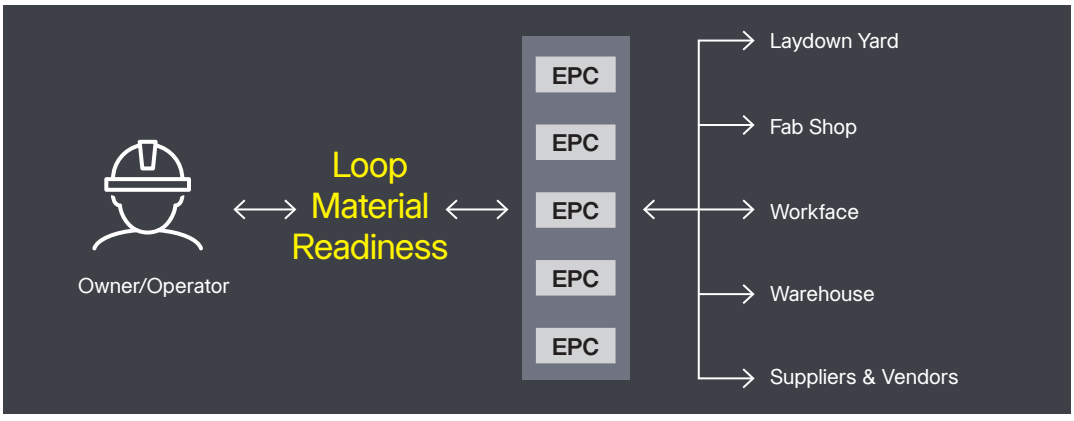
Country: Canada

Octave products used: Loop Material Readiness *(Jovix)*, Reporting, Inspections & Preventative Maintenance, Workface Planning, Look-Ahead Heavy Haul Report

Using Loop Material Readiness from Octave, a Canadian oil sands refinery owner gains unprecedented material visibility across multiple contractors.

This refinery project was comprised of multiple EPC firms and included an initiative to provide project-wide material visibility across multiple units and multiple contractors. The project owner selected Loop Material Readiness to support that initiative. The primary objective of this enhanced visibility was to provide the owner/operator with additional cost and schedule certainty. In addition to serving as the project's visibility tool, the owner also funded the transactional use of Loop Material Readiness and RFID tags for contractors, to drive transactional efficiencies through digitization and automation.

This project has a complex supply chain that includes multiple fabricators, marshalling yards, laydown yards, and material warehouses, of which some are shared between EPCs. Using Loop Material Readiness from Octave project-wide ensured complete visibility throughout the entire material lifecycle, from fabrication to installation. Loop Material Readiness serves as a comprehensive tool for the project owner, with robust functionality in reporting, trending and predictive analytics that can be easily configured to see the entire project at once or specific sets of information, down to the smallest individual material detail.



Key benefits:

- Detailed reporting across the supply chain provided real-time data to accurately manage the construction schedule
- Ability to detect and correct inspections and preventative maintenance issues before negatively affecting the construction schedule
- Owner gained more accurate view of productivity, performance and preparedness
- Proactive heavy haul decision-making, solving issues before impacting construction

A project laydown yard in the Canadian Oil Sands

Pain points

Jobsite challenges before the Loop Material Readiness implementation included the following:

- Lack of owner visibility into materials management challenges across a multi-contractor project
- Reactive decision-making based on outdated data from static reports across multiple contractors
- Multiple units and multiple contractors with different materials management systems and processes
- Inefficient and error-prone, paper-based materials management processes
- Inaccurate and outdated material data resulting from manual, error-prone data entry
- Inefficient and cumbersome cross-scope coordination involving multiple EPCMs, contractors and suppliers

The solution

Complete owner visibility of planning, productivity and performance across multiple contractors

The owner/operator adopted the Loop Material Readiness solution that combines hardware, software and professional services to address specific project challenges where traditional materials management processes fall short. This complex, multi-contractor project with a global supply chain required more than a simple material track and trace solution. For them, location was just the beginning. Loop Material Readiness is the cross-coordination tool that provides complete material visibility throughout the entire project lifecycle. Most importantly, Loop Material Readiness digitizes material data and brings it into a single solution owned and operated by the project owner. When all material data across multiple contractors' systems is accessible to the owner/operator through a graphical, user-friendly interface, true visibility is accomplished.

The Loop Material Readiness Implementation Team worked closely with all project stakeholders to enable data exchange in the most efficient and seamless method possible, with all EPC firms providing data to Loop Material Readiness on a recurring basis.

Because Loop Material Readiness was designed to support complex multi-site, multi-contractor projects, the project owner can slice and dice the project's material data with total transparency, accessing trending information on a large scale or focusing on a specific piece of material. The Octave Professional Services Team collaborated with key project stakeholders and the owner/operator to create additional functionality within the solution to enhance owner-focused visibility through a set of import templates. The project owner is now able to consume data from all EPC systems.

The following is an elaboration of functionality developed in partnership with the owner/operator that is now available to all Loop Material Readiness users. Included in each section is the problem, solution and results for each use case.

Jovix gives the project owner complete visibility into inspection and preventative maintenance compliance.

Streamlining inspections & preventative maintenance processes

Maintaining the quality of critical materials is paramount to ensure the safety and performance of specific items

Pain point: The project owner is ultimately the most interested in driving inspection and preventative maintenance compliance and documentation. With a traditional turnover approach, material preservation data is transferred in a manual, inefficient process. This leads to limited owner visibility into, and influence over, compliance. This challenge is increased in the case of this project in which there are materials being managed across multiple contractors.

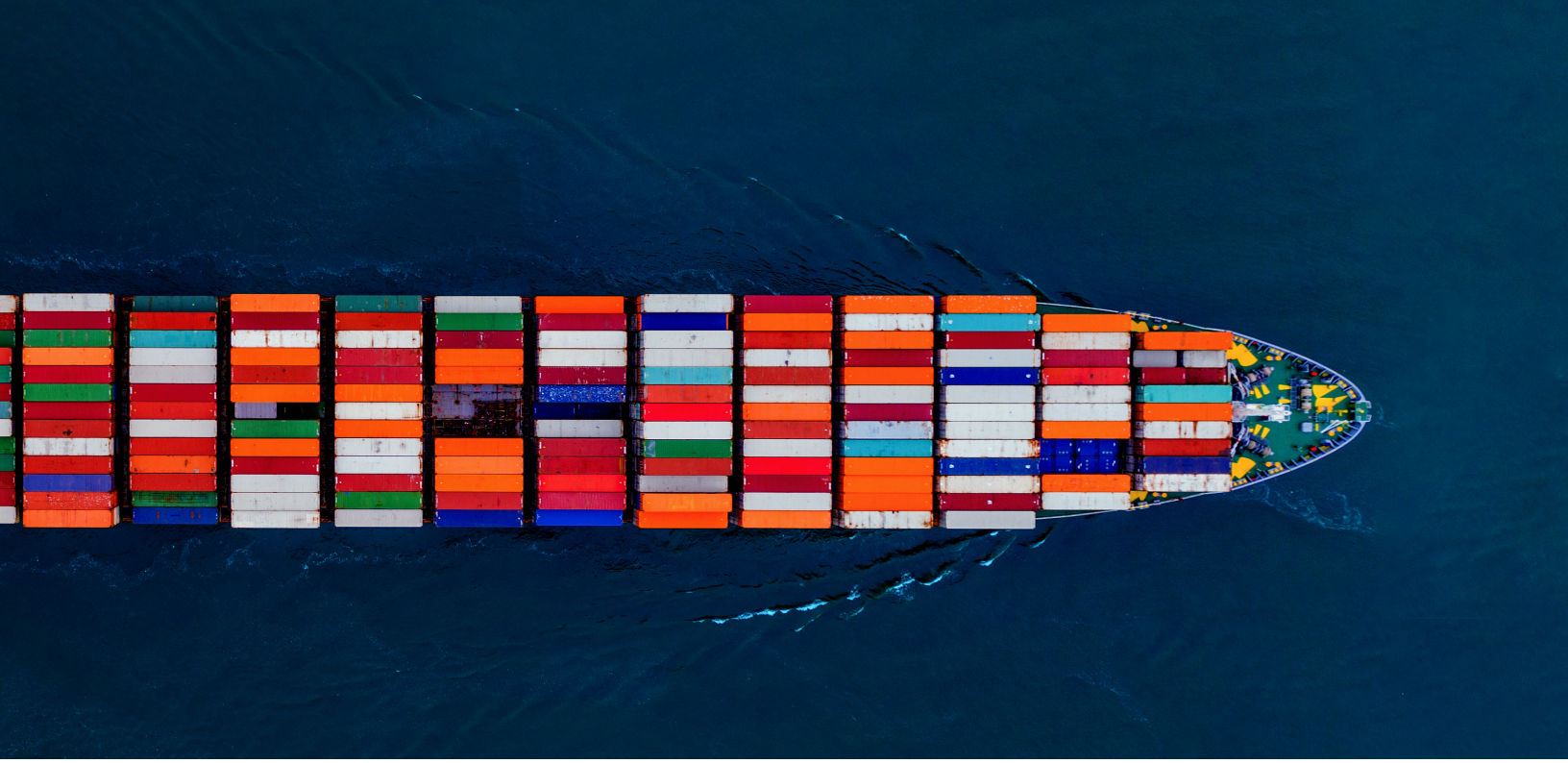
Solution: The Loop Material Readiness solution includes functionality for inspections and preventative maintenance that is tightly coupled with the core Material Readiness functionality, which drives efficiency by enabling activities such as a receipt to automatically trigger an inspection task, for example. Further, if a material fails inspection, Jovix can automatically place that material into quarantine status to remove it from the available materials and update workface planning data. This functionality is valuable for contractors and owners who are using Jovix to perform inspections and maintenance activities.

Loop Material Readiness can also be used as an inspection and maintenance compliance tool. Loop Material Readiness consumes raw data from the contractors' systems and then presents this data to the owner/operator in a graphical dashboard format. This visibility enables owners to detect and correct inspection compliance issues before they impact material availability and, ultimately, construction productivity.

Results: Maintaining the quality of critical materials is paramount to ensure the safety and performance of a specific item. It is also important to collect and access historical preservation information on an item from the time it is accepted on-site through construction and into operations. With the Loop Material Readiness preventative maintenance functionality, users are able to:

- Build inspection templates
- Upload requirements from suppliers
- Create recurring inspections
- Assign inspections to users
- Locate equipment requiring maintenance using GPS and RFID
- Collect pictures and digital signatures
- Edit images within the transaction such as cropping, brightening, circling problem areas and making notes

In addition to the ability for contractors to perform these transactions in Loop Material Readiness, the owner now also has complete visibility into inspection and preventative maintenance compliance, project-wide. This level of visibility and quick access through the dashboard widget is unprecedented.



Supporting workface planning with material readiness

Project owner gained a more accurate and timely view of productivity, performance and preparedness

Pain point: According to Construction Owners Association of America (COAA), workface planning with integrated Loop Material Readiness has shown to increase craft productivity by 25%.

With traditional progress reporting from contractors, it is not possible to assess the level of workface planning preparedness. This issue is exacerbated in the case of this project, where there was a lack of visibility into workface planning across multiple contractors and units, each using their own work planning process pertaining to their purchased materials.

Solution: The Loop Material Readiness solution includes a forecasting feature to predict future materials management issues by comparing supply data from purchase orders and shipments with demand data from work packages. This work planning functionality provides complete visibility into current and projected material availability, providing the owner/operator with visibility into the contractors' plans. For EPCs, the automated material allocation, combined with forecasting and predictive analytics, provides Loop Material Readiness with the ability to quickly identify future materials management issues before they impact each contractor's plan.

It is increasingly important for large-scale projects to have strong, collaborative tools for coordination across multiple contractors and units. Integrated solutions are key to effective collaboration, and the burden sits with project owners to drive data requirements. Forward-thinking contractors have also embraced integrated solutions that provide increased accuracy and productivity for the entire project, not just their part of it. These EPCs will be well positioned when owner/operators begin to mandate enhanced data requirements as this technology becomes mainstream.

Results:

- Project owner gained a more accurate and timely view of project productivity, performance and preparedness
- Project owner achieved visibility into contractors' use of workface planning and integrated Loop Material Readiness
- Contractors eliminated paper-based processes and replaced them with real-time material data collection at the point of transaction through auto-ID technology, such as active and passive RFID tags, GPS tags and barcodes, which ultimately enabled superior planning

Improving heavy haul shipment coordination through communication

Loop Material Readiness enables proactive decision-making to solve issues before they impact construction

Pain point: When any load exceeds a certain dimension (length, width, height or weight) or presents an irregular loading pattern that requires a specialized trailer, it becomes a "heavy haul" item. Heavy haul items require advanced planning for shipment, offloading and handling. The Heavy Lift Coordinator for this project is an employee of the project owner and is responsible for time and assets required to escort and lift the load from the trailer into place on the jobsite. According to the owner/operator, there are an estimated 1,500 heavy lifts throughout the lifecycle of this project. The most complex aspect of this coordinator's role is cross-scope coordination across all EPC firms across all units.

The project goal is to have a three-week heavy haul lookahead capability to allow time to coordinate all facets of heavy haul shipments. Each heavy haul shipment lift requires special coordination and permitting actions both on-site and throughout the shipping process. The shipping carrier - whether road, rail or ship - must adhere to the regulations of any port of call, municipality and transit authority involved in the transportation of the item. The coordinator is responsible for coordinating these regulations within the shipping company and any special rigging, lifting, staging, permitting and personnel requirements once the item reaches the site.

In addition to the regulations, the owner's Heavy Lift Coordinator is also ultimately responsible for maintaining positive community relations as the materials move through these various ports and municipalities, no matter which EPC owns that particular shipment. From small towns closing off their main street for a large delivery to pass through, to temporary road and bridge closures through Calgary and Edmonton, careful coordination and good working relationships are imperative to minimize the impact these large loads have as they pass through.

The complex logistics of shipping a heavy haul item from one location to another requires advanced planning.

All the EPCs working on the project have heavy haul shipments. It is the project owner's responsibility to coordinate the heavy haul traffic across their multiple scopes.

Previously, all coordination of heavy haul shipments across contractors and units was performed manually through phone calls, emails, spreadsheets and PDFs. This manual process introduced lags in decision-making plus errors from manual data entry and exchange.

Implementing heavy shipment coordination functionality in Loop Material Readiness reduced the equivalent of

$One full-time worker

that would traditionally handle all heavy haul information for the project.

The heavy haul item arrives on site and a quick scan informs all stakeholders in real time.

Solution: The owner operator and Octave Professional Services Team worked together to configure a three-week look-ahead heavy haul report with a corresponding dashboard widget. The report encompasses all heavy haul information project-wide, providing cross-scope coordination and complete owner visibility in real time. The report leverages material purchase order information, expediting information and the updates provided when a material moves through the supply chain. That data is pulled into a single system, Loop Material Readiness, and managed by the project owner.

With this reporting capability, the coordinator is able to easily manage by exception by configuring the report to show only certain information needed to highlight issues and allow for better decision-making. With access to this data project-wide, owner management can be alerted to non-conforming material data. For example, if a bridge closure will delay all major shipments for two weeks but a particular heavy haul item has not been updated with that delay, the coordinator is alerted that the material is not being properly expedited.

The heavy haul report is accurate, timely, easily configurable and available with one click on the dashboard widget. Through an import template, all EPCs are able to easily import and export material data from their systems in and out of Loop Material Readiness in order to comply with owner requirements. The Octave Implementation Team worked closely with all project stakeholders to enable imports in the most efficient and seamless method possible.

The Heavy Lift Coordinator's work processes have been drastically changed, and this heavy haul functionality has taught everyone involved in this process that this role has been undervalued and often reduced to playing "traffic cop" across EPC firms and units. With automation and site-wide compliance, the coordinator's daily responsibilities have shifted from comparing dozens of printed spreadsheets and making dozens of calls each day to an efficient and proactive approach to true coordination.

Results:

- Unprecedented owner visibility into heavy haul shipment data across multiple contractors
- Reduction of one full-time equivalent worker who would traditionally be required in order to handle all of the heavy haul information
- Total heavy lift material visibility for owner's representative across all contractors
- Graphical interface with user-friendly, configurable dashboard widget that enables management by exception
- Reporting features that enable proactive decision-making to solve issues before they impact construction

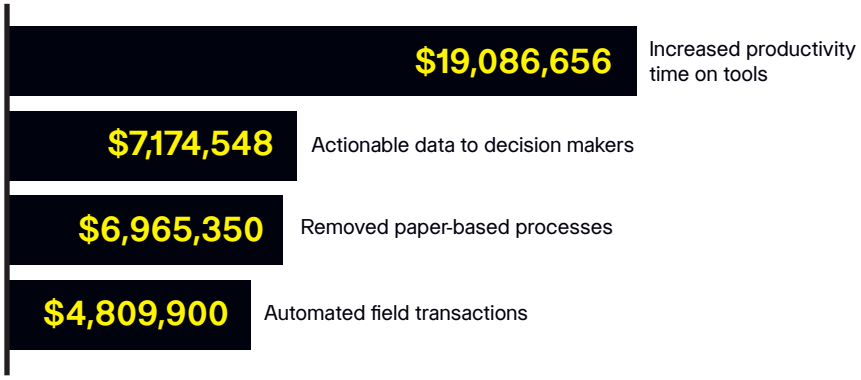
Project return on investment

The business case for the Owner Site Material Tracking and Control Program is based on risk mitigation, cost avoidance, schedule assurance and improvements in efficiencies of direct and indirect labor.

- Avoidance of “temporarily lost” material
- Improving efficiency of cost-reimbursable construction contractors
- Mitigating risks to the project schedule and budget by avoiding material availability issues (MWR Shorts Report)

Project wins:

- Visibility across all EPCs and contractors (single source of truth)
- Heavy Haul Report
- Asset tracking
- Inspections and Preservation Program
- Picking efficiencies
- Work packages
- Surplus management
- Material Shorts Report



The owner reported a total project savings of **$38,036,454** by deploying Loop Material Readiness.

Conclusion

This project owner is a leader in the owner operator market and is setting the example of what’s possible when adopting an enterprise solution that enhances complete visibility into today’s complex global project landscapes. Loop Material Readiness and this project owner continue to work together to develop new functionality that responds directly to the needs of today’s large capital assets in the construction and operational phases that benefits the entire industry from owners to EPC firms, contractors, fabricators and suppliers. Collaborative tools are a key component to greater efficiency and productivity in this industry.

About Octave

Octave is a leader in enterprise software, turning data into decisive action and intelligence into your edge. Our software solves for and simplifies complexity, from the design and build to operations and protection of people, property and assets – for any scope, at any scale. For decades, we’ve partnered with customers to sharpen performance, elevate efficiency and amplify results. From factory floors to entire cities, our solutions are tuned to scale up what’s possible from day one onward.

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