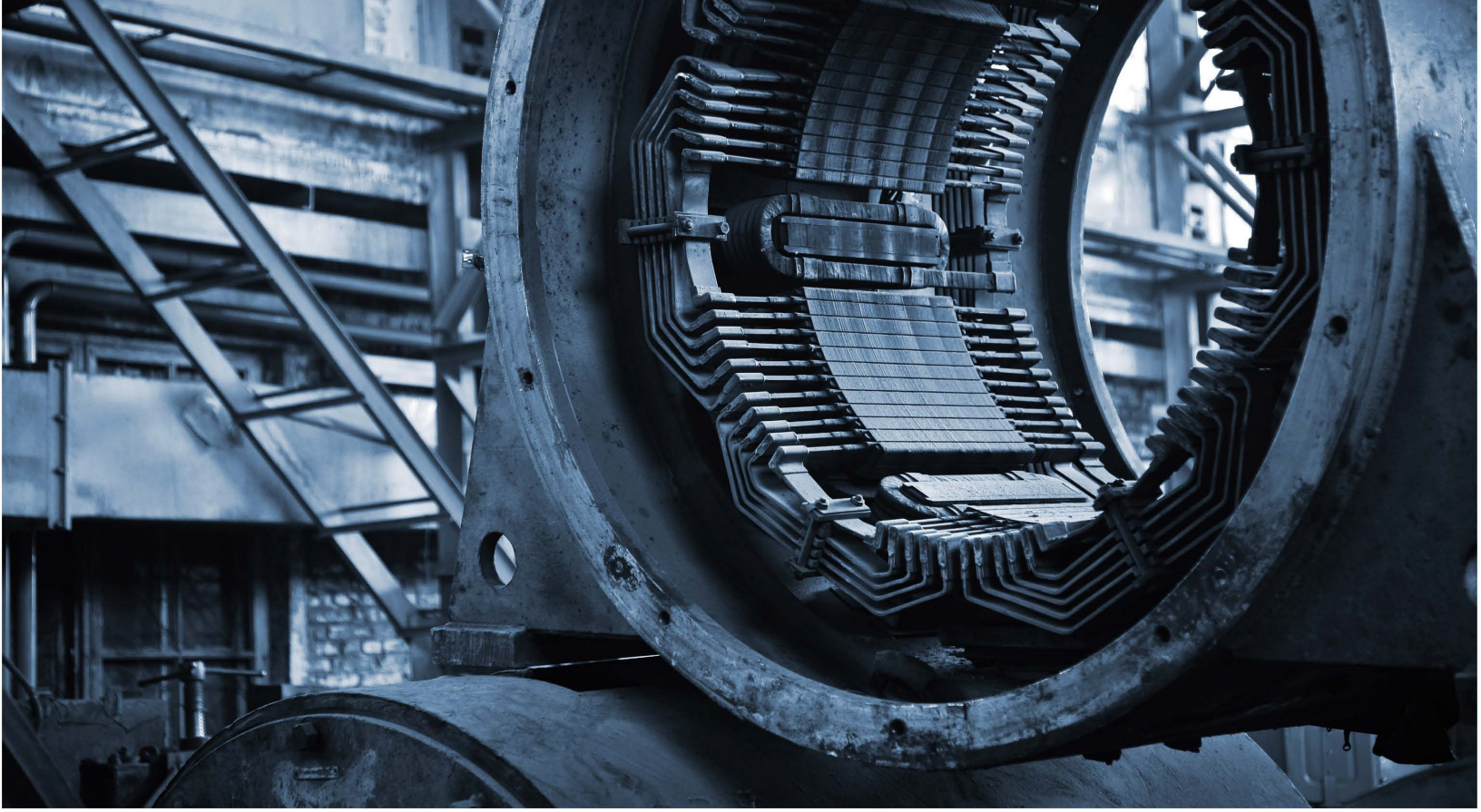

The Complex Job Shop

ERP Success for the Complex Job Shop

Some business software systems do not focus on costs within operational processes.
This white paper takes a look at common business issues and the modules needed to address them to ensure visibility into profitability.

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INTRODUCTION

It has been said that a profitable business can remain active and viable indefinitely, which is the goal of nearly every entrepreneurial endeavor. As a business grows, greater responsibilities must be delegated and tracked within the organization, otherwise the original proprietors must manage everything themselves. The challenge is how to create the needed visibility required for identifying exceptions, so management can apply the proper attention for timely decision making.

This concept is the foundation of Enterprise Resource Planning (ERP). It involves the centralization of details and the delegation of responsibilities so a company can manage its risk with an eye towards future growth. This challenge is even more daunting for the Complex Job Shop where each project is often unique, inventory is scattered and the communication of operational details are vital to assure profitability.

Standardized workflows and procedures are essential to centralization while many ERP systems do not provide the application infrastructure to capture the details for enhancing and improving communications. The objective of this discussion is to outline the more advanced ERP system requirements often needed to address the unique challenges of a Complex Job Shop.

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COMPLEX JOB SHOP OVERVIEW

There are many types of job shops. They range from equipment repair facilities that specialize in maintenance, repair and overhaul to construction firms, both small and large in size. What characterizes a Complex Job Shop is the size of their typical engagements and the number of people within the company required to deliver a completed project. The greater the number of people, the greater the challenge of coordinating tasks required to deliver the final product to the customer. The challenges intensify when coordination is required between departments along with maintaining budget control in an effort to carefully manage the company's working capital.

While the number of people will create challenges, the complexity of the jobs creates challenges which are revealed when you delve into the details of the business. It is common to find several independent systems being utilized within a company, some as sophisticated as standalone custom applications, others as basic as spreadsheets. These separate islands of mission critical data are required to support the execution of a Complex Job Shop's activities throughout any given projects lifecycle to completion. Because of these independent systems, problems will often arise when tracing back job details in order to produce customer invoices and job summary reports. Compiling and reconciling this information, all critical within the workflow is typically challenging and extremely time consuming. In addition, if the final reports are not timely, problem identification can be after the fact when it's too late to make the necessary adjustments, effecting the jobs overall profitability.

Multiple independent system constraints in some instances inhibits growth by hindering the effective management of resources. To evaluate the impact of multiple systems, two criteria must be considered: the cost of lost data passing between systems and the loss of timely information. If both are considered a low risk priority, then multiple systems may continue be the answer. But in an environment where a missed Purchase Order in the final invoicing stages can turn a profitable project into an unprofitable one, then a single integrated solution would make more sense.

Ideally, everyone within the Complex Job Shop should have access to the same real-time project data so that all users can be optimally coordinated. This collaboration can be achieved by utilizing a single system that centrally manages the data across all activities within the operational workflow. A wide range of functional requirements must be addressed if a single system is to meet the needs of the Complex Job Shop, for example:

- **Accurate Quotations:** The quotation and bidding process must be optimized by calculating the costs of each specific service with standardized processes. This will ultimately reduce costs and allow your business to take on more complex jobs while still meeting theneeds of your clients.
- **Work Scope Communications:** Proposals and tasks should be communicated uniformly through the job shop application in order to keep users current and to help eliminate out of scope work.
- **Integrated Procurement:** The linking of all Purchase Orders to Job controls eliminates unauthorized spending, while insuring that all job-related PO's are included at the time of invoicing.
- **Traceability:** This requirement varies by industry, but it should be a minimum expectation or legislative requirement to provide on-demand tracing of resources and inventory consumed in a job.
- **Streamlined Invoicing:** The close proximity invoicing has to project details allows accounting to resolve exception issues quickly with minimal disruption to the shop or sales resources.
- **Financial Efficiency:** All financials should be timely, effectively recorded and accessible for streamlined auditing, reporting and analysis.
- **Key Performance Indicators:** Summarization of the centralized data into performance measurements to help in evaluating the efficiency of any department.

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COMPLEX JOB SHOP CHALLENGES

There are a number of challenges a Complex Job Shop faces that a typical manufacturing or distribution business does not. For instance, the process of formulating a quote for Complex Jobs is often a combination of art and science. The art side of the quote involves summarizing a complex discussion into an easy to read document while the science portion involves the abstraction of details to assure the bid was properly formulated. Quotations typically involve multiple people while spanning across several departments and requiring repetitive discussions, each with a unique impact on the scope of work being proposed.

In some environments, the shop is contacted to get a specific budget, a scenario which has its own set of challenges such as:

- Pulls shop resources away from already committed jobs to budget work scopes.
- Quotes are delayed until shop resources are available to quote, which impacts the salesman's responsiveness.
- Shop provides inconsistent budgets for the same work scope which prevent management from objectively analyzing the shop's activities.

Once the job is accepted, the project information must be communicated to all departments that have a role in the workflow. Each department requires information that is pertinent to its responsibilities. For example, finance will be focused on the total budgets and taxability while the welding shop is only concerned with the work specifications and the time allotted to complete their task. All of this information is gathered in the early stages of the bidding process and is required to be communicated to all pertinent departments. The accurate dissemination of this project data is addressed by one or a combination of the following methods:

- Centralized storage of the Job & Bid information Physically copying the Job & Bid information for each department
- Passing the information from department to department

Each of these methods has their pluses and minuses, but they all create the following inefficiencies:

- Difficult to maintain current job instructions
- Work scope changes are painful
- Internal resources spend inordinate amount of time tracking, tracing and resolving issues

To deal with these issues the Complex Job Shop often relies on a patch work of systems to assist in the execution of job responsibilities. While this alleviates some of the more visible pains, the problems result in information lost both intentionally and unintentionally as the data is passed from one system to another. Intentional data loss is better described as intentional data placement in that the original dataset is divided by areas of responsibility. For example, if financial information regarding the job is required, you will go to the finance system, while if you need engineering work scope details you will find that in the engineering system. This is completely different than the unintentional loss, where an automated or manual interface completely fails, which creates costly disruptions as high as the loss of a key customer.

From an automation perspective there are multiple issues, but if you step back and view the business from a higher level, the real concern is how to delegate responsibility and accountability within the organization. This cannot be done efficiently if the data is not timely, accurate and consistent, which is the value add to your business with a fully integrated system. Furthermore, a fully integrated system provides a number of benefits such as:

- Creates job visibility throughout the organization
- Minimizes interruptions to shop
- Tighter links between budgets and resources
- Clear instructions to all resources required to execute
- Traceability of labor and materials consumed
- One single view of the job by all resources and depart

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THE PROJECT

Earlier we discussed the challenges that businesses encounter when they operate without a fully integrated system. This often occurs as a natural progression as a business grows and expands. Over time, these challenges become increasingly more complex, cumbersome and costly. This slowly evolving scenario can bring a company to a point of critical juncture as questions are raised concerning the efficiency and future profitability of the business, especially during recessionary periods.

Our strategy to address the requirements of the Complex Job Shop was to build upon an industry standard Enterprise Resource Planning System (ERP), which is a comprehensive solution that integrates all aspects of the business. This allows us to address the needs of multiple departments with functionally sound software. We then added a series of project application extensions that are designed to specifically address the unique requirements of the MRO provider and the Complex Job Shop. These extensions are bundled and called the ProMRO module.

The ProMRO extensions are designed to assist in the management and execution of project tasks from inception to completion. ProMRO manages opportunities from the initial contact andquoting phase to the managing of job execution, along with the accounting tasks to ensure the profitability of each job. This solution provides the framework of a fully integrated job costing and project management system that can add efficiency and streamline communications in all aspects of your business.

The primary goal of utilizing an ERP system is to eliminate external spreadsheets, so that jobs can be traced from proposal to completion. By doing this we eliminate the circulation of paper documents which reduces errors and streamlines job execution, especially at the time of final billing process. In addition, this approach also improves accuracy and timeliness, while providing a single foundational source for all pertinent data to create meaningful Key Performance Indicators, which helps to create visible into the organization.

An additional benefit to the implementation of ProMRO is the development of corporate wide standards. For a single location entity, this will help by standardizing the communication between sales and the shop. For a multi-location entity, this will help standardize sales to shop communications,

while simultaneously providing an infrastructure for each location to institute best practices. These best practices will improve a number of business processes, shop activities and providing financial guidelines which allows work to be coordination between facilities. These practices can then be used to profitably assimilate new acquisitions.

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THE SOLUTION

The solution begins with a standard ERP (Enterprise Resource Planning) system, which provides the technology infrastructure and functionality framework. A variety of benefits are gained by utilizing a widely recognized and adapted system. First of all, the standard inventory, accounting and job costing functionality is reliable, well supported and meets the basic requirements of most MRO providers and Complex Job Shops. Secondly, the development environment is accessible and the programming tools are provided, which gives us the capability to easily address the workflow and process exceptions.

The MRO's functional requirements are then added to, and fully integrated within the ERP solution, which provides the ability for the Complex Job Shop to establish standards. These standards are then applied to all services quoted to the customer. With the shop's cooperation, standards are developed using the shop's varying capabilities. The work scopes can either be simple or detailed. Ultimately, the objective is to not only obtain a detailed work scope, but to gain user acceptance. The user's participation in establishing the work scopes is essential to the success of the project. Typically we focus on simple work scopes during the initial stages to allow the users to become both comfortable and familiar with the process. Once the standards are in testing, it is common to see the users grasp the potential and take ownership by creating more advanced work scopes. Furthermore, initial work scopes can be very basic to allow the maximum flexibility throughout the process.

The shop's standards become the foundation of the of quoted proposals. In order to do this, we had to reconcile the customer's view of the required work with how the shop views

the job. Clients First Business Solution's ProMRO module allows for the simultaneous creation of a customer presentable document that is composed from their prospective of the job, with the creation of the necessary internal and parallel communications enabling the shop to execute their activities. This is done while also maintaining the financial and budgetary integration needed to maintain the integrity of the bid. Exceptions are also allowed within this process to accommodate unique or emergency jobs, while still allowing everything to be maintained and processes within the same fully integrated system.

The quote is always completely visible within the systems Customer Relationship Management (CRM) applications and is also supported by a funnel management workflow. The funnel management system groups the opportunities by priority. This allows management to focus on the more pertinent tasks, such as assisting and assessing customer opportunities, strategizing on how to move stalled deals to closure, sales productivity and any future production demands.

After a quote is accepted by the customer, several process flows are automatically set into play. First, the job structure, which is a combination of responsibilities, accountabilities and budgets are created to match the execution of the services required to complete the job. In addition to the jobs structure, all associated special item order's and inventory requirements are created. Finally, the initial snapshot of the job is saved so that all supplemental jobs, tasks and activities can be associated to the parent job and tracked throughout the system.

The new job then becomes visible to the shop manager for scheduling. Job deadlines, along with all of the associated project information collected during the sales and quotation process, are now clearly visible to the shop. As soon as the job is released to the floor, job information is printed onto Shop Travelers that detail each task. To efficiently log the time from the shop floor, each task is bar-coded so that it can be collected at an ProMRO time collection kiosk. The ProMRO Time Collection System accounts for all time on the shop floor and is used as supporting input into either in-house or external payroll systems.

The financial impact of the job is continually visible to accounting and booked into work in process. Accounting can also see the jobs that are requiring invoicing for billing. The process is designed to allow for the easy reconciliation of the quote to the delivered services. The billing process automatically checks that all activity on the job is accounted for. This process assures that the bills are complete and checks for any transactions in process.

Instead of driving the entire process, accounting has captured the financial effects of the job to eliminate lengthy and laborious closings. Questionable activities are easily audited and allow for reviewing. Sales tax calculations are integrated and can be linked to external sales tax calculation engines for the more demanding requirements.

Since the ProMRO's Key Performance Indicators track job details in real time, this built in analysis tool can be utilized by management for effectively guiding the day to day projectmanagement decisions required to keep projects on time and within anticipated budgets. This allows for the early implementation of corrective actions, which ultimately improves the utilization of company resources and all project related costs across the entire organization.

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SUMMARY

The Complex Job Shop and MRO provider are challenging businesses from both an execution and systems perspective. Unlike a distributor or made to stock manufacturer that focuses on a clear concise mix of products, the Complex Job Shop and MRO provider must be prepared to deal with the unexpected and unknown on a daily basis. This presents a very difficult challenge for most system implementers and standard software solutions available on the market today. The ProMRO solution addresses these challenges while providing a foundation to control the variables, so that all activities can be accurately measured while simultaneously streamlining the handling of the supporting details down to the accounting level.

ProMRO's scalable foundation can address needs ranging from a single location job shop, to the expanded requirements of a larger international, multi-site enterprise with hundreds of users. The strength of the ProMRO is its ability to address a full range of business requirements while maintaining a strong focus on the execution of the job throughout its lifecycle

Clients First provides medium-to-large enterprise solutions for the supply chain industry, with a vertical focus in Manufacturing, Engineer & Make-to-Order, Wholesale Distribution, and Maintenance, Repair & Overhaul (MRO). Clients First has developed MRO enhancements for Acumatica and for Dynamics 365 Finance and Operations: ProMRO.

Clients First has 6 locations nationwide and supports clients worldwide. Clients First is a Bob Scott's Top 100 VAR, VAR Top 100 Accounting Reseller, Acumatica Partner, Microsoft Cloud Service Provider (CSP) and Gold Enterprise Resource Planning Partner for Dynamics 365.

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