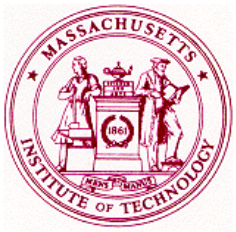

Reebok NFL Replica Jerseys: A Case for Postponement[1]

"This time of year is a little too exciting for us. I have a warehouse full of jerseys out there and retailers are screaming for the teams and players I don't have! Every year, it seems like we have the right mix of inventory going into the season, and then some team that no one expected to do well gets off to a 4-0 start, and the team everyone expected to contend for the Super Bowl is losing games. Suddenly I have 1000s of jerseys I can't sell and 1000s of orders I can't fill."

Tony is responsible for the inventory of NFL replica jerseys that Reebok maintains in their central distribution center. It is early October, and the NFL season is well underway. "No wonder we call this the chase, I feel like I have been running for months, I'm exhausted. I wish there was someway to plan inventory that would allow me to react faster to hot players and teams. But with player demand changing so much from year to year, I really can't increase inventory, in fact I like to minimize inventory at year-end."

Background

Reebok International Ltd. is headquartered in Canton, Mass. The company employs approximately 7400 people, and is widely known for their sports apparel and footwear brands. Reebok was still a small British shoe company in 1979, when Paul Fireman acquired the exclusive North American license to sell Reebok shoes.[2] In 1985 Reebok USA acquired the original British Reebok, and Reebok International went public. Reebok in 2003 had total revenues of $ 3,485 M and realized income from operations of $157 M. Paul Fireman continues to be the chairman and CEO.

In December 2000 Reebok signed a 10-year contract with the National Football League (NFL) that granted an exclusive license to Reebok to manufacture, market, and sell NFL licensed merchandise including on-field uniforms, sideline apparel, practice apparel, footwear and an NFL-branded apparel line. The National Football League is the premier

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 This case was prepared by John C. W. Parsons under the direction of Professor Stephen C. Graves as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. The case is based on the author's MLog thesis, "Using a Newsvendor Model for Demand Planning of NFL Replica Jerseys" supervised by Professor Stephen C. Graves, June 2004.

[2] http://www.reebok.com/useng/history/1890.htm

professional league for American football, consisting of 32 teams. Teams are organized in two conferences, the American Football Conference (AFC) and the National Football Conference (NFC), and in four divisions within each conference.

The history of American football traces back to 1869.[3] The Arizona Cardinals are the oldest continuing operation in pro football, dating back to 1899. In 2003, the Super Bowl between the Tampa Bay Buccaneers and the Oakland Raiders received over 139M viewers, making it the most watched television program in history. From its humble beginnings the NFL has grown into a very successful league.

Licensed Apparel Business

The Licensed Apparel Business is a high margin, and lucrative business. However, the risk associated with tying a product to on-field performance, and the sports business, is that your demand is influenced by many uncontrollable factors. It is important for Reebok's relationships with the NFL and with sports retailers that inventory be delivered on time, without increasing prices.

Reebok has a history of delivering quality products. As one retailer states, "The Reebok line is great. We're excited and anxious at the same time. [In the past] the fear was that one team jersey could be found from five different manufacturers at five different stores in the mall. Now the [question] is, will the consumer have to pay an extra $20 for a team jersey because it is from Reebok?"[4]

It is very important for Reebok to control the costs and to deliver products when required. For retailers heavily reliant on NFL sales, there are other concerns. "As a top-tier retailer in apparel, we'll only have access to that one brand," says another retailer. "I think that Reebok makes great product. We just hope they can deliver because we won't have options B, C or D to go to."[5]

Of particular importance will be Reebok's ability to deliver *hot-market* items, a concern for retailers in all areas of the licensed business. "I think with one major partner in Reebok we are in a better position for hot-market items….Reebok will be able to take a larger position in blanks on jerseys and fleece and feel more confident that they can meet the demands of retailers."[6]

A *hot-market* item, in the context of the NFL replica jersey business, is an item that was either not expected to sell well before the season or an unknown item that had no prior sales expectations. For example, in the 2003/2004 NFL season the Kansas City Chiefs outperformed all expectations and became a *hot-market* item. Demand was high, whereas the pre-season team forecasts were modest, resulting in shortages. Specific players on the team sold extremely well even if they had no prior sales. For example, Dante Hall

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[3] www.nfl.com/history

[4] Griffin, Cara. 2002. "NFL's New World Order" Sporting Goods Business, Jan 2002, Vol. 35 Issue 1, p56.

[5] Griffin, Cara. 2002. *Ibid*.

[6] Griffin, Cara. 2002. *Ibid*

was a largely unknown kick-returner prior to the start of the season. But he made several outstanding plays in the first four games of the season, creating *hot-market* demand for his jersey.

Early reviews of Reebok show that their performance has been satisfactory. "To be fair, in hot markets delivery is always going to be an issue. Whether you have 12 companies or one, it will always be an issue. And I have to say, this year, Reebok has been pretty much on-time with their deliveries."[7]

Reebok developed its expertise in Licensed Apparel through acquisition and expansion. In 2001 Reebok purchased a relatively small licensed apparel business, LogoAthletic, located in Indianapolis. LogoAthletic had extensive experience and expertise in sports apparel, as well as past relationships with the NFL. As a consequence, Reebok decided to locate its Licensed Apparel management at the former LogoAthletic facilities in Indianapolis.

The NFL Replica Jersey Supply Chain

Consumer demand for NFL replica jerseys is driven by the excitement and passion fans feel for the game. The entire football season is played between September and January, with only 16 regular season games per team. NFL replica jersey sales are highest in August/September as fans anticipate and prepare for the upcoming season. Off-season player moves and the previous season's performance drive a significant percentage of demand. Consumers visit retailers and expect to find the team, player, and style of jersey that they want to purchase.

A Senior Purchasing Manager at a large sports retailer explains, "We really need to anticipate what teams and which players will be popular this season, and ensure that they have inventory on hand. We replenish in-store inventory as required on a weekly basis from the DC."

Reebok supplies directly the distribution centers (DCs) for its major retailers from its warehouse in Indianapolis. (see Figure 2) "Normally retailers expect lead times between 3 to 12 weeks for normal demand, but when faced with hot-market demand those lead-times shrink to 1 to 2 weeks max. If we don't have inventory in the DC to meet the demand, we won't be able to meet customer demands", said Tony.

Figures 2 and 3 provide a high-level depiction of Reebok's supply chain. Fabric and raw materials for jerseys are procured and held in inventory by the contract manufacturers (CM). Internal contracts are in place to ensure sufficient levels of raw material inventory to provide capability to produce any team on demand, if required.

The contract manufacturers cut, sew, and assemble a finished team jersey without a player name or number. This is called a "team finished" or "blank" jersey. The jersey then has two possible paths to reach finished goods inventory. For some orders, the CM will print the player name and number on the jersey before shipping to the distribution

[7] Griffin, Cara. 2002. *Ibid*

center. For blank jerseys Tony stated “Blank jerseys are shipped directly to the distribution center with no player name or number. We keep these jerseys in inventory until we start to see demand, then we will burn blanks to meet customer orders on time”.

The inventory of blank jerseys in Indianapolis has two primary purposes. To fill demand for players that are ordered in small quantities, and to provide an ability to quickly respond to higher then expected demand for star players. The CM and Reebok have an agreed minimum order level of at least 1728 units of the same player. Any player with an order quantity lower then this level will be supplied through the use of blank jerseys and printed at the DC in Indianapolis. A typical NFL team might have only a handful of star players, whose jersey’s are sufficiently popular to warrant production by the CM.

Reebok also uses Blank jerseys during the off-season to meet immediate demand for star players that change teams through the various forms of player movement. Monty, Production Manager, cites a recent example, “When Warren Sapp signed with the Oakland Raiders in March (2004) retailers expected us to start shipping his jersey immediately. We can’t wait three months to get jerseys from our suppliers, we had to start printing immediately. It is a good thing we had extra Raider’s jerseys in stock.” Only through the use of blank jerseys is Reebok able to provide product to the retailers in a timely manner.

Manufacturing Planning

Reebok sources all jerseys from offshore contract manufacturers with a manufacturing lead-time of 30 days. These contract manufacturers are independent companies that accept production orders from Reebok and produce the finished goods.

The manufacturers ship both completely finished goods, known as dressed jerseys, and blank jerseys (team finished jerseys that do not have the player name and number). The name and number for each player is screen-printed on a finished jersey. The player number is printed on the front, back and each sleeve of the jersey, and the player name is printed across the top back of the player. Shipping takes two months for ocean shipping or one week via air. The transportation route via ship is to land on the west coast and take rail to Chicago and then a truck to the DC in Indianapolis

The NFL replica jersey consists of a 5 ounce nylon diamond back mesh body, a nylon dazzle sleeves/yoke in the team color and white, and a 8.6 ounce polyester flat knit rib collar, and stripe knit inserts for select teams. Each team’s jersey is a distinct combination of style, cuts and colors (team color, white and alternate) before the team logo is applied, and cannot be substituted for other teams.

Blank jersey’s that are shipped from the contract manufacturers to the distribution center in Indianapolis will be completed at a Reebok owned screen printing facility, also located on-site in Indianapolis. The finishing facilities in Indianapolis consist of many sewing and screen-printing machines, capable of embroidering and printing to the highest commercial standards. The facility is used for screen-printing of NFL and NBA jerseys, as well as T-shirts, sweatshirts, and other apparel items that require screen-printing.

Consumer Demand Pattern

Consumers purchase jerseys for several reasons. Reaction to big player moves and drafted players, in support of well performing team and players, for Christmas presents and finally during the excitement of the play-offs

Most player trades and free agent signings occur during the off season of February to April. Consumers react to these player movements by demanding the newest superstar jersey for their favourite team. Consumers purchase jerseys during the early part of the season in reaction to team and player performance. In 2003 the Kansas City Chiefs started the season with a series of wins, causing much excitement and increased demand for their jerseys. Christmas season drives a significant portion of sales, as jerseys are purchased and given as gifts. The Christmas spike is the last opportunity to clear inventory of teams that are not expected to make the play-offs.

During the NFL play-offs the consumer demand is strongly correlated to weekly performance. A team that is eliminated will see its sales disappear, while a team that wins and continues to play the following week will experience a sales bump. The excitement intensifies as the team progresses further into the play-offs, with the two teams that ultimately reach the Super Bowl selling much higher then normal. The Super Bowl winner continues to experience high sales for one to two weeks following the championship, but then sales will decline rapidly until the start of the next season.

Sales Cycle

Reebok offers retailers an incentive discount to place early orders that result in retailers placing approximately 20% of annual orders for planned delivery in May. Reebok uses the advance order information to plan their purchases for the upcoming season. These pre-season orders provide Reebok with enough information to confidently plan purchase orders for several months.

There is limited ordering by the retailers between February and April except some order adjustments and orders to react to player movements. Retailers will monitor player movements in March and April and place orders to reflect any significant player movements. Since consumers demand these jerseys be available in April when the event occurs, the retailers also expect that these orders to be filled as quickly as possible.

Retail orders placed between May and August are primarily to position inventory in the retail distribution centers to meet replenishment requirements from the retail outlets. Any orders placed after June are normally to replenish low stock or high demand items. Lead-time expectations at this point are 3 to 4 weeks. At the end of August, the start of the NFL season, 50% of sales have been shipped to retailers.

The mid-season replenishment period between September and January (See Figure 5) is known as “The Chase”. In store stock of jerseys that are in line with expected sales are replenished from the retailer’s distribution center. Some replenishment orders are placed with Reebok for strong sellers to restock the distribution center inventories. This is also the time of year when consumers react to player and team performance and create hot

markets. Retailers need to adjust their inventories to "chase" the hot market items, and they expect Reebok to supply product to chase the hot markets. Unknown players become superstars, and former superstars become non-factor players.

There is an opportunity for retailers to sell through high volumes of product if they can stock the correct players to match the consumer demand. Retailers benefit from quick response to orders placed during "The Chase."

Purchase Planning

As shown in Figure 5, the planning and purchasing cycle starts much before the sales cycle. The sales cycle entails the sale of jerseys by Reebok to retailers. The buying cycle starts in July, 14 months before the beginning of the target NFL season. For example, the buying cycle for the September 2004 season started in July 2003.

Reebok places purchase orders on its contract manufacturers twice per month for the months of July, August, September, and October. All jerseys ordered during this time are typically for blank jerseys, with delivery planned for April. Only blank jerseys are ordered at this time, due to the uncertainty about the roster for the following season. Reebok expects the contract manufacturer will manufacturer the jerseys immediately and hold the blank jerseys in inventory. If Reebok requires the jerseys in the current year, then a request can be made to expedite those jerseys for immediate delivery.

Starting in January, orders are placed by Reebok against known demand, namely the advanced orders from the retailers. During January and February, Reebok typically places orders for dressed jerseys, to match the advanced orders from the retailers. Reebok makes purchases during March and April based on a combination of known orders and forecasted sales. Reebok's orders placed in May and June are primarily to position inventory at the distribution center in Indianapolis in anticipation of retailer orders for the coming season. This is the most difficult time of year for Reebok. Outstanding retail orders have been filled, but inventory must be purchased in anticipation of the demand starting in June and continuing through the season.

Capacity Constraints in Indianapolis

The process to transform a blank jersey into a completed player jersey starts with a screen-printing machine that is set up with the screens and the appropriate color paints. The maximum capacity of the Indianapolis facility for NFL jerseys is approximately 40,000 impressions per day. This number assumes 80% utilization of the facility for NFL jerseys. Each NFL jersey requires four impressions, so the maximum capacity translates to 10,000 jerseys per day. The actual yield of the facility is reduced, due to multiple machine requirements, timing issues, and changeover times.

According to Monty, production manager of LogoAthletic: "Since it take two different machines to print a completed jersey you have timing issues so you are not getting 10,000 completed jersey on day one. My guess is that you are getting half that completed and the other half is some state of decoration which would increase the number of completed

jerseys that next day to more than half of 10,000."

Jersey printing is conducted year round. In February and March only 30% of the capacity is used for NFL jerseys. April to July is the busiest period for screen-printing, using the maximum of up to 80% of capacity. August to January ranges between 65 and 75% utilization for NFL jerseys. Monty estimates the annual average capacity for blanks to be 30,000 jerseys/week, or 1.5 million jerseys per year. If the immediate requirements exceed this capacity within the required service time, there are good outsourcing options with more than enough capacity, but at some additional cost. The cost to outsource is approximately 10% higher then the internal decorating cost.

Costs and Revenues[8]

As an illustrative example, consider the jerseys for the New England Patriots for the 2003 season. Reebok sells these NFL jerseys to retailers at a wholesale price of $24.00 per jersey. The retail price is in excess of $50. Reebok's costs depend on the supplier. The average costs for a blank jersey and for a dressed jersey (delivered to Indianapolis) are $9.50 and $10.90, respectively. It costs about $2.40 to decorate a blank jersey in Indianapolis.

Reebok has several options for jerseys that it cannot sell to retailers and that are leftover at the end of the season. Reebok can sell to discounters but needs to do so carefully to protect its retail channels. Another option is to scrap the jerseys, but this is expensive. Reebok can also hold these unsold jerseys in its DC and hope to sell them during the next season. There is significant risk with this option, especially for dressed jerseys. Between seasons there is a lot of player turnover, as players get traded, or become free agents and sign elsewhere, or retire. Also, teams will often change the style or color of their uniforms. In either case, Reebok can find itself having incurred costs to hold the jerseys and now being stuck with jerseys with very little value.

Based on a couple of years of experience, Tony estimates that any unsold dressed jerseys for the New England Patriots can be sold at discount for $7.00. He also estimates that any unsold blank jerseys for the New England Patriots have a value of about $8.46, which reflects the cost of holding these jerseys until the next season. The New England Patriots re-designed their uniforms a few years ago, and there is no indication that any changes are coming in the near future.
Forecasting demand is a challenge. Reebok develops forecasts based on a combination of factors: past sales, team and player performances, market intelligence, advanced orders, informed guesses. Furthermore, the forecast is continually revised as the sales cycle unfolds, and as Reebok gets more information on the current season.

In February 2003, following the initial order placement of retailers, enough information is available to generate a team and player level forecast. The following table provides this forecast for the New England Patriots.

[8] These are not the actual cost, revenue or volume numbers. All numbers have been disguised.

Desc	Mean	Stdev
NEW ENG PATRIOT Total	87680	19211
BRADY,TOM #12	30763	13843
LAW,TY #24	10569	4756
BROWN, TROY #80	8159	3671
VINATIERI, ADAM #04	7270	4362
BRUSCHI, TEDY #54	5526	3316
SMITH, ANTOWAIN #32	2118	1271
Other Players	23275	10474

At the time, the six listed players were the most popular in terms of jersey sales. Reebok expected demand for other players (e.g., Ted Johnson, #52). But this demand is very hard to forecast at the level of individual players.

Preparation Questions:

1) Given the uncertainty associated with player demand, how should Reebok approach inventory planning for NFL replica jerseys?
2) What should Reebok's goal be? Should Reebok minimize inventory at end of season? Or maximize profits? Can Reebok achieve both? What service level should Reebok provide to its customers?
3) Is the newsvendor model helpful here? What is the cost of underage for a dressed jersey? What is the cost of overage for a dressed jersey? How might Reebok decide between dressed jerseys and blank jerseys?
4) Using the forecast for the New England Patriots – what is the optimal quantity to order for each player? For blank jerseys? What profit do you expect for Reebok? How much and what type of inventory is expected to be left over at the end of the season? What service level?

Figure 1: Key Decisions for Purchasing and Planning (illustrated for 2004 Season)

	Buy Decisions	**Jersey Type**	**Vol.**	**Info Available**	**Alternate Criteria**
1	Pre-Buy (July – Oct ’03) – Planned Delivery April ’04	Blank Jersey	600K	Pre-Season Sales ’02 (40-50% of Demand) Current Inventory Position	Possible to “pull forward” delivery date to Oct-Dec ’03 or Jan ’04
2	Pre-Buy (December ’03) – Planned Delivery April ’04	Blank Jersey	75K	2002 sales to end of November (80%), and likely play-off teams 2002/03 play-offs	Target April Inventory = 50% of 2002/2003 sales for team or player
3	Buy against demand (Late December ’03 – Feb ’04) 90 Day LT	Dressed Jersey	425K	Retail Pre Orders (~20% of annual demand)	Target June Inventory = 50% of 2002/2003 demand
4	Buy against Forecast target inventory (March, April, May, June) 90 Day LT	Mix of Dressed and Blank	1900 K	Forecasted Demand at Team Level and pre-season sales at Player Level	On going retail orders

Figure 2 – External Supply Chain:

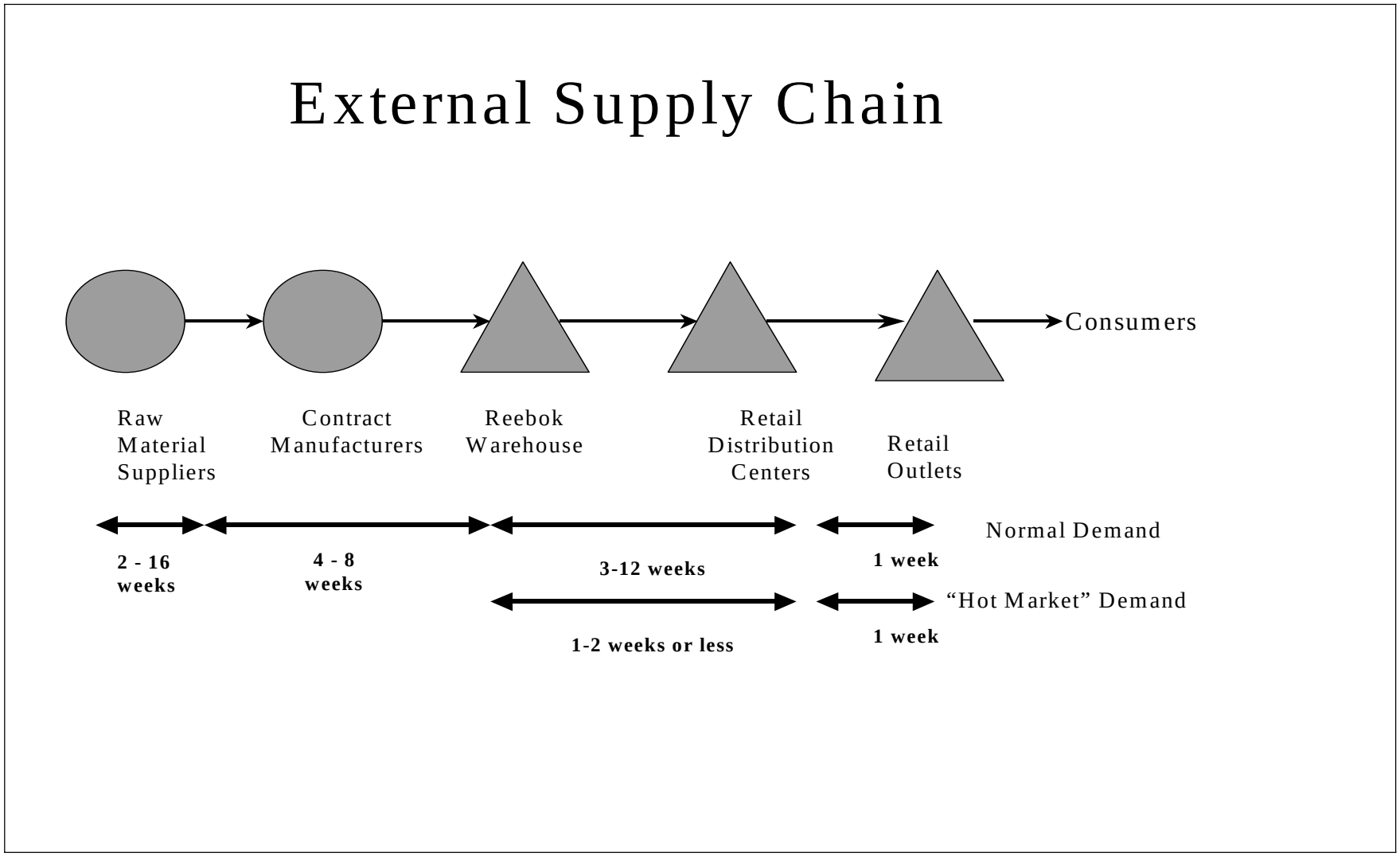

Figure 3 – Internal Supply Chain

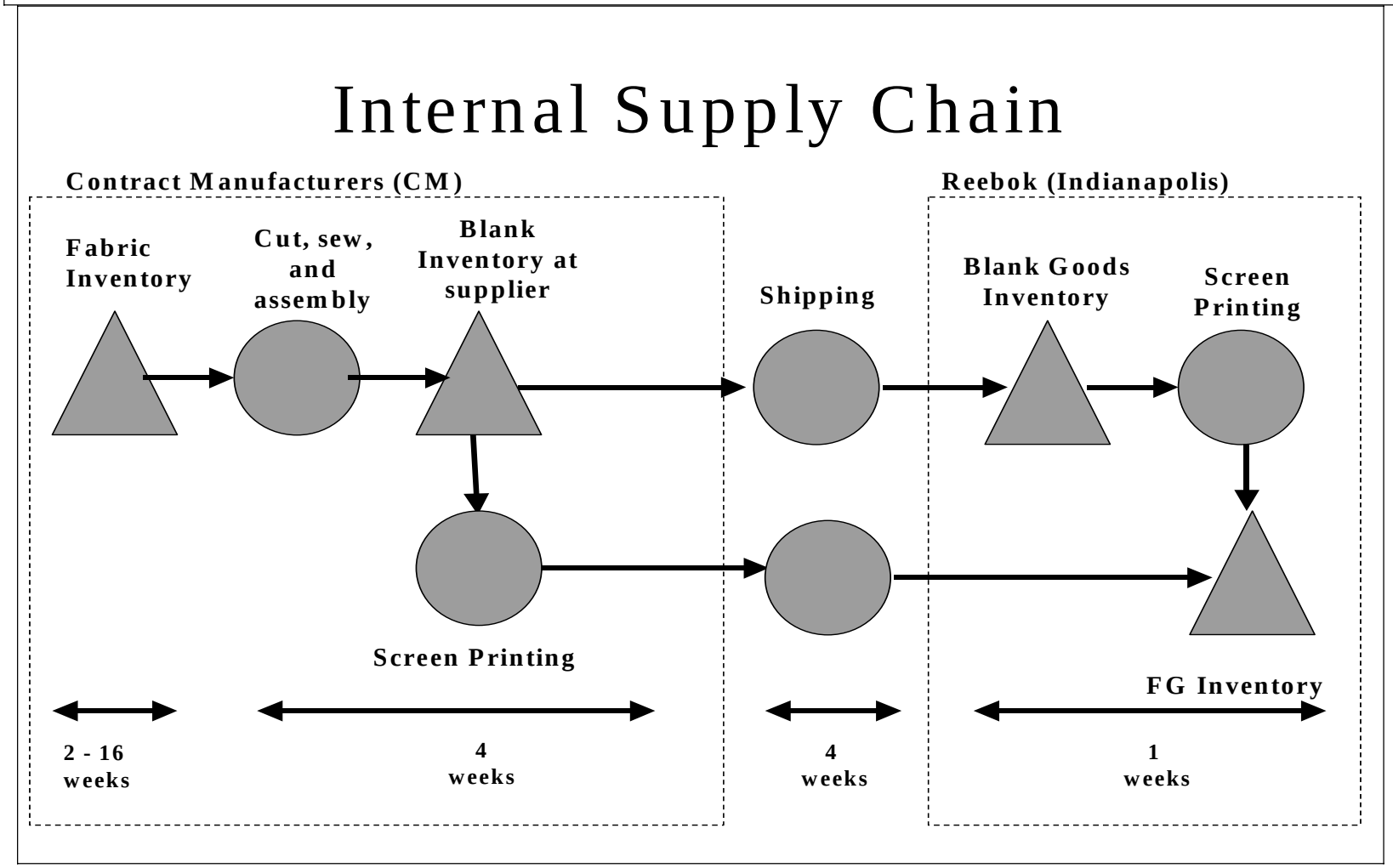

Figure 5 – Purchasing and Sales Timeline