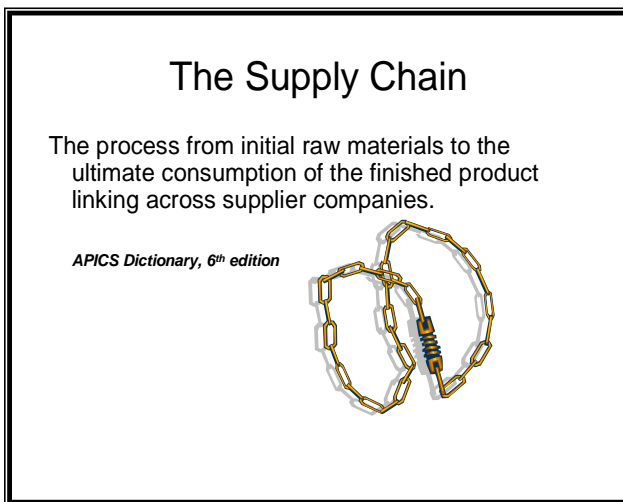


# ***The Synchronous Supply Chain aka The Distribution Solution***

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The “Supply chain” may be defined as the process of designing, manufacturing, distributing and selling finished goods and or services. It includes all the processes from raw materials to the end user. It crosses lines of ownership, nationality, business philosophy and culture. In the ultimate sense, it can begin with the mining of the raw mineral from which the product is made and continue through the environmental disposal of the used product by the final Consumer. Earth to earth.



The mission of the Supply Chain is to provide the desired final product to the consumer at the time and place it is wanted. It strives to ensure availability of products to the Customer while minimizing the costs of overproduction and excessive inventory. The inevitable conflict is:

- Produce and hold large inventory stockpiles to protect Customer availability
- Minimize manufacturing capacity and inventory to save money

In reality, the optimum solution is a strategic and tactical mix of the two called the *Synchronous Supply Chain* also known as The Distribution Solution. It is the application of *Constraints Management* concepts to the entire business process of a product.

The Synchronized Supply Chain recognizes that demand satisfaction is accomplished very early in the Supply Chain and that real-time visibility from the point of sale can effectively communicate the actual demand profile to the entire supply base, thus minimizing the effects of inaccurate forecasts. Each element of the chain maintains only the amount of inventory needed to meet average daily demand of each product type, plus a calculated amount to address a possible spike. Strategically placed “buffers” of inventory absorb the normal variability (attacks by Murphy) that occur each day.

Upstream from each element, the production/ship order is only to replenish the amount consumed from the downstream buffer. The common “bull-whip effect” is avoided because each element has visibility of the entire system and is charged only with replenishing the downstream consumption. The “schedule” for Supply Chain

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replenishment is driven by the aggregate consumption of products from the buffers closest to the market. Buffers are managed daily and buffer health throughout the Supply Chain is visible to all elements through an internet-based information system.

*The Distribution Solution* applies *Lean* tools and *Synchronous Flow* business processes within the supply chain elements while driving the flow of information and materials through the Supply Chain based on the science of *Constraint Management*. Buffer Management practices are followed diligently to protect against the inevitable fluctuations in demand and capacity. A real-time information network provides instant visibility into actual Buffer consumption at each level in the supply chain. This information drives the replenishment cycle throughout the supply chain.

Effectively applying these concepts to a Supply Chain would dramatically shorten replenishment times throughout any business system. Responsiveness and flexibility would increase significantly. The impact of uncertain demand would decrease. Overall Supply Chain inventory needed to safeguard against stock outs would be reduced. Customer satisfaction would be measurably improved.

### Two views on improvement

<ul style="list-style-type: none"><li>• The Weight of the Chain<ul style="list-style-type: none"><li>– “Reducing weight anywhere improves the chain”</li></ul><p style="color: red; font-size: small;">This is erroneous.</p></li></ul>	<ul style="list-style-type: none"><li>• The Strength of the Chain<ul style="list-style-type: none"><li>– “Improving the weakest link strengthens the chain”</li></ul><p style="color: red; font-size: small;">This is a proven fact.</p></li></ul>
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Synchronizing the Supply Chain can improve Customer service levels while dramatically reducing the reliance on inventory. Recent studies have shown that service levels can increase by 30% and chain-wide inventories can drop by 50%. The net effect is a more responsive business system. Those companies participating in the Synchronous Supply Chain realize an improved competitive advantage due to a better return on inventory investment. In most cases, the improved information flow leads to significant

enhancements in operational effectiveness, which further contributes to better bottom-line performance. The entire business process is enhanced because it is designed as a customer demand-focused and flexible supply chain.

The concept of the Distribution Solution is that strategically placed Buffers of inventories are located and managed daily from the point of sale upstream to the source of each raw material. Consumption at each buffer becomes the replenishment signal to upstream elements of the supply chain to produce and ship its products. Visibility of each Buffer, including current point of sale data, is available to all elements of the supply chain through an internet-based information system.

This “pull” approach provides a greater assurance of Customer satisfaction while maintaining a managed inventory investment throughout the chain.

In the ideal application the Distribution Solution also includes the following principles:

- Buffers of inventory are measured in units of *time*. The number of hours or days of each inventory item relative to the current demand profile are the essential metric.
- A daily Buffer Management process, involving representatives of each supply chain element, is conducted as an internet *virtual meeting* or as a conference call. The brief, daily meeting follows a disciplined agenda and becomes the primary information and process management tool. Historical data from the Buffer Management process is available to all participants via the on-line information system.
- Distribution Center Buffers closest to the point of sale assure a one-day delivery of at least 90% of the expected demand including a factor for possible spikes within each product line.
- The supply system is designed to replenish the inventory buffer at the point of sale at least daily. This minimizes the need for inventory at the final link and allows a greater assurance of satisfying the needs from a regional warehouse that can supply a group of retail links in one day. Each warehouse/buffer location has visibility of the aggregate demand profile from all the retail locations it serves through the available information system. Its job is to replenish consumption and to expedite as necessary to supply the products that are not held in inventory.
- All other links in the Supply Chain replenish the downstream buffers as frequently as practical. Generally, smaller batches, shipped more frequently offer an improved system velocity that can translate into a more agile and responsive business system.
- Daily *demand consumption* throughout the chain drives the replenishment process as each element strives to restock the downstream buffer it serves.
- Demand for products not held in inventory can be expedited though the chain within three days from the source.
- Metrics driving behaviors throughout the system are based on the effectiveness of the replenishment process rather than cost or efficiency statistics. *Throughput*, the measure of value added, is the basis of all financial reporting and is used as a primary scheduling tool. Generation of *Throughput*, rather than cost-based margin accumulation, is the primary financial driver. Ultimately, cash flow and generation of throughput (value added), rather than the minimization of costs, dictate inventory strategy decisions.
- In each element of the supply chain, operations perform in a lean and *synchronized* manner within the business processes. Lead times will normally be days rather than weeks. Producing and shipping smaller batches, more frequently shortens replenishment lead times.

Establishing a *Synchronous Supply Chain* requires collaboration throughout the chain to accept these principles and to operate in this manner. The resulting supply chain performance improvements will reap financial benefits to each participating member of the chain.



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Compared to the traditional asynchronous approach to satisfying demand where each element of the chain uses mounds of inventory to protect itself from variability at each supplier and each customer, the Synchronous Supply Chain is a blend of Lean and Constraint Management principles yielding far higher material flow velocities and far lower dependence on inventory to meet Customer demand. By making the status of the entire supply chain visible to all participants through an internet-based, real-time information system, flexibility and responsiveness to change is dramatically improved. Improving the overall effectiveness of the supply chain enhances return on investment, cash flow and profitability for the participating members. Most importantly, the concepts of the *Distribution Solution* can be the answer to coordinating the growth of a rapidly expanding business venture.

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