



GenesisSolutions

“Integrated MRO Supply Management”

A Three Dimensional View
By Thomas Terfehr

The pressures on suppliers to help their customers improve business performance are enormous in this global economy. Business complexity, cost pressures and ever-increasing quality standards are at the root of these pressures. The ‘extended enterprise’ supply chain model, with a focus on rapid product design, lean manufacturing, and JIT inventories, has proven its effectiveness as a competitive weapon. This is having a major impact on how direct materials (those materials and components that ultimately become part of the product which is sold), are purchased and their suppliers managed. Inventories have been slashed, time required for product design has been reduced, quality has improved, and suppliers and customers find themselves in new and unprecedented roles.

Business pressures and supply chain management are causing firms to also evaluate the world of indirect materials and particularly MRO (maintenance, repair and operating supplies). The path to improved performance in this arena is not, however, so straightforward as with direct materials. At the core, the MRO supply chain exists to support plant operations. The supply system is complex with many, often thousands or tens of thousands, of parts, pieces, suppliers and inventory stockpiles. The amount of annual “spend” for a typical company is significant (15%, or more of total spend). Finally, there are many decision-makers with different agendas who are often not in close communication with each other. The net result of this complexity and lack of coordination is higher cost and service gaps.

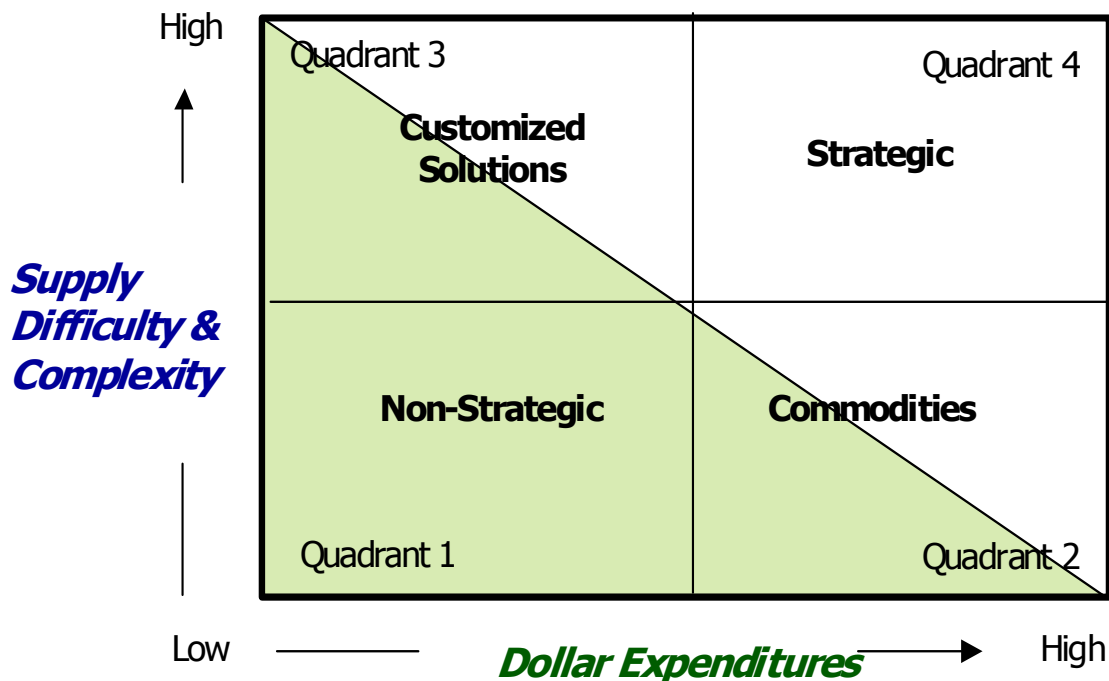
Achieving lower total cost of ownership for MRO items requires that the following three supply chain dimensions be addressed. Complete success involves integrating all three.

- Strategic Sourcing/Procurement
- Physical Supply Chain
- Technology Tools and Integrations

The most effective approach to MRO supply chain management includes a methodology to achieve integration of these three elements. It also includes an approach to organizational change – which makes successful implementation possible.

Strategic Sourcing/Procurement

A rigorous strategic sourcing process is the essential first step in MRO integrated supply management. In its simplified form, the process involves 7 steps:

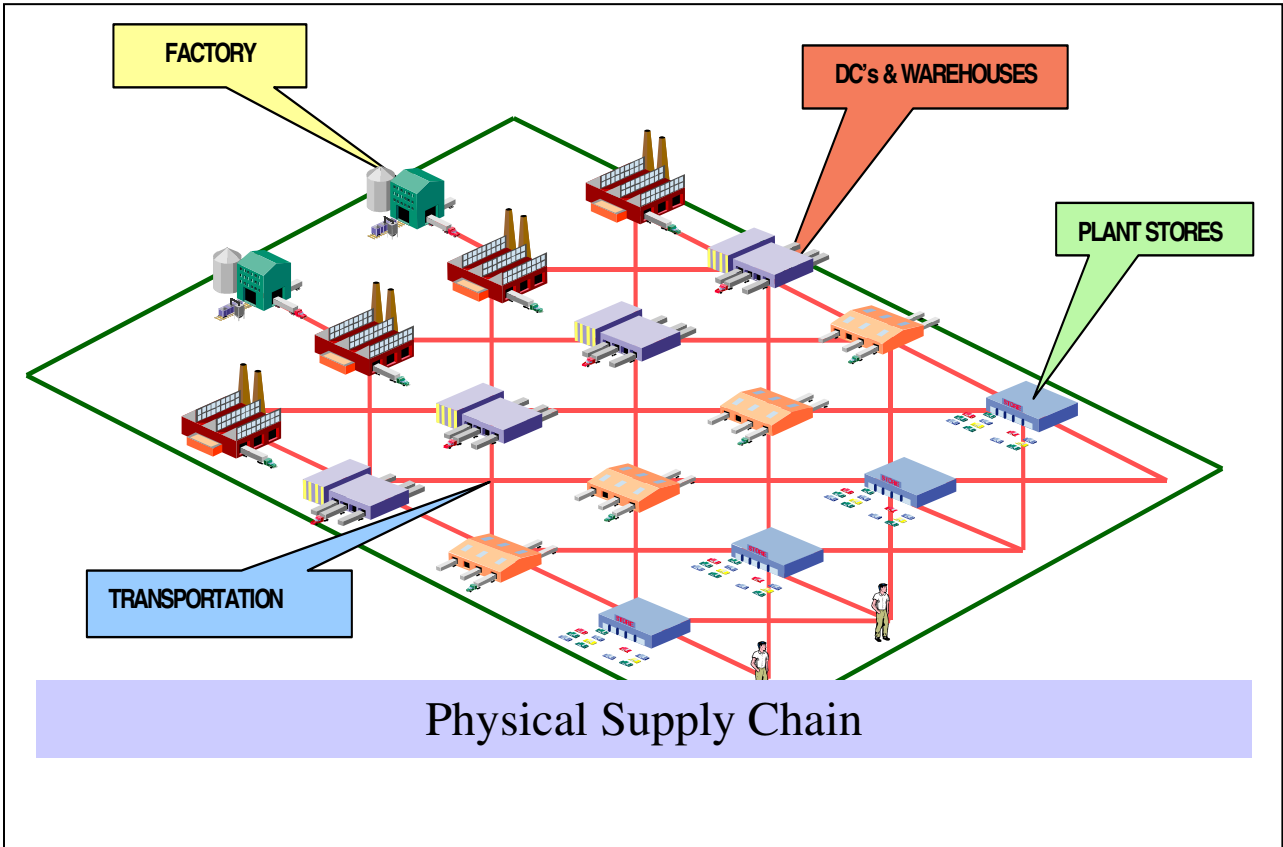


1. **Understanding the current state of MRO procurement:** This step involves compiling data to determine where MRO purchasing dollars are spent. From this analysis, commodity groupings and classifications are made. Exhibit 1 illustrates an approach to classification. The greatest improvement impact is typically found in quadrant four.
2. **Involve key stakeholders in the process:** Selecting a cross-functional team of subject-matter experts focused on one or more commodity groups is a preferred approach. This team, in essence, will be empowered to make company-wide decisions.
3. **Understand total cost of ownership for the MRO item/family:** This is critical and will act as the foundation for subsequent commodity team decisions.
4. **Establish business requirements for the item/family:** These requirements typically relate to service, quality, product development and collaboration.
5. **Evaluate supplier/strategy options for the commodity**
6. **Implement the sourcing decision**
7. **Manage the relationship using a supplier performance management process**

Through leveraging a company's purchases, the strategic sourcing process will typically yield savings of 5 – 25% of annual spend. More importantly, this collaborative approach builds a foundation upon which the relationship can grow, and future total cost reductions can be realized through customer-supplier integration.

Physical Supply Chain

The physical supply chain is the lifeline of the MRO plant support effort. The MRO supply chain includes many suppliers, inventory locations and ordering/receiving protocols. Complexity, particularly uncoordinated complexity between competing suppliers, typically brings redundancy – in cost, time and effort. One of the essential elements of MRO supply chain improvement, and ultimately integration, is an analysis of the inbound distribution system . . . including the key origin points, intermediate points and final destinations.



Addressing the inbound physical supply chain involves the following steps:

1. Define success . . . improvement targets, timetable and reporting metrics
2. Incorporate sourcing/procurement strategy as a key driver for design
3. Define “business rules” and internal customer requirements
4. Baseline defined . . . usage, costs, inventory levels, etc
5. Complete an inbound distribution network modeling study
6. Design/redesign the inbound system

The improvements from this activity are as follows:

- Defined strategy for the MRO inbound supply chain
- Lower “total landed cost” of MRO items/families vs. the base case
- Lower inventory value and carrying costs . . . for suppliers and customers
- Equivalent or improved service for MRO items/families

Technology Tools and Integrations

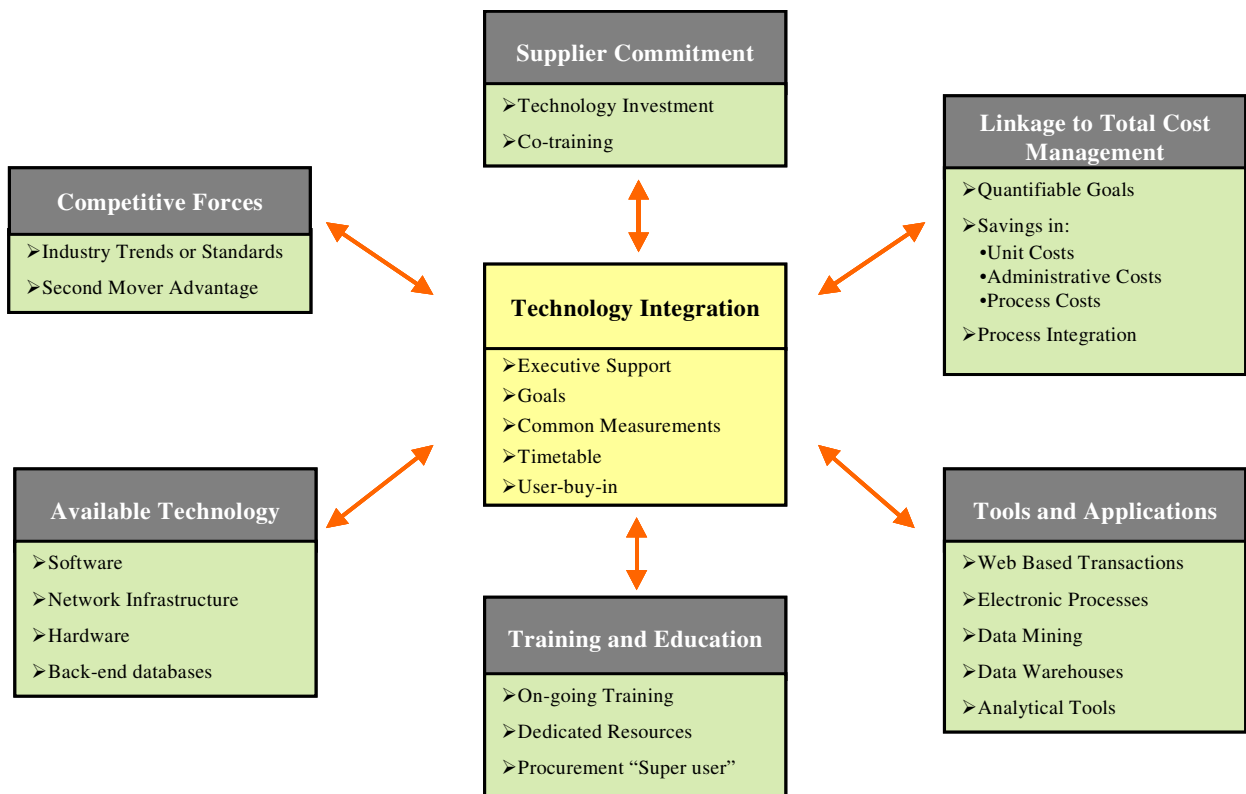
Only after a strategic sourcing and MRO operating strategy have been defined should organizations turn attention to the selection, deployment and full utilization of the right technology tools. Tools that operate within the customer firm and between supplier and customer are the final element of Integrated MRO Supply Management. But, technology tools are just that, only tools. The overriding objective is to use technology to support and enhance business operations ~ no more technology than is necessary, and no less. There are a myriad of options and no shortage of promises. In the final analysis, a logical selection process based on business requirements and user needs will lead to the right solution and match the available tools to needs.

The first step is to develop an e-Business plan to support the MRO strategy developed above. Some (but by no means all) elements of this plan are as follows:

- Establish “direct” order processing interfaces with Strategic Suppliers
- Define the role of “regional” (smaller) suppliers and supporting technology to be used
- Establish electronic catalogs and maintenance protocols
- Contract Management approach and supporting technology
- Define the on-line Supplier Performance Management methodology

A template for guiding the formulation of an e-Business plan is summarized below. The goal is to have a defined approach to employing technology to support business requirements. Pilot projects are a good way to make improvements in a relatively short time, learn by doing and avoid the risks of a “big bang” approach.

MRO e-Business Planning Template



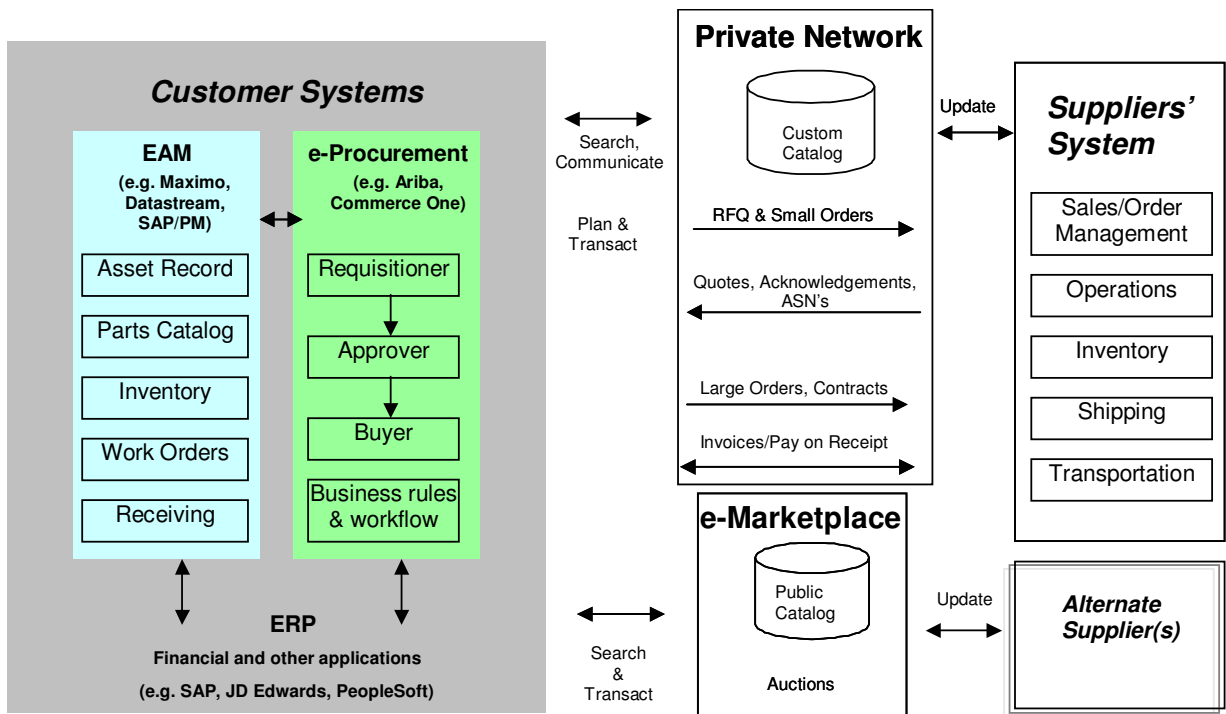
Technology support for Integrated MRO Supply Management is most often built upon a firm's maintenance management system (also referred to as an Enterprise Asset Management- **EAM** system). Suppliers such as MRO Software (*Maximo*), DataStream (*MP 7i*), SAP (*SAP/PM*) and others have a substantial installed base of comprehensive and sophisticated software packages that are frequently integrated into other core systems such as accounting and purchasing. These systems, when properly implemented and maintained, provide a treasure-trove of information on assets, usage, cycle-time and cost that can be used as the information foundation for an Integrated MRO Supply System.

Other technologies provide not only internal benefits, but also enable customer-supplier integration through the use of e-Business tools to streamline the entire "order to pay" process for MRO items. The software suppliers mentioned above, as well as companies such as Ariba and Commerce One, are major players in this arena. Some of the functionality available includes:

- Flexible architecture that allows for easy integration with back-office systems
- Workflow technology that streamlines the purchase requisitioning process, and enforces business rules and buying policies
- Easier search and faster processing through supplier e-catalogs
- Access to private networks and e-marketplaces

These features can provide reductions in transaction and product costs, reduction in cycle times, and reductions in inventory carrying costs and improved accuracy and service.

A Typical MRO e-Business Infrastructure



Organizational Change

It has been said that no improvement is possible without change. Experience has shown that successful change requires the following:

- A clear picture of the future state
- A need to change
- Some logical first steps

The methodology for Integrated MRO Supply Management discussed above is designed, and has the proven capability to provide a strategy and roadmap for change. The “need” or desire to improve MRO supply management must be present or be created within the firm’s and its supplier community.

Integrating MRO suppliers into business is, in the end, an issue of aligning separate interests, cultures, information systems, and technologies. In addition, years of traditional commerce have created a basic lack of trust, which tends to keep supplier and customer at arms-length. Overcoming these barriers to unlock the cost and service gains possible in the MRO supply system requires a disciplined approach to change.

Organizational change has two critical components and each can be successfully managed to achieve a desired outcome:

1. Business Processes and Methods

MRO supplier integration will impact several business processes. Companies must review how materials are sourced, how suppliers are evaluated, and how common business activities such as stock management, requisitioning and invoicing are handled. In addition, a Total Cost reduction strategy and tracking mechanism must be developed. Some difficult questions must be answered.

- Which items should be stocked?
- Where should inventory be located?
- What are appropriate inventory levels based on demand, criticality, and obsolescence?
- Who is better equipped to own and manage inventory?

Suppliers can be a valuable resource while assessing processes and methods around MRO items, and should be involved in various stages.

Genesis Solutions begins by documenting and understanding current internal and supplier business processes. A key to success at this stage is to include key individuals to gather cross-organizational input in order to fully understand the strengths and weaknesses of current processes and activities. This approach also helps build the case for change by calling attention to situations that need attention and by comparing the current situation to alternative approaches and methods used by other firms or other industries. Ultimately, this input will be used to redesign

key processes to reduce total supply-chain cost and improve speed and responsiveness.

2. People

Integrating the MRO supply chain impacts people and how they do their jobs. The Integrated MRO Supply Management strategy described above spans many organizational boundaries, both internal and external. Every aspect of the organization is affected and most everyone's job is changed in some way.

A few key methods and tools are used to help people deal with the upheaval of change.

- **Vision & Strategy Development** - A clear, consistent and simple vision (or picture) is needed to help everyone understand where management is headed. Strategy follows vision and provides the means by which the vision is to be accomplished. Some logical first steps, including a pilot project, are very useful to help people learn the new methods and make progress at the same time.
- **Work Redesign** - As Jobs are changed, or eliminated, new functions emerge, the ways people work together change. Work redesign is a methodology to redefine roles and responsibilities, develop new working relationships and support the transition.
- **Measures and Compensation Systems** - Defining success, measuring it and creating a reward system that reinforces the goals of the organization is also a critical element of change. Measurement is a key component of the Genesis methodology and is embedded in all our work because it is fundamental to sustaining successful change.
- **Interest-based Solutions** - Every person and organization is motivated by, among other things, the age-old question of "What's in it for me?" An interest-based process is used to discover and make visible the needs, wants, and insecurities that stakeholders have regarding the changes. Objective standards are adopted that fairly protect everyone's interests and creative win-win solutions are developed.

Genesis Solutions' experience with dozens of clients across many industries has shown that navigating organizational change is critical to the success of any business initiative. These initiatives will naturally cause resistance, even from those who will eventually benefit. Senior leaders have responsibility to set the stage for change to succeed. The need to communicate clearly and often is well documented. The changes and benefits expected need to be carefully explained, and well understood. As with any change effort, early successes should be used to demonstrate proof of concept. This more than anything else will support the pilot teams and convince others to join in the effort.

A Case Example

Recently, Genesis Solutions consultants assisted a major paper-goods manufacturer with the completion of a redesign of its MRO management function, utilizing supplier integration as a key improvement component.

Historically, our client employed literally thousands of MRO suppliers at a dozen locations across the continental United States. There was no central control or management of MRO purchases, and each plant made its own supplier and strategy decisions. Due to an emphasis on price and negotiation, the supply base at each location was large and diffused. With several suppliers supplying the same items, and pricing and supplier selection often handled on an ad-hoc bid basis, on-site inventories were very high and often duplicated by one or more of the suppliers.

An **analysis** of historical MRO purchases by the multiple plants produced the following:

Commodity Family	Annual Purchases (mm)	Number of Suppliers
Bearings and Power Transmission	\$150	150
Pipe, Valves & Fittings	\$75	125
Electrical	\$80	90
Packaging Supplies	\$90	40
Specialty Machine Consumables	\$40	8
Specialty Chemicals	\$29	29

- Purchases were grouped into commodity families. Key MRO families, and relevant information is below.
- Balance of MRO purchases: \$15mm sourced from 1000 suppliers
- Storeroom inventory turn rate: 1.1 times/year

Cross-functional, cross-organizational teams were assembled to address sourcing, inventory management and order management, for each of the six ‘commodity families.’ Each team was chartered with responsibility to craft a company-wide strategy for its commodity family with a goal to reduce total cost by 10% to 20%. Multi-discipline team members were given the assignment of ‘wearing two hats,’ one representing the interests of their respective plant locations, the other representing the interests of the company as a whole.

Through the initial phase of strategic sourcing, the following results were achieved over an 18 month period:

Commodity Family	Total Cost Reduction (mm)	Number of Suppliers
Bearings and Power Transmission	\$25	1
Pipe, Valves & Fittings	\$8	1

Electrical	\$7	1
Packaging Supplies	\$16	10
Specialty Machine Consumables	\$6	3
Specialty Chemicals	\$.7	2

Total cost reductions (as a % of purchases) were achieved a number of ways. Depending on the commodity family, reductions were realized in the following manner:

- Supplier reduction ~ Leveraged buying 5% - 18%
- Inventory ~ Eliminate supplier-customer duplication 2% - 5%
- Inventory ~ Eliminate plant-to-plant duplication 2% - 4%
- Supplier generated cost reduction ideas 3% - 15%
- Value-added supplier services 1% - 3%
- Administrative costs 2% - 3%
- Improved uptime difficult to quantify

Year over year cost reductions have continued each year in the range of 4% to 9%. Supplier performance and satisfaction continues to be greatly improved.

The technology platform for this initiative was a proprietary ERP system with integrated Computerized Maintenance Management System (CMMS), Financials and Human Resources systems. A workflow tool for Order Processing was evaluated and implemented as a “bolt on” to the ERP. Regional (smaller) suppliers use a combination of blanket orders with verbal commitments and auto-fax for order processing. An e-mail system with a message library and cataloging functionality was selected and implemented to supplement communications among enterprise users and strategic suppliers. Supplier catalogs with proprietary items and pricing were established for enterprise-wide use. A data warehouse was established as the engine for data analysis, performance tracking and the Supplier Performance Management System.