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FEBRUARY 28, 2001

Process Firms Must Deconstruct For Supply Nets

Firms in process industries like chemicals and pharma are repositioning their operational assets to minimize costs and risk. Winning firms will deploy Net technologies that support their assets within emerging supply network business models.

Food, chemicals, pharma, and other process industry firms are reshaping their operational assets into partnerships at an ever-increasing pace as they:

- **Put product development talent out to bid.** GE/FITCH -- a joint venture between GE and design firm FITCH -- taps GE Plastics' design and process engineering talent to develop plant-friendly products for its clients. And Procter & Gamble (P&G) has set up "Project EMM" -- a marketplace where it will put up for sale its expertise in design-for-supply chain.
- **Outsource manufacturing and distribution.** Process firms are plugging in partners that excel at specific supply chain functions. Pharma firms like Roche already outsource 20% or more of active ingredient and dosage manufacturing to contractors like Patheon. And Eastman Chemical has spun off its distribution arm into ShipChem, a dot-com that supplies logistics services to chemical firms like Eastman and others.
- **Leverage rivals' sales and marketing assets.** Competing oil firms have long practiced "lifting" -- buying and selling oil from each other's inventory -- and these practices are rapidly expanding. Under a comarketing deal, WYETH produces and sells ENBREL -- a protein drug developed by Immunex. And Usinor plans to market competitor Nippon Steel's car metal sheets in Europe.

SUPPLY NETS REDUCE COSTS AND RISK WITHOUT CONSOLIDATION

Why the boom in process industry partnerships? For the same reason firms in these commodity-heavy, mature industries have historically consolidated -- in order to share risks, cut costs, and improve asset performance. But Internet-era technologies are making the achievement of these goals possible without companies gobbling each other up.

Process firms are rationalizing their businesses using emerging collaborative design hubs and supply networks as they:

- **Partner to share risks.** Innovative firms like Cargill embrace “adaptive development” -- a new partnership-intensive product design paradigm -- in order to continue complex research without carrying the risk by themselves (see the January 2001 Forrester Report “Custom Chemicals Materialize”). For instance, Cargill and Dow Chemical set up a \$300 million joint venture to explore ways to create plastic monomer polyactide from corn glucose. Scientists at Cargill and Dow are using simulation tools like Moldflow and generic recipe design apps from vendors like Sequencia to bolster their codevelopment efforts.
- **Outsource to minimize costs.** Outsourcing is the name of the game in the food industry as players like Kraft Foods look to cut costs. Kraft has begun to create “flexible recipes” that can be outsourced opportunistically -- saving huge costs associated with delayed product launches. Kraft’s operations department can now go to an emerging manufacturing eMarketplace like processPoint to rapidly identify and outsource its new cheese cracker recipe to a low-cost Indian contractor (see the July 2000 Forrester Report “Manufacturing Deconstructed”).
- **Distribute core competencies to optimize asset use.** New apps help process firms coordinate complex multitier supply networks -- eliminating info latencies that lead to underutilized capacity. Private hub apps from vendors like Atlas Commerce and Aspen Technology let process firms delegate more coordination duties to suppliers (see the November 2000 Forrester Report “Sizing Supply Network Apps”). Atlas’ eHub lets Syngenta pass on inventory management to its suppliers -- ensuring that its plants never run out of hydrazine derivatives.

INDUSTRY WINNERS WILL EXPLOIT SUPPLY NET BUSINESS MODELS

Process industry firms wanting to win at this anticonsolidation trend must use technology to support the deployment of their assets within one of five nascent supply net business models (see Figure 1). Here are examples of what some specific firms must do:

- **BP Amoco.** Sensing a huge global demand for renewable energy, BP invested in and later acquired Solarex, a photovoltaic cellmaker. With already 20% of global market share, this joint venture -- BP Solar -- is now exploring ways to make its know-how in solar cell production available to other oil companies. To evolve into a capacity optimizer, BP Solar must learn how to price its capacity to rival energy firms -- which can be achieved using revenue optimization apps (see the December 20, 2000 Forrester Brief “Revenue Optimization Apps: Manufacturers Beware!”).

Figure 1 Process Firms Must Map Assets To One Of Five Supply Net Models

Model	Characteristics	Technology's impact
Product innovator	<ul style="list-style-type: none"> • "R&D factories" that build product designs • Collaborate to design made-to-spec products • Collaborate to boost manufacturability/serviceability 	<ul style="list-style-type: none"> • Rapid simulation avoids costly trial and error • Accelerates product innovation cycles
Customer attracter	<ul style="list-style-type: none"> • Acquire and retain end customers • Develop brand awareness • Match products and services to customer needs • Collaborate on new product designs • Drive real-time demand across the value chain 	<ul style="list-style-type: none"> • Sync R&D with market • Shift focus to managing custom solutions • Point-of-sale data directly fed into production planning
Process innovator	<ul style="list-style-type: none"> • Strong design-for-manufacturability expertise • Design custom manufacturing processes for pilot and volume production • Simulate and approve requested process changes • Provide expert advice to capacity optimizers 	<ul style="list-style-type: none"> • Rapid technology transfer and scale up • Reduced process-change validation cycles • Improved product quality • Plant-agnostic designs
Capacity optimizer	<ul style="list-style-type: none"> • Execute asset-intensive production process • Manage materials • Manage compliance with operating procedures and regulations • Execute switch overs for configured orders • Operate versatile plants with quick turnaround and ramp-up capabilities 	<ul style="list-style-type: none"> • Vendor-managed replenishment • Production plans aligned with actual demand • Reduced working capital and optimized asset use
Fulfillment specialist	<ul style="list-style-type: none"> • Handle global logistics • Execute late-phase differentiation steps like cut-/mix-in-transit and packed-to-order • Manage inventory replenishment and purchasing for end customers 	<ul style="list-style-type: none"> • Enables multistep manufacturing across partners and regions • Same-day delivery of custom batches of polymers

Source: Forrester Research, Inc.

- **Eastman Chemical.** Eastman spun off ShipChem to maximize this asset's performance by turning it into a transportation execution provider. But to succeed as a fulfillment specialist, ShipChem must first establish its neutrality. This means: diluting Eastman's 50% ownership in ShipChem and inviting equity participation from Eastman's rivals; and revamping ShipChem's corporate governance by splitting up from Eastman's specialty chemicals and plastics division. ShipChem must extend its partnerships beyond G-Log by tying into marketplaces like carrier-dominated Transplace.com to gain quick links to carriers and excess truckload capacity (see the August 2000 Forrester Report "Delivering The Global Goods").
- **Pfizer.** As the genomics revolution unleashes demand for structurally complex drugs into pharma firms' pipelines, they will come to rely on Pfizer's process design skills to improve their time-to-volume (see the February 2001 Forrester Report "The Pharma Apps Prescription"). But to become a process innovator, Pfizer must make its design-for-manufacturability skills easily available to other drugmakers -- by putting them on process innovation sites like processPoint.
- **Procter & Gamble.** P&G is optimizing use of its marketing talent to play the role of market attracter. Soon Campbell Soup will tap P&G's market attracter skills to help determine whether it should use aluminum or glass for packaging its new line of soups. But to make this a success, P&G's Project EMM must provide advanced collaboration tools to coordinate complex, multicompany marketing campaigns (see the December 1999 Forrester Report "Collaboration Beyond Email").
- **Alcoa.** As Ford Motor Company and Genral Motors start building cars that are built-to-order, they will increase their dependence on Alcoa's custom metal sheet designs (see the January 2001 Forrester Report "The Build-To-Order (R)evolution"). But to thrive as a product innovator, Alcoa must invest in a design collaboration hub that will help its R&D teams do rapid-fire new product introductions (see the March 2000 Report "Development Portals Emerge").