

Take Down The Walls!

Building World-Class Customer/Supplier Partnerships

Patricia E. Moody

There are as many ways to build a partnership as there are to destroy one. Unfortunately the word "partnering" has become fuzzy around the edges. We at AME are proud of our innovative practices in supply management. Our Best Customer article, "Best Customer, The Other

Side of the Fence," *Target*, Volume 7, Number 4, Fall, 1991 shared the results of AME's Best Customer survey, and offered members the survey Motorola uses with its own suppliers, rating their performance as a customer. Now we are ready to share examples of fellow-organiza-

tions' innovative approaches to collaboration.

Partnering in the examples that follow takes time and cost out, increases flexibility, and creates more robust designs.

Partnering goes beyond supplier development and looks at both sides of the fence — how each partner communicates, and how well each partner is structured internally to strengthen the partnership.

And until now the focus has been on improving quality and other "technical," product-based issues. First steps for most customers are vendor certification and reduction of supplier bases to more workable networks, focusing on qualification, selection, and monitoring. But supply management, looking at both sides of the fence, encompasses *process* as well as technical issues — new technology applications and production processes, logistics (maintaining and growing a seamless network), and product quality. How do companies foster fuzzy terms like partnering, trust, and communication?

Boeing's Customer/Supplier Team

Boeing's newest development program, the 777 twinjet, designed to move wide-body passenger loads over long routes, is an innovation both technologically and in its team design process. Backlog for this new product stands at 106 firm orders with options for 93 new planes.

According to John Roundhill, who served



In a move that is revolutionizing how airliners are developed, Boeing Commercial Airplane Group's 777 Division is working side by side with its customers through design/build teams. Based at the same location, team members representing all areas of airplane development work concurrently and share their knowledge with one another, rather than applying their skills separately in sequential steps. The Electrical Systems Engineering team, shown here, includes Brandon Maus (fourth from right), an employee of 777 launch customer United Airlines. The design/build concept, extensive customer involvement and other innovative processes are aimed at delivering a product that not only is driven by market needs and customer preferences, but also exceeds the highest standards of quality, reliability and service-readiness.

as 777 Chief Project Engineer and has now moved on to a new engineering assignment, one of the objectives of the team has been to make the jet service ready — “We are working very hard with customers, approaching the design in more depth early in the program.” Four of Boeing’s big 777 customers, United, ANA (All Nippon Airways), British Airways, and Japan Airlines (JAL), are working on site with Boeing engineers on the detail design.

Customer team members are with the supplier full-time, located in engineering. Customer representatives bring insight as the aircraft operator — attention to maintenance and reliability, and other post-sales customer issues — to the design process.

The direct involvement of the customer airlines in 777 development is a logical sequel to Boeing’s “market driven” approach to sizing the airplane pre-launch. United, ANA, British and JAL were among a number of carriers with whom Boeing held substantive discussions, including many group sessions, to define the aircraft. Meetings with these customers (more than half of whom have now placed orders) and other 777 customers continue today, providing Boeing with a market-wide view of needs and ideas.

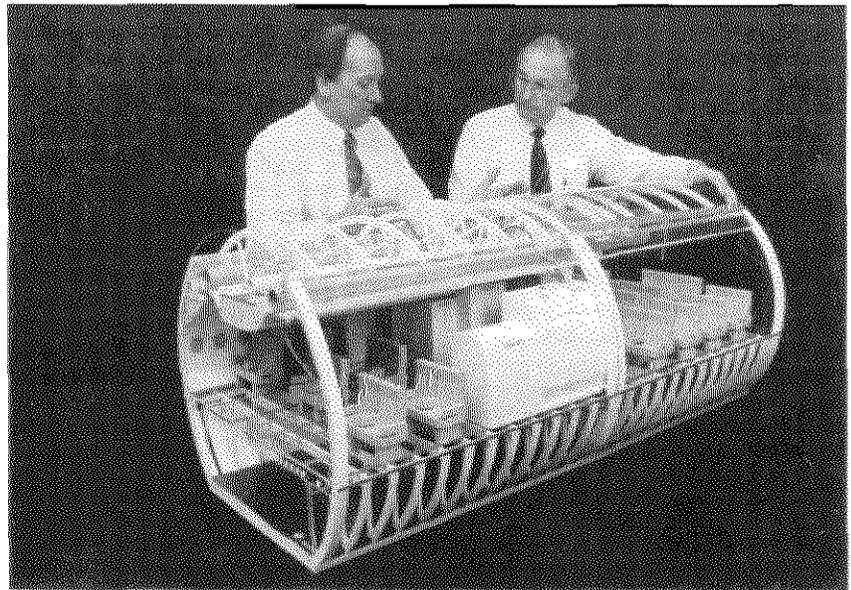
Gordon McKinzie, United’s 777 program manager, contrasts this new collaboration with the old days, “We’d order the airplane, write letters back and forth, and then five years later pick up the airplane.”

Customer early involvement changed the 777 Repair technology and costs

The 777 large outboard trailing edge, one of the aircraft’s longest pieces, holds trailing edge flaps made of composites. Sometimes they are hit by stones and damaged during takeoffs. Airlines often repair composites in autoclaves, but because this section at 45 feet is too long to transport, the customer would have required a new autoclave. The design team suggested splitting the member into two parts. (See figure at right: Outboard Trailing Edge.)

Serviceability

The location of the electronics bay access hatch, another “customer” issue, was changed to accommodate safety. Early in the design process the customer airlines pointed out that they had had numerous accidents when maintenance personnel pulled off the hatch door to perform maintenance, forgot about the hole, and fell in. If the door were located on the same side as the galley door, turnaround time would slow. And since airlines need



Boeing Commercial Airplane Group has developed a 1/10th scale model of the forward fuselage of its new 777 twinjet to demonstrate built-in flexibility features. George Broady, left, chief engineer-777 payloads, points out features to Gordon McKinzie, United Airlines’ 777 program manager. Modular galleys, lavatories and stowage units are attached to seat tracks, and can be repositioned within pre-engineered flexibility zones. Multiple distribution points for water, air and electricity above the ceiling allow quick connection to lavatories and galleys, while waste lines beneath the floor also can be accessed at numerous points. Airlines will be able to completely reconfigure interior arrangements within 72 hours, in contrast to taking up to three weeks to relocate the fixed-mount installations typical of current aircraft. The first of the 375- to 400-seat 777s is due for delivery to United Airlines in 1995.

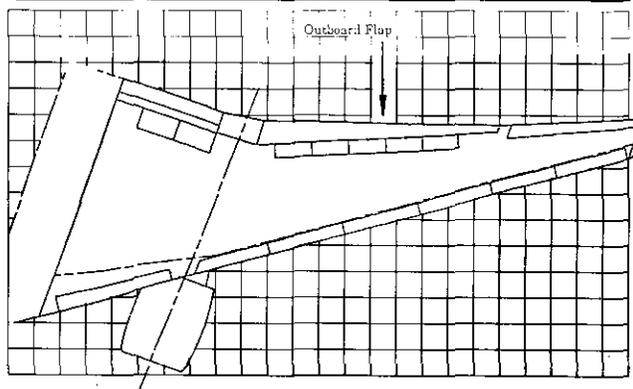
speedy turnarounds, they would like to service the galley and electronics at the same time.

The team’s solution was to put the hatch on the side where passengers enter, as far forward as possible. ANA suggested a design modification, adding a hinge with an automatic closure to the hatch so that when the mechanic goes down, the hinge closes up.

Lessons From the Design Partnership Process

The customer/supplier collaboration concept was born in October 1990 when the 777 project was formally launched, following receipt of United’s first order. According to Mr. Roundhill, “it was a great idea — honest — great philosophically, but it needed to be formal-

Outboard Trailing Edge



B777 Objective

United + Boeing

In order to launch on-time a truly great airplane we have a responsibility to work together to design, produce and introduce an airplane that exceeds the expectations of flight crews, cabin crews, and maintenance and support teams and ultimately our passengers and shippers.

From day one:

- Best dispatch reliability in the industry
- Greatest customer appeal in the industry
- User friendly and everything works.

October 15, 1990
CHICAGO

James M. Guyette
Exec. V.P. Operations
UNITED AIRLINES

Richard R. Albrecht
Exec. V.P., BCAC

Phil Condit
Exec. VP & GM, New Airplane Prog.
BCAC

Figure 1. This collaboration agreement was signed by James M. Guyette, Executive Vice President of Operations, United Airlines; Richard R. Albrecht, Executive Vice President, Boeing Commercial Aircraft Group; and Phil Condit, formerly Executive Vice President and General Manager of New Airplane Programs, Boeing Commercial Aircraft Group, now Boeing's new president. The text reads: *B777 Objective, United & Boeing. In order to launch on-time a truly great airplane we have a responsibility to work together to design, produce and introduce an airplane that exceeds the expectations of flight crews, cabin crews, and maintenance and support teams and ultimately our passengers and shippers. From day one: Best dispatch reliability in the industry; Greatest customer appeal in the industry; User friendly and everything works. October 15, 1990*

ized." The team has two mechanisms for guiding the process, a Customer/Supplier Agreement, and a Steering Committee.

The Steering Committee of senior customer and supplier executives also helps manage this complex project. One steering committee monitors Boeing and United working together; there is another for the ANA/Boeing collaboration.

Boeing and United worked for three weeks on a formal statement of their partnership. Not a legal agreement, this document was intended to summarize the team's objectives (see Figure 1.).

To have a "customer-in" relationship (a term coined by the ANA representatives), the team must have absolute honesty and integrity, no secrets, especially in the trade-off areas such as maintenance versus performance. The team needs to specify how far down into the numbers they are willing to go to expose cost data. Mr. Roundhill notes that although Boeing does not share all technical data, "we don't have two sets of books. The customer may see ratios instead of absolute costs."

The collaborators need to write down the details of their proposed relationship. "You can't just say, 'Come along!'" Specify the kind of meetings that will be set up to deal with certain types of issues, the location of the meetings, what other customers to let in, and when.

Keep monitoring the process, not just the technical design, but the people process. Mr. Roundhill and now his successor Jeff Peace meet weekly with United and ANA program managers to talk about big issues as well as the team process. "The little conversations that we have day-to-day cut through a lot of wasted effort and letter-writing," Mr. Peace feels.

Not only is Boeing developing a better understanding of its customers' challenges, the "working together" airlines are gaining a new perspective about the complexity of Boeing's task as well. "We've started to understand how complicated a process it is to put an airplane together," United's McKinzie said.

And since the design of the 777 is essentially complete, with computer-generated "drawings" of airplane structures and systems being released to manufacturing, the role of the airline (customer) representatives is beginning to change. "We've designed the airplane; now we'll learn the airplane," explained McKinzie, who expects more airline maintenance and training people to become involved in this stage of the airplane's development.

Williams Technologies' Customer Rating System

Peggy Goddard, Williams Technologies quality assurance manager chaired the task force that created Williams' customer rating system. Williams is in the remanufacturing business, producing remanufactured automotive and industrial automatic and electronic/automatic transmissions. Automatic customers include GM (Cadillac, Buick, Pontiac and Oldsmobile); industrial units go into school buses, vans, garbage packers and RV's.; transmissions and engines are for customers like GM and Caterpillar.

Every month GM Powertrain Division customers visit Williams for a detailed quality review meeting, partnerships in action. GM's "reman" business is organized under service parts operations out of Ypsilanti, MI, from which service product teams control every phase of the remanufacturing process.

The teams are typically made up of an engineer, a materials professional, and an expert from field service. The team runs an entire business unit.

Several years ago GM began to grade its supplier for all three GM lines on a dozen criteria (see Figure 2 on page 12). About six months ago one customer suggested that Williams rate *them*. Williams' folks were very receptive to the idea of structured feedback, says Peggy, "because just like the way they rate us, there is no doubt what is important to us as a supplier."

From this welcome suggestion a Williams team of General Manager Jeff Anderson, Peggy Goddard, the material, production, and productivity managers developed the customer evaluation or performance matrix.

How did the supplier tell its primary customer that they were going to start this report card? "Very delicately," answers Peggy. To the customer that suggested the idea, the response was "we took you up on it."

Users on both sides feel this is a perfect communication tool. Peggy summarizes her involvement with the system this way, "Personally, I like receiving it from the customer, because not only can you see the bottom line score — to see if you have improved from month to month. But in each category there is something measurable, so you can see if you are moving in all these areas. This particular tool keeps everyone focused on the quality of the product."

Protocol

The product review meeting follows a structured agenda that Peggy sets up with the customer. One month in advance she faxes the agenda topics to GM for their input and agreement on how the meeting will run. Twelve to 14 participants attend, about 10 from Williams, including managers from production manufacturing, quality, technology, and productivity, materials, personnel, and occasionally marketing. The customer speaks first; Williams goes last.

GM rates its supplier in 12 categories of service, six of which fall under quality, one inventory, and three performance to contract (see Figure 2.). Note that not all criteria are weighted equally by the customer. The heavi-



GM Powertrain Division's representative, Williams Technologies' customer, Fred Bejster, at the monthly product review meeting in which customer and supplier ratings are exchanged and discussed. Photo by Dickson Dunlap Studios.

est weight is given to warranty exposure (18), sediment (14), and continuous improvement (14); inventory, at eight, receives one of the lowest weightings. The total score adds up to 100.

Williams' score, therefore, multiplied by its weight, produces the total value received for that rated element. The warranty rating of 5.66 percent rounded up to six percent rates a score of four, multiplied by a weighting factor of six, to produce a total value of 24. Warranty liability represents claims per 100 vehicles with six months exposure.

The Customer Evaluation Sheet (see Figure 3 on page 13) contains fewer rating elements — schedule, parts delivery, new parts quality, synchronous (schedules), communications, price/cost, and customer supplier relationship. Highest weighting factors go to synchronous and price/cost. In June 1992, for example, GM's adherence to schedule was rated a high nine, multiplied by a weight of 15, to produce a total value for keeping to schedule, of 135.

Williams' Points of Measure show detailed gradations of customer performance to schedule, from absolute perfection (multiple truckloads, no changes in a month, no mix changes in a week, no VIP's [emergency orders], EDI schedule transmissions), down to "Thankful for the business!"

How do the customers feel about being rated? Fred Bejster, GM Powertrain Service Engineer responds, "Our customer/supplier relationships have always been a strong point with any of the reman sites we work with. We want to be very interactive with them, assuring good product quality and on time shipments. We had a good relationship to begin with."

The document GM uses to rate Williams, the performance matrix, is not mandatory, but is used with some other reman sites. The site takes the matrix scores very

Williams Technologies Performance Matrix ("customer grades us this way...")

Quality							Inventory	Performance to Contract			Other	Scale
Warranty 6 Month Exposure 3 Month Average	Warranty W.T. + 1/2 Shared Liability	Final Test %	Sediment Mg/unit	Teardown Average Defects/5 Transmissions	Leak Test Accept Rate	Cont. Improv	Turns Per Year	Customer Response Reports	Drive Audit (Units)	Root Cause	Case Usage Rate	
5.66%	18.30%	95.44%	155.1	6.25	99.60%	10	11.8	100.00%	18.0	5.00%	94.90%	
3.00%	16.50%	97.50%	240.0	0.00	100.00%	10	21.0	100.00%	20.0	5.00%	98.00%	10
3.50%	18.00%	97.00%	248.0	2.00	99.75%	9	19.0	90.00%	19.0	4.80%	97.50%	9
4.00%	19.50%	96.50%	256.0	4.00	99.50%	8	17.0	80.00%	18.0	4.60%	97.00%	8
4.50%	21.00%	96.00%	264.0	6.00	99.25%	7	15.0	70.00%	17.0	4.40%	96.50%	7
5.00%	22.50%	95.50%	272.0	8.00	99.00%	6	13.0	60.00%	16.0	4.20%	96.00%	6
5.50%	24.00%	95.00%	280.0	10.00	98.75%	5	11.0	50.00%	15.0	4.00%	95.50%	5
6.00%	25.50%	94.40%	288.0	12.00	98.50%	4	9.0	40.00%	14.0	3.80%	95.00%	4
6.50%	27.00%	94.00%	296.0	14.00	98.25%	3	7.0	30.00%	13.0	3.60%	94.50%	3
7.00%	28.50%	93.50%	304.0	16.00	98.00%	2	5.0	20.00%	12.0	3.40%	94.00%	2
7.50%	30.00%	93.00%	312.0	18.00	97.75%	1	3.0	10.00%	11.0	3.20%	93.50%	1
4	8	5	10	6	8	10	5	10	8	10	3	87
6	12	5	14	14	5	14	8	5	5	5	7	100
24	96	25	140	84	40	140	40	50	40	50	21	750
Targets For Excellence 1.5			Target = 0 Discrepancies				Month June 92			750		

Score Weight Value

4T60/4T60-E Performance Matrix, FWD Service Product Team

(1) SRTA WARRANTY — Hard part (R7000) claims only.

Claims per 100 vehicles with 6 months exposure. Last 3 months running average from GM Corporation Warranty Date.

(2) WARRANTY LIABILITY

Claims per 100 analyzed returns. 100% SRTA site liability + 50% shared (SRTA site + GMPD) liability.

(3) FINAL TEST %

Acceptance rate of final test machines at SRTA site.
 [(Monthly total accepted units/by monthly total tested units) x 100].

(4) SEDIMENT (Mg/unit)

From monthly audit performed at GMPT plant by reliability.

(5) TEARDOWN (Average defects/5 transmissions)

From monthly teardown audits performed at GM Powertrain plant. Discrepancies are reported for mis-builds and low torque applications.
 [(Disc./# units audited) x 5].

(6) LEAK TEST ACCEPT RATE %

Acceptance rate of leak test machines at SRTA site.
 [(Monthly total of accepted units divided by monthly total of tested units) x 100].

(7) CONTINUOUS IMPROVEMENT

2 points maximum given to each of the following categories:
 Quality — Charts and 5-phase reports updated monthly.
 Gauging — Gauges certified and records up to date.
 V.I.P.S. — Shipped on time (24 hours).
 Job Instructions — Written procedures updated and on job. Preventative maintenance schedules followed.
 Cost/Unit — Total cost of Material, Freight, and Labor/units produced.

(8) TURNS PER YEAR — GOAL = 20 TURNS PER YEAR (obsolete parts exc)

$TURN = \frac{\text{cost of material used in month}}{\text{beginning inventory value for months}} \times 12$

(9) CUSTOMER RESPONSIVENESS

Reports and requests submitted on time.

(10) DRIVE AUDITS (Units/Month)

The number of units driven divided by the number units produced. Based on 1.3 units per day. Score excludes Allante models.

(11) ROOT CAUSE

Five percent of remanufacturing production analyzed in root cause.

(12) CASE USAGE RATE

The number of transmission cases scrapped divided by the number unit accepted. Number reported is three-month running average.

Figure 2. Date printed: July 9, 1992

GM Powertrain 4T60 SRTA Customer Evaluation ("we grade customers this way...")

Schedule	Parts Delivery	New Parts Quality	<None> Synchronous	Communications	Price/Cost	Customer Supplier Relationship	Scale	
10	10	10	10	10	10	10	10	
9	9	9	9	9	9	9	9	
8	8	8	8	8	8	8	8	
7	7	7	7	7	7	7	7	
6	6	6	6	6	6	6	6	
5	5	5	5	5	5	5	5	
4	4	4	4	4	4	4	4	
3	3	3	3	3	3	3	3	
2	2	2	2	2	2	2	2	
1	1	1	1	1	1	1	1	
9	8	7	6	10	9	8	57	Score
15	10	15	20	10	20	10	100	Weight
135	80	105	120	100	180	80	800	Value
Goal 1000				Month June 1992	Score 800			

Points of Measure

ITEM # 1 SCHEDULE

- Schedule in multiple of truckload (104)
- No fluctuation in given month (freeze volume)
- No variation in mix per week
- No VIP's
- Communicate schedule EDI
- A change in either of these would cost one point.

- 10 = Above
- 9 = Any one (1) change
- 8 = Any two (2) changes
- 7 = Any three (3) changes
- 6 = Any four (4) changes
- 5 = Any five (5) changes
- 0-4 = THANKFUL FOR BUSINESS

ITEM # 2 PARTS DELIVERY

- 10 = JIT and Kanban, all delivered
- 9 = Some JIT, all delivered
- 8 = Smooth but large quantities
- 7 = Back order in 2nd week of schedule
- 6 = Late (1)
- 5 = Late (2)
- 4 = Late (3)
- 3 = Back order in current week
- 2 = Subassembly down
- 1 = Part of final assembly line down
- 0 = LINE DOWN

ITEM # 3 NEW PARTS QUALITY

- 10 = Ready for new line — ZERO defects
- 9 = < 5% need inspection or clean

- 8 = GCN resolution outstanding over 30 days
- 7 = 15% parts needed inspection or clean
- 6 = 20% parts needed inspection or clean
- 5 = GCN resolution outstanding over 60 days
- 4 = 25% parts needed inspection or clean
- 3 = GCN resolution outstanding 6 months
- 2 = Subassembly went down
- 1 = Part of final assembly line went down
- 0 = LINE DOWN

ITEM # 4 SYNCHRONOUS

- 10 = SIT has followed all ten (10) steps to Synchronous mix
- 9 = Demonstrates eighteen (18) characteristics
- 8 = Producing mutual cost reductions
- 7 =
- 6 = Treats supplier as partner
- 5 = Implemented some elements of Synchronous with supplier
- 4 =
- 3 = Just getting started/learning
- 2 = Can spell SYNCHRONOUS
- 1 = Can say SYNCHRONOUS (syn' chro' nous)
- 0 = Not moving toward SYNCHRONOUS

ITEM # 5 COMMUNICATIONS

- 10 = No surprises, responsive and all information on time
- 9 = Any one (1) surprise
- 8 = Any two (2) surprises
- 7 = Any three (3) surprises
- 6 = Any four (4) surprises
- 5 = Heard it from truck driver
- 4 = Information showed up in mail or fax

- 3 =
- 2 =
- 1* =
- 0 = Heard from another SRTA site

ITEM # 6 PRICE/COST

- 10 = Pays a fair price; helps reduce cost
- 9 =
- 8 = Mechanism in place to identify additional costs and adjust price
- 7 =
- 6 =
- 5 =
- 4 =
- 3 =
- 2 =
- 1 =
- 0 = Beats supplier for every last penny

ITEM # 7 CUSTOMER/SUPPLIER RELATIONSHIP

- 10 = Partnership that mutually benefits both
- 9 = Aids growth — supplier rationalization — new business
- 8 = Establishes two way performance matrix
- 7 =
- 6 =
- 5 = Considers supplier a commodity
- 4 =
- 3 =
- 2 =
- 1 =
- 0 = Supplier = a vendor

Figure 3. Matrix — Points of Measure



Kelly Turley and Peggy Goddard, Williams Technologies quality assurance manager and team leader for the Customer Rating sheet, reviewing Williams Technologies scores. Photo by Dickson Dunlap Studios.

seriously and knows what each score is month to month. Within the Powertrain service organization the sheet is a quick track on how the supplier is performing.

According to Fred, although the customer's rating sheet started partly as a joke, when Peggy, Williams' quality manager ran with it, everybody plant-wide got involved developing the criteria. "The original scores were terrible, a real shock (approximately 600 total). Guess they didn't want to inflate our ego." Although the service organization does not control parts scheduling and shipments, the low scores reflected some issues with materials and shipping schedules that are handled by another department. This document should help make other functions more responsive.

Twenty too many, the NMX Consortium

As a Baldrige winner, Motorola is expected to pioneer quality excellence. The company works hard at partnering, conducting quarterly confidential surveys of its major suppliers to evaluate its performance as a customer. *Target's* "Best Customer, The Other Side of the Fence" (Volume 7, Number 4, Fall 1991) featured Motorola's customer feedback instrument that examines at the plant level how each facility performs in 19 areas critical to the customer/supplier relationship.

Molex of Lisle, IL, a one-half billion dollar connector producer, and one of Motorola's suppliers, has joined a consortium called NMX (NCR/Motorola/Xerox). Molex President John Krehbiel, Jr., explains the problem caused by customers who consume supplier resources with various quality audits and certification exercises, 20 in one year, in fact. Their Lincoln, NE plant spent one accumulated man-month managing multiple customer site visits, data gathering, and other certification requirements.

NMX, described by Ken Stork as a "skunkworks pro-

ject" began in 1990 when he, Ray Stark (formerly of Xerox) and Al Rashpour of NCR exchanged and began to criticize their own supplier certification programs. The Motorola QSR (Quality System Review), a one-inch thick document that preceded the Baldrige, seemed to be the one rating system that all three customers found most appropriate for their requirements. The Motorola QSR covers ten areas of control:

1. the quality system
2. new product/technology/service development control
3. supplier control
4. process operation
5. quality data programs
6. problem solving
7. control of quality measurement equipment and systems
8. human resources involvement
9. customer satisfaction assessment
10. software quality assurance.

Because the QSR is so comprehensive, full review takes 1-2 weeks. It is a prescriptive review, self-scoring, "a take-home exam with Cliff notes."

According to Mr. Krehbiel, who completed sections three and eight (the QSR is not consultant-dependent), "The QSR is among the most rigorous we have participated in. Initially it hurt our feelings," but slogging through the details forced the company to ratchet up their quality goals; they agreed to a 10x quality improvement.

What's the usefulness of all these rating systems? Notes Ken Stork, "Without data, potential collaborations fall apart very quickly." But they don't work everywhere. John Kiley of Stratus Computer, another electronics company, has a vendor rating system that monthly provides detailed supplier feedback. When he recently asked suppliers to rate them, the response was "No problems, you're four stars!" Stratus is looking at a different communication tool.

You Gotta Keep Feeding the Beast...

Partnering cuts inventory and administrative costs as team members take out inventory and organization layers. As more companies outsource higher proportions of manufacturing, like the following company — EMC — they become more a total value systems integrator. Partnerships with suppliers only work well for those folks when their internal systems and personnel are revved up to speed communications and try out new ideas in systems planning and control.

MRP systems were not originally designed to manage big proportions of outsourcing. Combined with the demands placed on material movement and tracking by JIT, users find that MRP frequently compounds the logistics challenge.

Many U.S. companies, locked in the expectation that they can demand more of their suppliers than of themselves, will find that entering into a partnership stretches their organization, and lets them get creative.

EMC Corporation of Hopkinton, MA, one of the remaining "Massachusetts miracle" high tech companies that is growing at over 35 percent per year, has some real gems. EMC manufactures storage devices, competing with first-tier producers like IBM.

Eighty-five percent of its current revenues come from products not in the mix two years ago. The average product life cycle in mid-range products is 18 months; for a mainframe product it is somewhat longer.

What's fascinating about EMC is its "growth problem." Until two years ago the company was a board house. The management structure and many of the people systems — training (almost nonexistent), reward and review process — and long-range planning were sized to fit a board shop.

Mike Schoonover, the vice president of operations, has been there about a year. He's lost some weight since taking over this job. Mike starts his mornings with 12 ounces of black coffee in a tall styrofoam cup — breakfast. Helping EMC shed "the legacy of high-tech" — that pseudo-professional blend of controlled chaos and reactive, matrix management, is his personal mission.

Where to start? Mike trimmed the organization, and started talking, and talking, and talking. And while he talked, trying to elicit feedback and engender feelings from those remained that they could take charge of their own destiny, he started rebuilding EMC's basic management structures, and driving the inventory way down.

He instituted weekly lunches with six to seven employees, "rumor control," and empowerment talks. For many white collar folks, this was a useful but time-consuming break in ten hours of running and chasing.

All purchasing personnel started moving toward supply management. Where the procurement group had been organized along traditional purchasing manager and buyer lines, re-structuring resulted in a more diffuse spread of power and responsibility. Although commodity expertise is still a critical core competency for this high-

tech up-start, Mike felt that the organization could not be driven solely by a few key individuals. So he organized commodity teams, group meetings that were conducted to plan, and took all players off-site for mission planning sessions.

And in the middle of blasting and hauling away old bricks, the company posted incredible returns. Inventory, Mike's "first hit, a surgical strike", dropped \$7-10 million, what he called "the low fruit."

Two supply management gems shine through all the smoke.

Gem #1, The Distribution Alliance Program

Judy Lazaros, a very quiet woman who has been with the company a long time, three and a half years, in fact — and who was recently named "buyer of the year" by *Electronic Buyers News* — started working to cut inventory from the purchasing side. She had the idea that the buyer planners needed to get out of the day-to-day tactical material movement game, and shift some of that responsibility to the sources of certain components, two distributors.

Judy worked out an arrangement with distributors Anthem and Hallmark, both located about 20 miles away, to take over ordering and replenishment. Four distributor representatives are in the program; two visit once per week; two have desks and "live" on site. They access both the EMC and their home MRP systems, and starting with the EMC MRP run, including the forecast, they calculate an on-shelf quantity, "suggested" to be three months, which they maintain for the customer off-site. The in-plants have limited access to the system. They can enter P.O.s (paperless), and can review them, including ship dates and quantities, and prices taken from the contract. They cannot see upper-level pegged requirements.

The arrangement is all verbal, not a written agreement. Like all true partnerships, it benefits both sides. EMC takes a big cut out of their inventory and gets to spend more time planning, and the distributor can combine upcoming requirements with other demands he sees coming.

The in-plants have contract badges, pay their own phone bills, and sign in and out. Unlike the Bose in-plants, they do not access engineering. Hard-copy P.O.s and change-orders went away, at a savings of about \$110 per event. Prices are set 9 percent above contract. Total inventory bite is \$1.8-\$2 million. Other benefits accrue to the customer: the minimum dollar order is small: \$50, cutting lot sizes for higher turns. The order window for

cancellation and reschedules dropped to two days. Leadtime dropped from six weeks to three days, a strategic requirement to be in EMC's business. On-time delivery soared to 100 percent, and distributors have agreed to drop-ship direct to Puerto Rico plants (eliminating kitting at Hopkinton).

Along the way, this program consolidated the vendor base. Managing three or four distributors is better than ten or more, says originator Ms. Lazaros.

Sheet metal and cables are the next commodity group for an alliance program.

A word from the troops about recognizing partnership initiatives. This unsolicited improvement idea saved EMC money as well as time. It garnered Ms. Lazaros a quality award, a week-end for two in Orlando.

Gem #2, Jimmying MRP

Internal systems can get in the way of good partnering. MRP systems often accumulate inventory through cascading inventories. Leadtime is the one element of the system that planners have been trained to not touch. But Mike Terry, inventory control manager, figured that EMC's MRP system was another opportunity area.

Mike did an analysis of a mid-range storage product, looking at the major components to see if they really needed to be brought in when and in the sequence the system called for. Five components represented 80 percent of the mass storage device's total value: the disk drive, SRAMs, PAL chip, raw board, and the power supply.

Looking at the system's leadtimes, and thinking about optimal leadtimes, Mike asked the question if throughout the assembly process any of these items could show up later. The board and the SRAM could not because they went to Puerto Rico and back. But the sub-assembly doesn't need the disk drive when the system called for it, ten days before ship date.

What Mike came up with was nicknamed a "negative offset." Through a subroutine he tricked the system to ask for the disk drive on day five, rather than day ten. Planners know that this subroutine has generated a real signal because a sidebar on the MRP requirement reports specifically identify these special items, and show how many days have been shaved from the system standard leadtime. All in-ship reporting, which translates to one of Mike Schoonover's first inventory dollar targets, future planned orders, reschedule notices, and new procurement requests, key off the new offsets.

The new subroutines allow MRP to more accurately reflect new inventory plans. Where in-ship projections were massaged constantly before, according to Mike Terry, this modification "Builds a little more integrity into MRP. We're not doing inventory estimates on the back of a napkin. And we have details and an audit trail in the system."

The tab for this system modification? Fourteen days cut from leadtime for only 20 items saved the company \$1.7 million in inventory costs.

Conclusion

These four examples of innovative customer/supplier partnering are all different in their approach. But Boeing, NMX, Williams Technologies and EMC are all working on the same partnership issues — improved early communications, creation of a common language, and developing trust in shared interest areas. They have each reached outside their own organizations to pull in a vehicle that especially suits their partnership challenges.

What we have addressed briefly here is how the contact points — the customer's procurement function and the supplier planning department — can get better themselves. That means structuring and rewarding their organizations to be most responsive and focused to partnership needs. It also means, as Mike Terry did at EMC, getting the systems to help. We'll look at that process next.

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Gordon McKinzie, 777 Program Manager, United Airlines and Ken Stork, President, Ken Stork Associates, Inc. are featured speakers at the 1992 Annual Conference. Watch for further coverage of excellent customer/supplier partnering.

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