John Deere Supplier Development Program

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Abstract. The continual demands of customers to lower costs force today’s companies to think beyond the traditional Continuous Improvement approaches to reducing waste. As a greater percentage of costs are outside the plant in the supply chain, it becomes harder to realize savings by addressing only that portion of the cost structure within the plant walls. A way must be developed to work with the supply base to lower the Total Acquired Cost of goods purchased. One important component of this is a group of highly skilled engineers who work with the suppliers to implement lean transformations throughout the supply chain. Results are immediate and dramatic. We call this group “Supplier Development.”

The Need. As customer expectations rise, companies come under increased pressure to deliver products to market faster, with more features, higher feature mixes, and lower cost. The ability of a company to respond quickly to market changes and customer demands is a competitive advantage. As the percentage of purchased material increases, the supply chain becomes the dominant factor in determining market response.

Suppliers determine a large share of the cost of the product. As more and more components are out-sourced, the majority of costs can be built into a product before the company selling it starts building it. Traditional manufacturing techniques have difficulty handling low-volume, high-mix production, and additional costs are incurred all along the supply chain as many firms deal with these challenges through inventory pools.

The time it takes to fill an order is in many cases the difference between dominating the market or running in the back of the pack. Supplier lead times sometimes impose critical limits on a firm’s responsiveness to customer demands. When the first tier suppliers have to wait for their suppliers, the summation of all supply chain lead times can frustrate the best marketing plans.

Clearly the company that figures out a way to influence the entire cost structure (internal and supply base) will have a cost advantage. If that firm can also develop the means to cope with production fluctuations, lead times issues and product mix challenges, it will be a formidable competitor in its industry.
Meeting The Need. In the mid-90s, Deere & Company used the assessment criteria from the Malcolm Baldrige Quality Award to evaluate areas of the business. Part of the plan, which emerged from this exercise, was a renewed emphasis on Supply Management. The leadership group determined that it would be difficult-to-impossible to compete globally if supply base costs were not brought under closer control. To this end, they authorized the formation of Supplier Development groups throughout the enterprise.

Supplier Development is comprised of engineers with a broad range of experience in various aspects of manufacturing. The typical Supplier Development engineer has a graduate degree in a field of engineering combined with real-world experience. They combine the latest theories with a healthy dose of reality. To this prerequisite base, Deere added extensive training in specific techniques essential to leading change within a company. Facilitation skills are emphasized. The result is a group of motivated, highly trained and experienced change agents.

Supplier Development engineers work with supply management’s Strategic Sourcing group to select Supplier Development project candidates. Working in teams, the Supplier Development and Strategic Sourcing personnel, together with other stakeholders, analyze the performance of various suppliers to determine where opportunities exist for improvement. Some of the selection criteria which a supplier needs to meet to be chosen for Supplier Development activity include: the presence of a critical technology, intent for a long-term supply relationship, a genuine desire by the supplier to make improvements, and the usual factors of cost, quality and delivery. As there are far more suppliers than there are Supplier Development engineers, candidates for Supplier Development projects are chosen carefully with the goal in mind of maximizing the impact on overall business performance.

Once candidates are selected, they are entered on an Supplier Development web-based project tracking system. This notifies all factories using that supplier so that they can contact the lead Supplier Development engineer working with Strategic Sourcing and determine enterprise performance goals that this supplier should meet. The supplier’s past performance, new performance goals, and potential new business are blended into a presentation that is given to the supplier by the Strategic Sourcing and Supplier Development team that visits the supplier. The team asks that the supplier’s senior management team is present for this presentation. The team also takes an initial charter that is a non-binding, written agreement for everyone to cooperate if a project is identified, to share data, and how cost reductions will be shared. The Supplier Development program is explained to the supplier management team and they are asked to make their best people available for a process mapping exercise to determine potential projects.

The supplier almost always agrees to process mapping their operation. Process mapping combined with an assessment identifies opportunities for projects. These are presented to the supplier management who normally selects a team to work the project. At this point another charter is created that is specific to the project. This charter names the people, the start and expected completion date, meeting frequency, percent of time assigned to the project, the goal results, and anything else that is needed to exactly define the project scope. Following their selection, a supplier is introduced to Supplier Development by the supply management specialist working with that supplier. The Supplier Development engineer then assumes responsibility for the next phase of the supplier development relationship. In an initial visit, the
business and manufacturing processes are evaluated, and opportunities are identified for joint
effort involving the supplier and the Deere Supplier Development engineer, who may be
assisted by other Supplier Development resources as needed. A starting project is selected
and a charter is written which details the scope of the project to be undertaken, the expected
benefits, roles and responsibilities, deliverables, and management commitment. A team of
resources from the supplier is identified to work on the project in conjunction with the Supplier
Development engineer.

Using the charter as a project guide, the Supplier Development engineer trains supplier
personnel as necessary in the techniques of problem solving which will be employed. A fairly
basic tool used early in the project is process or value-stream mapping. The mapping exercise
helps to focus the project team on where the challenges lie, and the training helps the team
think of original solutions. The process also trains supplier personnel in the use of advanced
problem solving tools, so that they are able to use this approach in the future without the
involvement of Deere Supplier Development resources.

After results are achieved from the project, the supplier and Deere supply management agree
on the impact of the project. If, for example, it used to cost the supplier $900,000 to produce a
product which Deere would buy for $1,000,000, they would have a profit of $100,000, or 10%. If,
working together, the supplier and Deere Supplier Development were able to reduce the
cost of this product by $200,000, the new cost of production would be $700,000. By splitting
the cost savings, Deere would then pay $900,000 for the material, while the supplier would
realize a profit of $200,000. This is truly a “win-win” approach to supplier development.

Results. Suppliers who have participated with Deere & Company in this effort have realized
significant savings. They have been able to increase production capacity, reduce lead times,
and improve their overall business performance. This creates a stronger supplier for Deere.
Stronger, healthier suppliers cost less to work with and improve the bottom line performance
for supply management. An important benefit from the supplier’s viewpoint is that the savings
they realize from involvement in Supplier Development activities apply to all their production for
all customers. Deere only asks for a share of the savings on production going to Deere. This
increases further the profitability of the supplier.

Supplier Development success stories are published to demonstrate the type of results that
can be expected from participation in this program. Four typical projects are summarized in
the next few paragraphs. Each of the following case studies comes from a different Deere
division. Supplier Development is a common process across divisions, with Supplier
Development resources taking an active role in all of Deere’s supply management groups.

Case Study #1. Supplier Development engineers from the Construction & Forestry Division
worked with “Supplier A”, a supplier of sheet metal and plastic products, to reduce cost while
improving quality and delivery performance. The end result was the identification of part
families and the introduction of cellular manufacturing techniques. Annual savings realized by
Deere were $354,000. Tangible benefits to the supplier, in addition to their portion of the cost
savings, were:
• 40% reduction in cycle time, from 10 days to 6
• 40% reduction in inventory
• 75% reduction in rework costs
• 50% reduction in scrap
• 40% reduction in indirect labor
• 9% reduction in direct labor

Case Study #2. The Commercial & Consumer Equipment Division worked with “Supplier B”, a supplier of exhaust components. In this project, field engineers from the Wisconsin Manufacturing Extension Partnership were also brought in as additional resources. The resulting projects were directed at reducing manufacturing cycle time. Annual savings realized by Deere were $455,000. Tangible benefits to the supplier, in addition to their portion of the cost savings, were:
• 50% reduction in manufacturing cycle time
• 70% reduction in assembly cycle time
• 82% reduction in rework operations
• 17% increase in average line rate
• 7.5% increase in production capacity
• 5.4% decrease in manufacturing cost

Case Study #3. An Supplier Development team from the Agricultural Division worked with “Supplier C”, a supplier of transmission housings and related parts for agricultural tractors. The purpose of this project was to help the supplier meet cost targets for a transmission housing to be used in a new model of tractor. The new parts were similar to existing parts produced using a mature manufacturing process, and had been reviewed several times by design engineering for savings opportunities. It was believed that there was limited potential for improving the housing. The team identified major cost drivers and was successful in making significant improvements in the cost and manufacturability of the part. Annual savings realized by Deere on the transmission housings were $576,000, with an additional $10 per tractor in associated parts savings. Other tangible benefits realized from this project were:
• Simplified part design for manufacturability
• Eliminated two cores from foundry process
• Reduced casting weight from 891 pounds to 812 pounds
• 18.3% reduction in machining cycle time
• Combining two part numbers into one

Case Study #4. Deere & Company Supplier Development engineers worked with “Supplier D”, a supplier of wire-form parts. The focus of this project was to increase the supplier’s flexibility and ability to respond quickly to customer orders. The action plan addressed three main areas: 1) capacity issues, 2) material flow and control, and 3) process variability. Annual savings realized by Deere from this project were $580,000. In addition to annual savings of $1,435,000, other tangible benefits to the supplier were:
• 78% reduction in manufacturing cycle time
• 71% reduction in quality PPM
• 42% improvement in on-time delivery
• 47% reduction in total inventory cost
• 23% reduction in floor space requirements
• Improved flexibility to meet changes in product volume and mix
• Increased sales to other customers as a result of these improvements
**The Business Case.** The above results, impressive as they are, are not the sole reason for developing a Supplier Development capability. Supplier Development is a tool that can be used by Strategic Sourcing to help in commercial negotiations. Supplier Development is a technical resource which complements the commercial side of supply management. Where seemingly insurmountable technical problems are encountered, Supplier Development gives the buyer the ability to achieve corporate goals while improving the relationship with the supply base.

At the end of FY 2001, Deere had 92 Supplier Development engineers across the enterprise. These engineers had worked on a total of 426 projects, with $52,000,000 in cost savings and $36,000,000 in cost avoidance. Similar results were realized in quality, delivery, and lead time metrics. Relationships with the supply base have been strengthened, and suppliers have become more able to respond to changes in production schedules and requirements. This increased performance of the supply base constitutes a significant competitive advantage for Deere over our competitors.

Another benefit to Deere from Supplier Development is the creation of a pool of talented problem solvers. The training of an Supplier Development engineer in modern lean and flexible manufacturing techniques, coupled with the experience they have in a variety of industries and situations, equip them well for positions throughout the organization. They are equivalent to “black belts” in the scope of their knowledge, and also possess a strong appreciation for the supplier and their relationship to Deere. This perspective puts them in a unique position to be able to integrate the supplier’s processes with Deere’s.

There is an initial investment when starting Supplier Development. Including training and travel with salary and other expenses, the annual cost of one Supplier Development engineer is in the neighborhood of $130,000 – $150,000. The return on this investment is in the 3:1 – 8:1 range. Annual savings of $1,000,000 per Supplier Development engineer are not unusual, although the average is closer to $700,000. The job attracts talented people who appreciate a challenging assignment and are able to work with little supervision. These people have the skills to accept assignments of considerable responsibility at higher levels within the company.

**Summary.** If this is such a great idea, why doesn’t everyone do it? It would seem that benefits such as these would be enough to convince anyone of the wisdom of this course of action, but inertia and tradition are powerful forces. Some of the more common reasons identified include:

- “It’s the supplier’s job”
- “We don’t have the manpower”
- “Consultants can do it”
- Win-lose mentality
- Unwillingness to share benefits

Each of these excuses are indicative of a resistance to change. Supplier Development, as practiced at Deere, is a radical departure from prior practice. It requires a willingness to face internal issues uncovered at the supplier. Deere has had to learn from suppliers and make
changes in the way it relates to the supply base. This has been a painful and positive process of improvement and growth. The supply base has also been changing and growing. As they become more capable of responding quickly to the changing requirements of the customer, Deere has increased its ability to respond. Responsiveness and flexibility are important keys to not only survive but prosper in the economic climate of the twenty-first century.

If the excuses for not doing supplier development are familiar to you, ask yourself the question, “If my company doesn’t do Supplier Development, would I want my competitor doing it?”