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Kewal Dhariwal and Andrew Bitcon prepared this case study under the supervision of Dr. Peter Carr to provide material for class discussion in the Supply Chain Management – MBA Residential program for the Centre for Innovative Management (CIM) and as part of the development of the Supply Chain Collaboration Online Research Institute (SCCORI) at CIM. The authors do not intend to illustrate either effective or ineffective handling of a managerial or strategic business decision. The authors have disguised certain names and other identifying information to protect confidentiality.

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Contents

Case Study B: Industry Collaboration

US President George Bush has sponsored a Continental Energy initiative, representing a unique opportunity for Alberta energy producers to expand production and secure long-term contracts for the supply of their product. Big Tar Oilsands Corporation (BTOC) wants to take advantage. However, the corporation's profitability would depend on rapidly expanding its production while significantly reducing its overall operating costs.

The Canadian federal and provincial governments, anxious to promote development, job creation, and tax revenues, have offered financial assistance. The assistance would be contingent on BTOC finding new and innovative ways to reduce their cost structure and becoming competitive with other sources of energy.

The Minister of Energy in Alberta has strongly suggested that BTOC investigate supply chain collaboration with other local major oil producers as a method of reducing costs. BTOC's executive agree with the Minister that cost reductions can be achieved through the use of new Supply Chain Management (SCM) techniques including Internet focused software that will link BTOC, other oil producers, and their respective suppliers.

Stephanie Clarke is Director of Supply Chain Management (SCM) at BTOC. She has been in the position six months and has just been awarded an important and controversial assignment from BTOC's Executive Council: to prepare a strategic paper on SCM collaboration opportunities between BTOC and other major oil operators. The paper must identify potential areas of collaboration, benefits, risks, and technological solutions.

In the Athabasca region of Northern Alberta, BTOC and its neighbour, the Ultra Large Tar Sands (ULTS) Company, are the economic powerhouses behind local prosperity. Since the late 1960s, the two companies have pioneered exploitation of the vast tar sands, using a combination of technologies from the mining and petroleum refining industries to extract bitumen from the gooey black tar sands and process it into crude oil. Together, they produce almost one quarter of Canada's total domestic crude oil requirements (approximately 250,000 barrels of oil per day, each).

BTOC and ULTS are of roughly equal size and are Fort McMurray's major employers as well as the major customers of the local business community. Approximately 10,000 workers owe their employment, either directly or indirectly, to the two oil sands operators. Their total annual procurement expenditure is almost $2 billion, a significant proportion of which goes to local businesses.

Because they are located in the same geographic area and their production techniques are similar, BTOC and ULTS' supply chain departments have much in common. For example, the sheer size of their operations, combined with their distance from major supply centres, increases the importance of inventory management to ensure availability of critical spares and control transportation costs.

If a part is urgently required and is not on the warehouse shelf, often the only delivery option is expensive airfreight. Ground transportation routes can be unreliable as the only highway into the Fort McMurray area can be blocked by blizzards in the winter and forest fires in the summer. As a result, BTOC and ULTS carry large inventories to avert production losses due to inventory stock outs. Their local suppliers must carry large inventories for the same reasons.

Stephanie wonders how much inventory duplication there is in the Fort McMurray area and if collaboration would somehow allow all parties to reduce inventories. She knows that her company and ULTS use many of the same materials and services, and that their inventories and costs are similar. She looks at the supply chain statistics for her own department and knows the numbers for ULTS are very similar. Refer to Exhibit I "BTOC Statistics".

Stephanie is aware that that previous supply chain managers have tried to cut inventory levels by transferring some of the inventory responsibility to suppliers (consignment, on-site management, etc.). However, two main factors resulted in BTOC being unable to give their suppliers accurate demand forecasts: inadequate information systems capability and the fact that materials demand is not directly linked to productions levels or previous usage. Without accurate demand forecasts suppliers were unable to reduce their inventories, resulting in high carrying costs that were ultimately passed back on to BTOC.

Stephanie hopes the recent installation of an Oracle Enterprise Resource Planning (ERP) system and a Maintenance, Repair and Operating (MRO) software, "Maximo" Plant Maintenance System will help alleviate the first issue. The second issue, however, presents the larger problem.

The oil and gas industry is very different from the manufacturing industry in which Stephanie has spent most of her career before now. When her previous employer, a large appliance manufacturer, estimated customer demand at 200,000 new fridges, the production department planned to manufacture 200,000 new units, and the purchasing department ordered 200,000 compressors (less existing inventory, current backorders, etc.). This is not the case at BTOC. The materials and services that Stephanie's department purchases do not go directly into the end product, but rather are primarily MRO related.

Demand for these materials and services are dependent on the quality of maintenance procedures, the weather, and operation of the equipment; the level of production is not a good indicator of purchasing requirements. As a case in point, Stephanie has noted an increase in demand for brake parts for the large mining trucks after each rainfall. Wet sand gets into the brakes and causes excessive wear and tear, requiring the brakes be changed regularly. Afterward, her department receives a large volume of inventory requisitions to replenish the warehouse's stock of brake parts.

Also, in the oil and gas industry, end customers have traditionally consumed as much as the refineries can produce. Price is dependant on world markets and general economic conditions, not on brand or quality. Procurement is primarily of "indirect" materials, which do not impact the customers' perception of, or demand for, the end product. While cost reduction is on BTOC management's agenda now, this has not always been the case.

With production revenues in the billions of dollars per year and purchasing and inventory costs in the millions, an unofficial, but accepted, purchasing commandment has been to "keep units operating regardless of the cost". A common saying among buyers has been, "The Purchasing Agent who buys too much gets in trouble; the one who doesn't buy enough gets fired".

On paper, the concept of industry collaboration makes a lot of sense. However, the enormity of the idea of collaboration between BTOC and its competitor, and the potential impact on the local economy makes Stephanie nervous.

BTOC and ULTS are both very concerned about supporting local businesses in general and aboriginal businesses in particular. Considerable effort and management attention are expended on initiatives to strengthen the capabilities of these suppliers. In addition to the positive optics of these initiatives, a strong local economy provides security of supply and helps to attract qualified workers. Stephanie wonders how the local and aboriginal suppliers will react when they hear that the two major customers are considering "collaboration". Will this be viewed as a positive development or will it generate fear and negative publicity?

Stephanie has always worked in a fiercely competitive manufacturing environment where the thought of collaborating with competitors on supply chain initiatives is unheard of. However, in the upstream oil industry (exploration, drilling, recovery, and transportation), joint ventures between competitors are commonplace. The high costs and risks involved in new oil and gas initiatives make bringing in partners, to share the risks and rewards, a successful strategy.

Now Stephanie must map a strategy for collaboration with a major competitor.

She thinks about the SCM business environment of her company and that of ULTS. At the macro level, the two companies are similar in size, operation, and procurement expenditure. They are also relatively aligned in their vision for supply chain management and share some other issues, such as staffing.

Both BTOC's and ULTS' SCM departments face staffing issues due to increased business volumes, the new skills sets required in SCM, retirements, and their northern location. Staff levels have decreased over the last five years and both operators are attempting to address the increased workload through new supply chain relationships and improved technology. Despite these difficulties, Stephanie's assessment is that staff in both companies' departments are highly motivated, sophisticated, and would be enthusiastic agents for change. Getting her staff to think "outside the box" on innovative projects like industry collaboration will not be difficult**.**

In fact, her staff and the buyers at ULTS have long been in favour of enhanced collaboration. Both companies see a future dominated by closer business relationships with a much smaller supplier base. This vision includes transitioning their primary purchasing focus from tactical and transactional to strategic and relationship based.

At a recent meeting of the Purchasing Management Association of Canada (PMAC), Buyers from ULTS and BTOC brainstormed a list of collaboration opportunities. Refer to Exhibit II "Collaboration Opportunities" for a list of their suggested collaboration initiatives.

Many of the opportunities identified focused on saving money, time, and inventory costs by consolidating the procurement activities of BTOC and ULTS on specific generic items. Two of the examples discussed were work gloves and steel. The annual procurement of work gloves between the two companies is over one million pairs and considerable leverage could be obtained by combining the requirements. For steel buyers, there are often production capacity constraints due to both companies placing orders at the same time. Coordinating the timing of orders could generate significant savings.

Some of the ideas, however, go well past consolidation of common purchasing requirements. Many of the suggestions involve a more comprehensive and in-depth collaboration style between the two energy giants. For example, some buyers are promoting BTOC and ULTS collaboration on strategic planning, risk assessments, and staffing issues.

To achieve their supply chain management goals, BTOC and ULTS are employing similar strategies, which include:

1. Reducing, but not eliminating, competitive bidding.
2. Centralizing supplier relationship management and decentralizing order placement.
3. Tailoring the contractual arrangements to the supply requirements ("one size does not fit all").
4. Applying "strategic sourcing" and "supplier alliance" methodologies to key spend categories (chemicals, electrical supplies, bearings, etc.).
5. Using new SCM technology to automate high-volume, low-value activities ("exiting the transaction business").
6. Upgrading financial and supply chain information systems to provide better information, analysis, and "fact-based" planning.
7. Focusing more on services contracts and materials/services contracts.

Despite these similarities, there are subtle differences in the tactics employed by BTOC and ULTS in implementing their supply chain management strategies.

For example, purchasing staff at ULTS are reducing their supplier base but they are planning to proceed cautiously. Their focus is on increasing financial visibility with their primary (1st tier) suppliers. ULTS wants to intimately understand the total costs of their business with their primary suppliers, and then use this information to better manage the relationships. They believe a more efficient relationship will generate significant process improvement and total cost savings for both ULTS and its primary suppliers.

ULTS has embraced bringing vendor personnel on-site and giving them direct access to internal systems to facilitate Vendor Managed Inventory (VMI). Their strategy is to expand and enhance their existing strategic relationships. They employ a detailed and comprehensive process for developing new strategic relationships, predominately with existing suppliers.

At BTOC, purchasing staff also see reduction of their supplier base as their key focus and primary objective. However, they are interested in extending their visibility and influence as far down the supply chain as possible. If they can understand the cost drivers and value-add activities of the entire supply chain then they can remove inefficient activities and non-value adding suppliers.

BTOC sees value in the concept of VMI, but only in limited situations. They would prefer to install BTOC buyers in the vendors' offices to help the vendor identify downstream supply chain collaborations and cost-reduction opportunities. BTOC has allowed some suppliers on-site, but their role is very limited, as compared to ULTS' model.

The systems architecture at the two tar sands producers is also different. BTOC is planning to aggressively expand the internal footprint of their Oracle ERP software, recently installed to handle their financial and accounting requirements. They also recently installed MRO Software's Maximo solution for maintenance, inventory, and purchasing. They have implemented eProcurement with 5 suppliers for requisitioning and purchase order creation. Implementation of Maximo cost BTOC its in-house bar-coding system, but Stephanie is actively lobbying for an upgrade to regain this functionality.

At ULTS, on the other hand, staff are using a highly customized legacy system for financials and materials management. They do not have any eProcurement functionality. However they do give some key suppliers access to their maintenance system to help with forecasting. ULTS makes extensive use of a sophisticated, self-developed MS Access program for expenditure and inventory analysis.

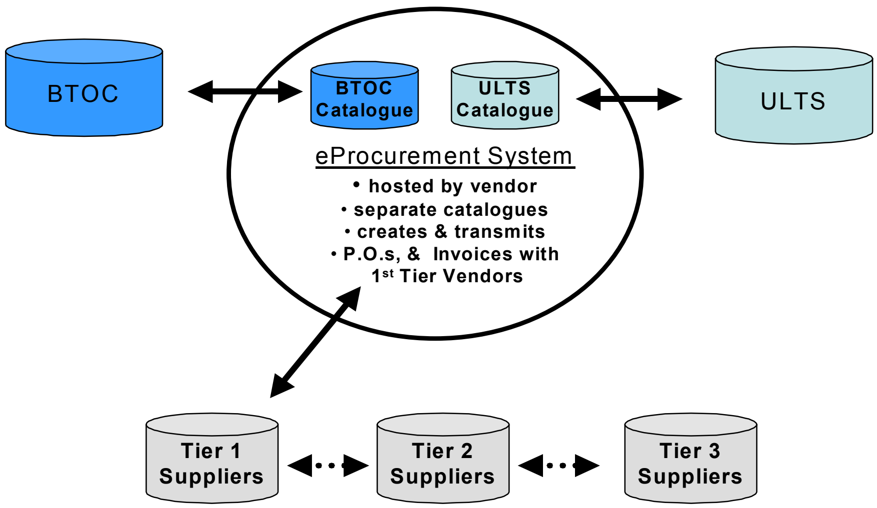
In the informal discussions so far between BTOC and ULTS, two technology options have emerged. Her colleagues at ULTS, and some of her own staff, favour a quick installment of a common "lean" eProcurement system available from such suppliers as Ariba, Commerce One and PurchasePro.com. This solution would connect BTOC and ULTS electronically to their major suppliers, but would allow the two purchasing departments to operate independently. Refer to Chart One, "SCM Industry Collaboration: SCM-Lite Model".

The key functionality available with this solution would be automated approvals, electronic purchase orders, and electronic invoicing. Materials descriptions would be standardized, but each company would maintain their own catalogues in order to keep selected information, such as pricing, confidential. Second and third tier suppliers would not be part of the electronic system.

The proponents of this solution argue that, in addition to the standard eProcurement benefits of automating transactions, entering information once, and reducing cycle times, by combining their requirements into one solution there are additional economies of scale such as minimized startup costs, reduced cataloguing costs, and shared implementation costs (training, configuration, consulting, etc.).

<u>CHART ONE</u>

SCM Industry Collaboration
"SCM-Lite" Model



Having two separate purchasing departments and two separate catalogues will reduce the potential "bad optics" of the two oil sands producers working together, yet will allow both companies to "exit the transaction business" in a quick and inexpensive manner.

The reduction in transaction volume and tactical/clerical work will allow buyers at both organizations to spend more time managing the business and exploring further collaboration opportunities with each other

Stephanie, however, believes this solution does not go far enough. She has been studying recent literature regarding online SCM collaboration and believes there are larger opportunities available. (Refer to Chart 2 "SCM Collaboration Technology: Stephanie's Model").

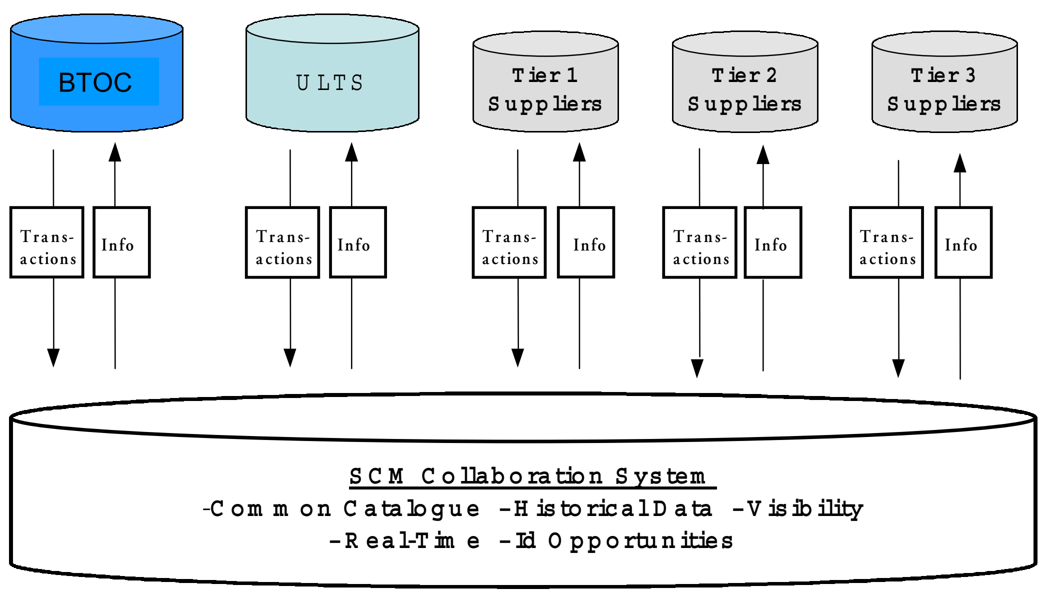
Stephanie favours one fully integrated system with BTOC, ULTS and their suppliers creating transactions in the system. All parties would have access to online data and real-time reporting.

In this model, suppliers could access historical data in order to forecast demand volumes and improve their business processes. BTOC and ULTS could search for cost-reduction opportunities and have the system run "what if" scenarios. Buyers could use new SCM technologies like "SCM Event Management" to identify bottlenecks and propose solutions.

A common catalogue and a common database of information (with appropriate security) would allow the system to generate and test collaboration opportunities. As opposed to the "SCM-Lite" model that enables the potential for collaboration, Stephanie's "Full-Meal-Deal" solution would actively seek out, simulate, and implement collaboration between the two energy giants.

CHART TWO

SCM Industry Collaboration
Stephanies' Model



In theory, Stephanie's "Full-Meal-Deal" solution would be more expensive and potentially more controversial. However, Stephanie knows that the major software vendors are interested in providing complementary software. That, combined with the possibility of government assistance, might make the extra expense of her solution less of an obstacle.

Stephanie is also taking into consideration findings of a recent survey of Canadian Supply Chain technology. Amongst other findings, the survey indicated that:

1. Seventy-eight (78) percent of the respondents indicated they would like to use more Internet-related technologies with suppliers and customers (Table 20, Question 1).
2. Fifty-eight (58) percent indicated that the larger organizations are increasingly controlling the activities of the supply chain network (Table 15, Question 20).

3. Seventy-five (75) percent indicated their organizations will share more planning and operations information with suppliers over the next 5 years (Table 2, Question 3).
4. Eighty-two (82) percent say their company has become more dependent on information technology during the last 5 years (Table 10, Question 10).
5. Only seventeen (17) percent believe that SCM technologies will have no impact on their company's future competitive position (Table 20, Question 10).
6. Fifty-five (55) percent indicated they would be influenced in the selection of suppliers by the supplier's implementation of SCM technologies (Table 20, Question 2).
7. Only thirty-two (32) percent of respondents felt their current job skills would be insufficient to allow them to do their future work.

Refer to "Athabasca University Supply Chain Management Issues Study, May 2002" at www.athabascau.ca/scm/scm0004.htm

Stephanie and her colleagues find the study's conclusions valid, and she wonders how these trends should influence her recommendation regarding the use of technology. She also contemplates the significance of the last finding mentioned above (#7). Does this mean SCM training and understanding is ahead of the implementation of new technologies or does it mean the respondents do not fully comprehend how much technology could change their jobs? The answer to this question may have an impact on her recommendation.

"This whole concept is a lot more complicated than we originally thought" thinks Stephanie. "We have similar SCM strategies (reduce supplier base, etc.), but our cultures, tactics, and systems are different. Are we similar enough, or are our differences too great? Also, there is the perception of oil company collusion, the big guys picking on the little guy. Will the benefits be worth the trouble?"

Closing her office door and putting her phone on call forward, Stephanie reflects on her recommendation and the seven key areas she must address:

1. What ground rules should apply to any collaboration?
2. What types of commodities and services should be targeted? What characteristics identify a good versus a risky target for consolidation?
3. What are the major benefits?
4. What are the potential risks and what contingencies can be put in place?
5. What legal or public relations issues might BTOC have to deal with if they consolidate or collaborate with ULTS? How should the initiative be communicated to staff, suppliers, and the community?
6. What style of collaboration should we pursue and what technology should we use to support it? Should we leave it to the buyers to identify and initiate opportunities on a "one-off" basis, or should we use technology to identify and implement collaboration? Should we use the "SCM-Lite" or the "Full-Meal-Deal" solution?
7. How will we monitor improvements and cost reductions, and how will we show that collaboration is indeed making us more efficient?

<u>EXHIBIT ONE:</u>
<u>BTOC STATISTICS</u>

○ **Purchase orders:**	**63,500**
○ **Line Items:**	**148,600**
○ **New Contracts:**	**477**
○ **Amendments:**	**5,266**
○ **Warehouse Receipts:**	**155,600**
○ **Warehouse Issues:**	**217,900**
○ **Total active vendors: Purchasing and services**	**1,661**
○ **Total items in database:**	**84,225**
○ **Order continues for storeroom items:**	**46,000**
○ **Asset value:**	**$6.5 billion**
○ **Spend (Materials and Services) Calendar year:**	**$712.6 million**
○ **Local Spend**	**$203 million**
○ **Aboriginal Spend**	**$ 34 million**
○ **Inventory**	**$47 million**
○ **Obsolete (>3 years with no activity)**	**$8 million**
○ **Headcount (Materials distribution (hourly)**	**27**
○ **Headcount (Purchasing Contracts non-mgmt)**	**19**

source: Athabasca University interviews, May 2002

EXHIBIT TWO:
COLLABORATION OPPORTUNITIES
(Listed by number of votes)

1. **Consolidated purchasing**
2. **Simulated BTOC & ULTS collaboration**
3. **Risks assessments**
4. **Handling costs**
5. **Aviation and chartering costs**
6. **Calculation and tracking of savings**
7. **Production runs consolidation**
8. **Supplier visibility into combined demand**
9. **Pipe procurement**
10. **Total cost of ownership analysis capabilities**
11. **Cost to manufacture**
12. **Impact of supplier failures and potential contingencies**
13. **Measuring stick. Cost savings of new options, identify and monitor**
14. **Freight costs at each step.**
15. **Fuel surcharges**
16. **Tariffs**
17. **Storage**
18. **Inventory costs**
19. **Value Add (at each step)**
20. **Activities and their costs**
21. **Time, process cycle times**
22. **Bulk pricing & rebates**
23. **Bulk shipping**
24. **Consolidate demand with tier 3 suppliers**
25. **Impact of engineering specifications and value engineering**
26. **Spares locations**
27. **Labour costs and unions**
28. **Cost add versus value-add activities**
29. **Gloves (1 million pairs combined annual procurement)**
30. **Surplus**
31. **Make Alberta production possible**
32. **Aboriginal suppliers – combine volumes to increase profitability**
33. **Import regulations, impact of changes to regulations (steel, lumber, etc.)**
34. **Fuel surcharges fluctuations**
35. **Cost savings sharing scenarios**
36. **Local versus distance (cheaper) suppliers**
37. **Hotels**
38. **Empty backhauls, coordination of logistics**
39. **Couriers**
40. **Delivery reliability**

source: Athabasca University, FMM Meetings Summary, May 2002

EXHIBIT THREE
SCM COLLABORATION TECHNOLOGY

This exhibit lists SCM collaboration software available from three major software solution suppliers.

SUPPLIER ONE: SAP

mySAP Supply Chain Management (mySAP SCM) offers all the capabilities you need to design, build, and run the supply chain of the future. Key capabilities include:

1 Networking
Private Exchange -- Provides e-marketplace infrastructure that enables you to extend your supply chain processes across enterprise boundaries by linking suppliers, partners, and customers
Supply Chain Portal -- Lets users collaborate with colleagues down the hall or across the globe, both inside and outside the enterprise
Mobile Business -- Extends the efficiencies and benefits of networked supply chain management to every member of the network -- no matter where they are

2 Planning
Collaborative Demand and Supply Planning -- Enables buyers and sellers to collaborate on demand and order forecasting, synchronizing plans based on the dynamic exchange of information
Supply Chain Design -- Allows you to align your supply chain infrastructures to changing market conditions, such as new product launches and new customer segments, that enable you to reduce your time to value

3. Coordination
Supply Chain Event Management -- Monitors every stage in the supply chain process, from price quotation to the moment the product arrives at the customer site -- including alerts when things go wrong
Supply Chain Performance Management -- Monitors and reports on key indicators and objectives of supply chain performance, including costs and assets across the supply chain network

4 Execution
Collaborative Procurement -- Integrates Web-based buying processes, including rule-based procurement, automated replenishment, and multiple supplier support
Collaborative Manufacturing -- Manages supply chains throughout all stages of the manufacturing process -- even across enterprise boundaries
Collaborative Fulfillment -- Enables you to quickly determine where and when you can obtain a product, and handles order management, availability checks, and transportation management

source: www.sap.com

EXHIBIT THREE:
SCM COLLABORTATION TECHNOLOGY (continued)

SUPPLIER TWO: ORACLE

Oracle Supply Chain Management is complete and integrated. It delivers competitive advantage across critical business areas such as

-product development, Collaborating with customers and suppliers to get the right products to market faster is every organizations product development challenge. Oracle Product Development brings together engineers, manufacturers, customers, and development partners to intelligently collaborate throughout the entire product lifecycle, from concept to release.

advanced planning, Supply Chain Visibility Drives Performance Oracle Advanced Planning streamlines and synchronizes all planning business processes from demand forecasting to advanced supply chain planning. The knowledge gained through the increased visibility that this integrated system delivers helps companies make smarter decisions and optimizes the flow of materials, cash, and information across an extended supply chain.

procurement, Oracle Procurement - Automated, Collaborative, IntelligentOracle Procurement delivers cost savings by automating the complete procure-to-pay business process. Oracle's broad set of procurement capabilities enables you to source for best value, extend efficiencies with real-time supplier collaboration, and identify savings opportunities with spend analysis and supplier performance tracking.
manufacturing, Oracle offers the only fully integrated end-to-end internet based manufacturing and supply chain management system, enabling you to efficiently use the Internet to run your business - from order management, supply chain planning, and procurement through manufacturing. Oracle Manufacturing helps you to manufacture to changing demand and drive continuous process improvement by supporting ALL manufacturing -- simultaneously, globally, in real time

order fulfillment - Oracle Order Fulfillment automates and optimizes the complete Order to Cash business process flow to deliver improved customer satisfaction, shorter delivery lead times, and lower fulfillment costs. This complete order to cash support enables companies to capture multi-channel demand, provide accurate order promise dates in real time, and flexibly fulfill orders without expensive software customization. Additionally, Oracle integrates robust logistics capabilities to ensure customer shipments are executed accurately, efficiently and according to schedule

source: www.oracle.com

<u>EXHIBIT THREE</u>
<u>SCM COLLABORTATION TECHNOLOGY (continued)</u>

SUPPLIER THREE: i2 TECHNOLOGIES

- **Design and validate a <u>supply chain strategy</u> before deployment**
  Starting with supply chain design, i2 SCM allows analysts to run simulations to test different global network scenarios, to determine where to place facilities and where to manufacture. Strategic planning even goes down to one node in the supply chain, such as an individual plant, to determine optimal assembly, production and stocking for that plant, as well as the transportation links between plants.

  <u>Collaborate on demand</u> for the most accurate forecast
  i2 SCM enables companies to anticipate and manage customer demand across the value chain. Demand planning incorporates multiple inputs from different functions within the company, as well as real-time collaboration with customers and suppliers. Collaborative demand planning meets all the demand planning needs of the manufacturing, service and retail industries, and also integrates with supply planning systems so that supply and demand plans can be optimized simultaneously.

  <u>Collaborate on supply planning</u> for business velocity
  With accurate demand forecasts in hand, only i2 SCM enables collaboration across multiple enterprises to optimize, monitor and control all supply chain processes simultaneously, including production, inventory, distribution and transportation. Production and distribution planning can be synchronized with factory scheduling, while transportation planning can be integrated with master planning. This drives forward visibility and enables you to optimize total material, transportation and capacity costs.

  Bridge the gap between <u>planning and execution</u>
  All i2 supply chain planning solutions are tightly integrated into i2's transaction backbone. i2 SCM manages transactions across order promising and fulfillment; logistics of warehouses, transportation and international trade; and financial settlement. Exception-based alerts and proactive event management ensure that orders stay on track. Finally, i2 SCM provides decision support to provide the best after-sales service, to keep customers coming back.

source: www.i2.com

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