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# Supply Chain Software Selection for Nypro Inc.

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**Supply Chain Software Selection for Nypro Inc.**

A Major Qualifying Project Report:

submitted to the Faculty

of the

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

by

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Date: April 24, 2008

Approved:

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This report represents the work of one or more WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review

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# 1 Abstract

With the field of Supply Chain Management becoming so instrumental to the internal workings of so many companies, there has also appeared an incredible amount of technology in order to optimize how the Supply Chains are managed. However, this influx also forces companies to have to make crucial decisions on what technology to invest in, in order to get the most for the investment. This project focused on the process of making that decision for Nypro.

## **2 Acknowledgements**

I would like to thank Professor Amy Zeng for her help and encouragement on this project. I would also like to thank Nypro Inc. for the opportunity to do this project; especially Diane LaRoche, Rashid Shaikh and Seyed Raissi for the help that they have provided.

## 3 Introduction

### 3.1 *Company Background*

Nypro Mold Inc. is an incredibly expansive company that is operating in 52 separate and unique businesses dealing with everything from the design and build of plastic products to product supply of plastic materials to the general assembly of plastic products. The backbone of the company has not been producing their own product and selling it; the company has been built upon the basis of designing and manufacturing plastic products specifically designed for their customers.

It is because of this business model that the company has implemented a customer first mentality throughout the company. This does not only apply to the external customers who are directly purchasing the products, but the internal customers as well. This is best demonstrated by the fact that Nypro is completely employee-owned. Since the company's inception, this has served them well as a huge competitive advantage and to their motto "We'll be there for you". While the company has been thriving for many years, it is constantly searching for new ways to improve and reduce the costs of the numerous different processes that are done in their facilities.

One of the most recent improvements was the addition of a supply chain management department. This department was created after an analysis and recommendation by a project team that was brought in from Boston University to perform a study on Nypro's supply chain management system. Now that it has been a year since that study and subsequent creation of a supply chain management department, WPI was contacted in order to have a project team come

to Nypro to perform a follow up study on how the new department is functioning and what can be recommended in order to improve its overall functionality.

This is where my project group came into the picture. For my Major Qualifying Project, I was brought into the company in order to perform a study in order to make recommendations as to the potential software improvements that Nypro could utilize in order to improve the overall function of the Supply Chain Management Department.

### ***3.2 Problem Statement***

The basic idea of the project was to aid Nypro in selecting a major Supply Chain Management software system. This has become a major project from Nypro's perspective since the company is putting a great deal of attention and resources into the revamping and improvement of the overall Supply Chain and one of the most effective methods in which to accomplish this is to invest in specialized Supply Chain Management software.

### ***3.3 Project Plan***

Our strategy for accomplishing this will be to conduct a benchmarking study of the numerous different software companies that have approached Nypro about investing in software. The next step of the project was to compile an easy to read spreadsheet with all of the pertinent information about the software packages. In this spreadsheet will be the different functions, costs and potential improvements of the software packages.

### ***3.4 Goals and Objectives***

The need for this study stems primarily from the fact that this newly formed Supply Chain Management Department within Nypro is trying to grow so quickly, that in order for the

department to accomplish the goals that they have laid out for themselves, it is necessary to invest in the most effective materials in the industry. One of the biggest of these resources is software. The goal for this project will be to give the engineers within the Supply Chain Management Department a base line of what the potential software can accomplish and which of these software packages should be explored more intensely in order to select the best possible software for the company and allow, or at the very least provide a great tool for the people to utilize in order to reach the final goals for the department and company.

### ***3.5 Expected Results***

With this project, the final result that is expected is a list of potential software packages that I feel will best fit the needs of the company as the needs of the company have been laid out for me. The final list will be composed a list of major suppliers of software packages in order for Nypro to meet the major and immediate needs of their Supply Chain Management Department and there will also be a list of smaller, more targeted list of software packages that do very specific tasks that Nypro will most likely need to look towards in order to expand as much as they are hoping.

## 4 Company Background

### 4.1 *Nypro Company Profile*

51 years ago Nypro Inc was founded in Clinton, MA and in that time, the company has grown into one that functions as one of the largest plastics manufacturers in the world. Operating 27 facilities in North America, 20 in Asia and 7 in Europe, Nypro currently has annual revenue over one billion dollars and has been a consistently growing company. Much of this growth has stemmed from the fact that Nypro has established a customer centric mentality, which has helped to make them the successful company that they are. This applies not only to the external customer of the company, but also the internal customer. It is because of this commitment that the company puts forward a 24 hour commitment to the satisfaction of the customers. Nypro also exemplifies this by making all of their products according to the specifications of the customers in order to ensure that the customer gets exactly what they want. This policy is in place instead of the standard business model of making products and selling them to the customer. This dedication to their customers has also led to company motto of “We’ll be there for you.”

One of the biggest differences between Nypro and most other companies in their industry is the fact that Nypro is a company that is completely owned by its employees. This allows Nypro to keep the atmosphere of a private company and it gives the employees a major stake in the success of the company. This is offered to every employee who has worked for Nypro for one year and is of 18 years of age or older. This also allows the company to avoid the constant fretting about the day to day concerns of the stock market. Nypro has stated publically that it

will hold on to this policy permanently and never become a public company and sell to a larger company.

As a leading plastics molder and manufacturer, Nypro works with leaders in numerous industries in order to meet their demands. They have worked with companies in industries from the electronics, telecommunications, consumer and industrial branches. For these companies, they have been contracted to make packaging, healthcare products, automotive parts and general contract manufacturing. It is because range of operations that Nypro can do and the level which they can perform these tasks, that the companies that have hired them in the past continue to come back to Nypro for their plastics molding needs.

#### **4.2 Nypro Supply Chain**

The Nypro Supply Chain Management department was established approximately one year ago in order to allow Nypro to maintain its corporate commitment to offering the best possible quality and value to their customers. This has been accomplished by holding to the three main focuses of the Nypro Supply Chain; Sourcing, Supplier Management and Program Management. Sourcing is the departmental focus on making sure that they are making the most beneficial contracts with the best possible suppliers of Nypro's resources. Supplier Management is the focus of the continuous improvements in general supplier related issues. Finally, Program Management is dealing with the lowering of the total costs related to the general system utilized in the production of goods for their customers.

“Supplier consolidation, ‘Pull’ systems of [HVS](#) (Nypro's proprietary "lean" system), build-to-order business practices, global expansion of operations and opportunistic acquisitions are business strategies that drive profitable growth for Nypro through Supply Chain excellence.”<sup>1</sup> It

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<sup>1</sup> Nypro.com

stems almost entirely from Nypro's consistent growth that the company has been forced to place more and more focus on its operations and internal processes in order to maintain the levels of efficiency and quality that they and their customers have come to expect.

This is being accomplished with a four program "Operational Excellence" plan. The four programs that are in place to make this work are the Supply Chain Management department, the High Velocity System, the Nypro Operating Way and a general commitment to overall quality in all aspects of the company. This program has had such a profound impact on the operations of Nypro that it has started to spill over to the customers of Nypro. By taking an active part in the supply chains of their customers, Nypro has both allowed their customers to thrive; which helps to provide Nypro with consistent customers; and by helping their customers improve operations, Nypro has established even stronger relations with customers, which in turn has led to longer contracts with more overall business.

With these increases in overall productivity and sales, Nypro has had to put an even stronger commitment to their own operational excellence. This has best been done through the ideas of consolidation of suppliers and a pull based manufacturing line. This has allowed them to hold to their own goal of maintaining as lean of an internal process as possible. This has been made easier because of the company's basis of being a built-to-order manufacturer. By starting out with the business model of building specific injection molded plastics, they have had to hold to one of the principles of lean manufacturing; making products in accordance with the orders that are placed for those products. It is because of this commitment to lean manufacturing that has allowed Nypro to keep their overall costs low and minimize the waste that is produced in production. While this is not the only major accomplishment stemming from the corporate

commitment to lean manufacturing, it has been one of the biggest accomplishments for the Nypro Supply Chain.

While Nypro has done a great deal of improvements to their Supply Chain recently, one of their biggest achievements has been in place since 1981. This started with the creation of the company Automated Assemblies Corporation, which functioned as an industrial robot manufacturing subsidiary of Nypro. This allowed Nypro to turn their overall manufacturing processes from a “job shop” to a highly efficient manufacturing facility. This was a major change not only to Nypro, but to the plastics injection molding industry as a whole, which had never seen a highly utilized robotic manufacturing line. These changes to the overall manufacturing system allowed Nypro to begin to incorporate the basics of lean manufacturing and have also allowed the company to keep more manufacturing jobs within the United States.

### 4.3 Nypro Competitors

Table 1- Nypro Competitors

Company	Nypro Inc.	Aptar Group	Rubbermaid	Berry Plastics
<b>ROA</b>	0.70%	6.47%	6.10%	-2.92%
<b>Inventory Turns</b>	10.84	4.81	4.85	7.18
<b>Revenue Growth</b>	31.61%	13.80%	7.81%	18.30%
<b>Total Assets (in millions)</b>	710	1,592	6,311	2,569
<b>Net Income (in millions)</b>	5	103	385	-75
<b>Cost of Goods Sold (in millions)</b>	856	1,086	4,131	1,156
<b>2006 Sales (in millions)</b>	1,066	1,601	6,201	1,432
<b>2005 Sales (in millions)</b>	729	1,380	5,717	1,170
<b>Inventory (in millions)</b>	79	226	851	161

### **4.3.1 Why These Competitors?**

The competitors that were selected by our group came from the industry of plastic injection molding, the industry which Nypro is one of the global leaders. While these companies do not focus as extensively on injection molding as Nypro does, they all have extensive injection molding departments that rival the size of the one in Nypro. However, all of these companies are larger than Nypro as a whole. By examining some of their operations, Nypro can get some direct perspective on what some of their competitors, who are more successful, are doing to make themselves more profitable.

Also by taking a look at the backgrounds of several of Nypro's competitors in the industry of plastics injection molding, our group is better able to get a clear perspective on the industry in which Nypro operates. By knowing about the industry in which Nypro operates, we gain a clearer perspective on the Nypro Supply Chain in regards to where their products are going and where their supplies are coming from.

### **4.3.2 Aptar Group**

Founded in 1992, the Aptar Group is a leader in the production, development and manufacture of dispensing systems for personal care, fragrance and cosmetic, pharmaceutical, household, and food and beverage markets. The specialty of the company has recently focused on pump dispensers and aerosol containers for the fragrance and cosmetics market. This company, which operates out of Crystal Lake, IL, has expanded an incredible amount in the 15 years since its inception. In that relatively short amount of time, it has become one of the most global injection molding companies in the industry, with 8 offices in the United States and 42 offices globally in Europe, Asia, Africa and South America. The company is now approaching \$2 billion dollars in total annual revenue and has an operating workforce of 8,300 people.

Included in these numbers are the \$400 million dollars of annual revenue produced by their injection molding facilities and the nearly 1000 people dedicated to that operation.

This company operates on a system based on designing and building generic dispensing containers and then selling them to specific companies. This is a different mentality than most plastic container companies, which will make specific containers for companies in order to match the specific demands of the customer. This mentality stems mostly from the fact that the customers that the company is selling to, pharmaceutical companies, home and body products and cosmetics companies, do not have as much of a need for highly customized plastics containers and instead prefer the generic containers that have a lower cost.

#### **4.3.3 Berry Plastics**

An injection molding and thermo foaming plastic products manufacturer based out of Evansville, Indiana. Founded in 1967, originally known as Imperial Plastics, the company now has total annual revenue of over \$3 billion dollars and a workforce of 13,800, with the injection molding lines creating \$1.147 billion dollars in revenue and utilizing a work force of 6330. Most of their revenue comes from their manufacture of open-top containers, closures, drink cups, bottles, tubes, prescription vials, overcaps, and assorted consumer products. Outside of their home base in Evansville, the company also operates 56 different offices in the United States and 7 offices globally.

The company is a subsidiary of the BPC Holding Corporation; and up until September of 2006 was primarily owned by Goldman Sachs and J.P. Morgan Chase and Co. In September 2006, the primary ownership of the company was bought by Apollo Management and the Graham Partners. Also in April 2007, the company was involved in a major merger with

Covalence Specialty Materials Holding Corporation. This has made the overall Berry Plastics Corporation one of the largest plastics packaging companies in the world.

Much of the company's growth stems from the acquisition of other plastics companies that specialize in the manufacture of specialty plastics. This started in 1992 when Berry purchased the Mammoth Containers division of the Genpak Corporation. This method of purchasing companies in order to utilize the specialty of the company has allowed Berry Plastics to consistently offer their customers, not only a wide variety of options, but the most up to date methods and product varieties. It is because of this capability that Berry has clients that are leaders of their industry, such as Gillette, Wal-Mart, Pepsi and many others, using Berry as their plastics manufacturer.

#### **4.3.4 Newell Rubbermaid**

Founded in 1902, Newell Rubbermaid was originally a manufacturer of curtain rods. Since that time it has grown a great deal and is now the parent company of numerous subsidiary companies such as; Sharpie, PaperMate, Parker, and Waterman writing instruments; Calphalon gourmet cookware; Goody personal grooming products, Irwin and Lenox tools and accessories, and BernzOmatic torches and patio heaters. These subsidiary companies have all been purchased at one time or another by the Newell Corporation. This has lead to Newell becoming leaders in numerous industries, which has been extremely beneficial to the overall success of the company.

However, the subsidiary that our group is focusing on is the Rubbermaid branch which is a leader in the field of injection molding. The Rubbermaid Company was purchased in 1999 by the Newell Corporation. This purchase was so important and profitable for the Newell Corporation, that they officially changed their name to the Newell Rubbermaid Corporation, both

in order to appease Rubbermaid and to hold on to the name recognition of the Rubbermaid Corporation. It is because of these business practices and mergers that the overall company has annual revenue of around \$6.2 billion dollars annually, with a workforce of 23,500 people.

Out of that, the injection molding branch of the company brings in around 705 million dollars annually and utilizes a workforce of approximately 500 people. The specialty of the company is plastic packaging supplies. The company is based in Sandy Springs, GA; which is about 20 miles north of Atlanta. The company also operates numerous manufacturing and distribution facilities in the United States and around the world.

## **5 Literature Review**

### **5.1 *Best Practices***

One of the more increasingly studied aspects of the corporate world has been supply chain management and the various methods that can be utilized in order to streamline and improve the overall effectiveness of the process. This has become such a major area of study because companies that have made great improvements to their supply chain management systems have seen overall savings in the millions of dollars. This potential impact on a company has made it an ever increasing area of study and recently there have been a few major areas of improvement that have been established as the best practices that can be undertaken by a company in order to improve the effectiveness of their supply chain.

Over the past two years, the major Supply Chain Management magazine; Supply Chain Digest; has put out a top 10 list of the most important Supply Chain Management trends of the year. These major trends of particular years are designed to show the greatest innovations in the department of Supply Chain Management.

### 5.1.1 2008 List<sup>2</sup>

Table 2- 2008 Best Practices List

<b>Rank</b>	<b>Best Practice</b>	<b>Form</b>
1	Globally Integrated Business Model	Strategy
2	Heavily Increased IT Spending	Technology
3	Reinforce Supply Chain Fundamentals	Strategy
4	Concentration on Fulfillment Execution	Strategy
5	Product Lifecycle Management changes to Enterprise Strategy	Strategy
6	Process Integration Software	Technology
7	RFID needs to demonstrate business value	Strategy
8	Taking on supplier problems	Strategy
9	Organic Knowledge Management	Strategy
10	Machine-to-Machine technology	Technology

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<sup>2</sup> Industry Week

### 5.1.2 2007 List<sup>3</sup>

Table 3- 2007 Best Practices List

<b>Rank</b>	<b>Best Practices</b>	<b>Form</b>
1	E-Auctions	Technology
2	Labor Management Systems in Distribution	Technology
3	Spend Management Visibility	Strategy
4	Demand Management	Strategy
5	Supplier Portals	Technology
6	Network Optimization	Technology
7	Transport Management Systems	Technology
8	Strategic/ Global Sourcing	Strategy
9	Wireless in the Warehouse	Technology
10	Yard Management Systems and Dock Door Scheduling	Technology

<sup>3</sup> Supply Chain Digest

### 5.1.3 2006 List<sup>4</sup>

Table 4- 2006 Best Practices List

Rank	Best Practices	Form
1	Voice Technology in Distribution	Technology
2	Labor Unions at an Inflection Point	Strategy
3	Concern Over Commodities	Strategy
4	Supply Chain Vendor Consolidation	Strategy
5	Increased Truck Capacity	Strategy
6	Focus on Risk Management	Strategy
7	Consistent Innovation	Strategy
8	RFID Slows	Technology
9	Global Supply Chain Gets Serious	Strategy
10	The Greening of the Supply Chain	Strategy

### 5.1.4 Best Practices List Comparison

Over the past three years there have been lists released regarding the Best Practices for Corporate Supply Chain Management. These three lists prove just how many ideas and opportunities are created in the area of Supply Chain Management that is helping to create new mechanisms to allow companies to expand. One of the biggest things that can be taken from the lists is the cyclical variety of change from a list based on technology to strategy and back to technology.

While there does not seem to be any theories directly explaining why this happens, but the theory that our group put together was that strategies are created in order to improve overall Supply Chain Management and they become widely utilized by companies and then in the next year, companies begin modifying, improving and specializing the technology in order to accommodate

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<sup>4</sup> Supply Chain Digest

and create the most effective utilization of the new strategies that have been implemented. Once the overall technology being used by companies becomes more effective and advanced, this opens the door to other new strategies that can utilize new technology and once new strategies are created the cycle repeats itself.

This can be best in the area of transportation management and logistics. In 2006, the number 5 Best Practice was an increase in Truck Capacity; a new strategy; and this was followed up the next year with the introduction of Transportation Management Systems and Yard Management Systems and Dock Door Scheduling; two technologies dealing with logistics and transportation. With these advances in the technology of this sector, the 2008 acknowledged that the vastly improved logistics Best Practices would allow for a better integrated Business Model, which pushed the strategy of Globally Integrated Business Model to the top of the annual Best Practices list.

## **5.2 *Best Practices for Nypro***

While the general list of Supply Chain Best Practices that were put out by Supply Chain Digest are a great list of general rules to organize and utilize. There are a few that are far more valuable to Nypro as the tips focus on very specific problems that a manufacturer like Nypro would face. In order to better improve the overall Supply Chain of the company, it is important to look at the more specific recommended Best Practices that apply to Nypro the most and would have the greatest overall impact.

### **5.2.1 Technology**

One of the most effective methods that a company can use is the improvement and modified use of technology. The recent advances in communications technology can have a profound impact on how a company operates their supply chain. One thing that has become

more commonly used by companies is to have their ordering done via online auctions with their suppliers. With the ever increasing amount of both direct and indirect products available in markets, this process helps to simplify and consolidate the entire process of the purchasing and distribution of necessary products. One of the more unusual things that companies have started implementing in their factories is voice recognition software. This technology allows for people in the factory to better communicate with each other and will boost the efficiency in the overall processes within the factory.

Another very simple thing that is being done in a great deal of major factories and distribution facilities is the implementation of wireless internet in the building. This small and relatively easy addition can make communication within a building a great deal easier than the alternative of communicating via paper based systems. Another important change that is being made to the supply chains of companies is the inclusion of the company suppliers via web portals. This allows the company's suppliers to have a better grasp on when they need to deliver and how much of the product they will need to have. This also allows for a supplier to keep the company better informed about their operations.

However, one of the biggest things, technologically, that can be done in order to improve the corporate supply chain is to do an overall complete optimization of the internal network of the company and its suppliers. While this is a very large project to be undertaken by a company, the benefits of such a project have proved to be incredibly high. The biggest thing that this will do is provide a great deal of balance between the total costs and services provided within the supply chain. A form of technology that has become increasingly important is the inclusion of RFID chips in the supply chain management process. This allows the company to keep better track of how they get their supplies and how they distribute their products. By including a

greater amount of tracking and information to the process, it cuts down on the costs of the transportation processes.

### 5.2.2 Strategy

Some of the other major things that can be utilized in order to optimize the supply chain relate greatly to the overall strategy of the company in regards to its purchasing and distribution strategies. One of the biggest aspects of this is the idea of demand management. This is the idea of instead of producing in reaction to demand, having every aspect of the supply chain; marketing, sales, etc; work together in order to drive demand and helps to maximize the profitability of all products. Another very important thing that a great number of companies are doing is allowing for a greater amount of visibility in what they are spending money on and how much they are spending on specific things. This allows vendors to see what a company is spending on a product, it allows said vendors to better assess how they are distributing their products and would thus create a greater amount of competition within the vendors. This will force the company's vendors to both lower the costs of production and distribution and improve the quality of their process and product. All of this will improve the final result that the company ultimately receives.

One of the more popular methods that companies have been undertaking recently is to consolidate the supplier selection and procurement processes. Another method relating to this that many major companies have started doing is implementing a transportation management system. This allows the company to automate the planning and execution of the overall transport system. This will allow the company to connect with their carriers, which will allow the overall costs of the shipments they send out to be reduced greatly. Companies have also begun signing more long term contracts with their suppliers in order to ensure that they have guarantee that they

will have the required supplies. This has become more and more commonplace with the ever increasing concern over limited supplies. This also falls in with the ever increasing trend of including more and more risk management in the supply chain management system. Also, great deals of companies have begun to “green” their supply chain management processes. This includes everything from using alternative energy sources to energy efficiency to more environmentally friendly packaging. All of these not only boost the reputation of the company, but also allows the company to save money and then get a boost from the government for converting to “green” activities.

### ***5.3 AMR Top 25 Supply Chains***

One of the most influential Supply Chain consulting companies in the world, AMR Research puts out a list of the top 25 best Supply Chains of the year. This has been done since 2004 and has been done every year since, except for 2006 for reasons that are not explained. The criteria that the company uses to evaluate the overall Supply Chains of companies is to first select companies from the Fortune Global 500 list. They then create a grading scale based on two major criteria, 40% for Financial and 60% based on peer evaluation. The Financial evaluation is based on the three major criteria of Return on Assets, Inventory Turns and Revenue Growth. The peer evaluation is completed by the Supply Chain experts in major companies and the Supply Chain experts within AMR. They evaluated the overall functionality of the corporate Supply Chains and the innovation that has allowed these Fortune Global 500 companies to thrive. In our analysis we have decided to analyze the comparative financials of the major manufacturing companies that have appeared on the list and we have looked at the innovation and functionality of the closest comparison of Nypro, Johnson Controls.

**Table 5- AMR Top 25 List**

<b>Year</b>	<b>2004</b>	<b>2005</b>	<b>Change</b>	<b>2007</b>	<b>Change</b>
<b>1</b>	Dell	Dell	0	Nokia	3
<b>2</b>	Nokia	Procter and Gamble	1	Apple	N/A
<b>3</b>	Procter and Gamble	IBM	1	Procter and Gamble	-1
<b>4</b>	IBM	Nokia	N/A	IBM	-1
<b>5</b>	Wal-Mart	Toyota	1	Toyota	0
<b>6</b>	Toyota	Johnson and Johnson	1	Wal-Mart	2
<b>7</b>	Johnson and Johnson	Samsung Electronics	N/A	Anheuser-Busch	5
<b>8</b>	Johnson Controls	Wal-Mart	-3	Tesco	1
<b>9</b>	Tesco	Tesco	0	Best Buy	8
<b>10</b>	PepsiCo	Johnson Controls	-3	Samsung Electronics	-3
<b>11</b>	Nissan	Intel	8	Cisco Systems	7
<b>12</b>	Woolworths	Anheuser-Busch	8	Motorola	3
<b>13</b>	Hewlett Packard	Woolworths	N/A	Coca-Cola	12
<b>14</b>	3M	The Home Depot	7	Johnson and Johnson	-8
<b>15</b>	GlaxoSmithKline	Motorola	N/A	PepsiCo	1
<b>16</b>	POSCO	PepsiCo	-6	Johnson Controls	-6
<b>17</b>	Coca-Cola	Best Buy	1	Texas Instruments	2
<b>18</b>	Best Buy	Cisco Systems	N/A	Nike	3
<b>19</b>	Intel	Texas Instruments	N/A	Lowe's	1
<b>20</b>	Anheuser-Busch	Lowe's	2	GlaxoSmithKline	N/A
<b>21</b>	The Home Depot	Nike	N/A	Hewlett Packard	N/A
<b>22</b>	L'Oreal	L'Oreal	1	Lockheed Martin	N/A
<b>23</b>	L'Oreal	Publix Super Markets	N/A	Publix Super Markets	0
<b>24</b>	Canon	Sysco	N/A	Paccar	N/A
<b>25</b>	Marks and Spencer	Coca-Cola	-8	AstraZeneca	N/A

#### **5.4 Lessons of AMR Top 25**

The AMR top 25 list of the best Supply Chains produces several extremely valuable lessons that can be utilized by any company in need of improvements in their Supply Chain Management. While there are great deals of industry and company specific lessons that can be taken from this list, there are five over riding lessons that are generally applicable.

Focus is outside in—that is, everything starts with the customer and then looks back into the organization.

Supply chains extend out to customers and suppliers.

Balance is vital to their success.

Innovation is embedded in the fiber of their companies.

They have the right attitude.<sup>5</sup>

One of the biggest lessons that can be taken from the list is the idea that the organization of the Supply Chain and the general operations of the company are based around the needs of the customer. This creates a system based on the idea of first identify what the customers of the company need and then basing the operations of the company in order to meet those demands. This leads to more Supply Chains focused on demand driven processes and products being manufactured and delivered based entirely on specific customer orders. These processes will allow a company to produce a quality product in a timely manner and will allow the company to focus on other customer needs; such as customer service and technical support.

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<sup>5</sup> AMR Research

The next lesson that can be taken from the list is that Supply Chain no longer refers solely to the supplies utilized by the company. The best Supply Chains are now extending themselves out to their suppliers and customers.

Processes necessary for delivering an exceptional customer experience in the store

Planning for the extended supply chain, including customers and suppliers

Management of operational excellence in global supply networks

Using suppliers in extended design networks <sup>6</sup>

The most important of these extensions of the Supply Chain is the “Using suppliers in extended design networks”. This helps to build better connections with suppliers, which will allow for easier consolidation of total suppliers. This also encourages suppliers to keep up with the changes made by a company and rewards the suppliers who accommodate the changes.

Another important change that a great deal of companies are making is to move focus away from trying to be good in every aspect of Supply Chain Management and work to achieve a balance in all aspects of the Supply Chain. This stems entirely from a corporate realization that no matter how good a company is, they cannot be good at everything. The major benefit to this change is that it allows for the operations of the company to become a much more controllable; whereas the previous strategy of companies to try and excel in everything often sends the Supply Chain out of control and resources have to be expended in order to control it again.

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<sup>6</sup> AMR Research

One of the lessons from this list that is traditionally one of the hardest to incorporate into a Supply Chain is the idea of innovation. Major innovation is a very rare thing nowadays in markets and when it occurs, it is usually worthy of attaining a great deal of recognition. The thing that makes innovation difficult is the fact that incorporating it into the current operations of a company. This has led to one of the more prevalent and successful forms of innovation, embedded innovation. This is the idea of introducing new ideas and activities that are based on pre-existing activities and products in the company. One of the leaders in this concept has been Procter and Gamble, in how they have found a great deal of innovation in products that are already established in the marketplace; with the prime example of this being their line of Swiffer products. The innovation that has been introduced into that product line has turned it into a billion dollar branch of the company in just 3 years.

While those direct changes to the operations of the company can have a significant impact on how successful the Supply Chain functions, one of the biggest impacts could come from the final major lesson of the AMR top 25, which is just a change in the attitude the company has towards its operations. The change is summed up best in the phrase “Good is the enemy of great”<sup>7</sup>. This encompasses the idea that a company should never be content with a good review of anything. If a company can adopt this mentality, they will always be striving for better and finding new ways to improve. The biggest part of the mentality is the lesson that companies should focus on ways to measure how they are doing and try and find new ways to measure them. By consistently measuring themselves and requiring improvement, the company can always have new goals and achievements to reach.

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<sup>7</sup> Jim Collins

### 5.4.1 Nypro Comparison with Top 25 Financials

Table 6- Nypro Comparison with Top 25

Company	Nypro Inc.	Johnson Controls	Procter and Gamble
AMR Rank 2007	N/A	16	3
Fortune Global 500 2007	N/A	201	74
ROA	2.69%	5.19%	7.49%
Inventory Turns	12.44	20.51	5.38
Revenue Growth	12.09%	6.90%	10.79%
Total Assets (in millions)	681	24,105	138,014
Net Income (in millions)	18	1,252	10,340
Cost of Goods Sold (in millions)	923	29,548	36,686
2007 Sales (in millions)	1,145	34,624	76,476
2006 Sales (in millions)	1,007	32,235	68,222
Inventory (in millions)	74	1,441	6,819

Company	Toyota	Hewlett-Packard
AMR Rank 2007	5	21
Fortune Global 500 2007	6	41
ROA	5.05%	8.23%
Inventory Turns	10.18	9.82
Revenue Growth	11.81%	12.11%
Total Assets (in millions)	275,941	88,699
Net Income (in millions)	13,927	7,264
Cost of Goods Sold (in millions)	155,495	78,887
2007 Sales (in millions)	202,864	104,286
2006 Sales (in millions)	178,898	91,658
Inventory (in millions)	15,281	8,033

## 5.4.2 Johnson Controls

### 5.4.2.1 Company Profile

Johnson Controls Inc. has become one of the global leaders in the manufacturing and distribution of interiors for automobiles. Along with this, the company also is either the leader of one of the global leaders in the areas of car battery manufacturing and the development of control heating, ventilating, air conditioning (HVAC), lighting, security and fire management in non-residential buildings. It is because of this that the company is now a constant on the Fortune 500 list with annual estimated revenue of around 34 billion dollars. One of the major reasons that this company has seen so much success is demonstrated by its appearance on the AMR Research top 25 supply chains list, where the company comes in at number 16.

The company has grown an incredible amount since its inception in 1883 by Warren Johnson, where the company was formed after a patent was obtained for the first electric room thermostat. The company was founded as the Johnson Electric Service Company, but changed its name to Johnson Controls in 1885, when the company expanded into making automatic temperature regulation systems for buildings. After this, up until around 1911, the company expanded its interests into everything from electric storage batteries to steam and gas powered automobiles to wireless telegraph communications. However, in 1911, the company finally decided to concentrate almost solely on temperature control systems for nonresidential buildings. The other two major industries that Johnson Controls have gotten involved with have been via acquiring smaller companies. The first major one in 1978 was the acquisition of Globe-Union, a major manufacturer of automotive batteries. The next one was in 1985 when the company bought up Hoover Universal, an automotive seating and plastics manufacturing company. Since Johnson Controls acquiring of these two companies, they have committed to innovation of those

industries, which was what made them the leader in the temperature regulation systems industry. They have done this through both the constant research and creation of new varieties of products and the acquisition of smaller companies. This was highlighted by the buying of Prince Automotive in 1996.

Since its creation as a small thermostat manufacturer in Whitewater, Wisconsin in 1883, the company has grown into a world leader in several industries and has around 140,000 employees in approximately 1,300 locations around the world. Despite the fact that the company is already one of the biggest and most profitable companies in the world, it is still consistently growing, as shown by the fact that last year was their 17<sup>th</sup> straight year of earnings increase and 32<sup>nd</sup> consecutive year of dividends increase. This is best demonstrated by some of the company's incredibly strong financial data, which includes a return on assets of 5.19%, inventory turns of 20.51 and 6.9% annual revenue growth. While a great deal of this success can be attributed to the company's innovation in the products that they manufacture, a good bit of credit belongs to the company's innovation in the area of supply chain management.

#### **5.4.3 Johnson Controls and Nypro**

Outside the obvious success that this company has had financially because of their innovations in their management of their Supply Chain, the biggest reason that this company is singled out and analyzed specifically for Nypro was that the company is the most comparable to the market that Nypro exists in. The companies both receive the majority of their business from companies that need the company to build specific parts of their commercial products. Johnson Controls focuses on the manufacture of interior products for automobiles, whereas Nypro gets almost all of their business from the molding of products for companies that need molded plastics.

One of the first major changes that Johnson Controls did to its supply chain was in 1998, when the company decided to test the idea of including supplier ports into the company network, which would give all of their major suppliers the ability to keep updated on the status of the use and need of their products. This also gave Johnson Controls a greater ability to manage their numerous suppliers and their ordering and purchasing processes. Having this level of access with their suppliers also allows the purchasing staffs to more effectively identify, control and solve problems that occur in the process. Since then, this has not only become a commonplace thing within the company, it has not only expanded to all of their suppliers, not just their major suppliers, but has become an industry standard in supply chain management.

With all of the incredible advances in technology that have taken place recently in the network systems industry, the idea of network portal systems have become included in just about every company in recent years. While Johnson Controls had been utilizing a basic system of network portals for nearly a decade, they did not initially jump at the brand new technology increases as some of their rivals did. The company took some time and only recently established a brand new network portal system after nearly 3 years of work on the system. While this was an incredibly unorthodox system, it is already paying dividends for the company. The system is called NexCommerce and works on a three portal basis.

“The customer portal is a shared database that will give authorized customers real-time access to key information concerning product launches, enhancing communication and collaboration among members of product development teams. Johnson Controls is working with several partners to develop the supplier portal, a single point of contact for procurement, product launch and supply-chain management. Extended-enterprise partners will use this tool to receive and respond to requests for quotations, interact with quality-management systems,

submit cost-reduction ideas and manage inventory against manufacturing demand. The employee portal will provide a unified, personalized information resource for company employees around the world.”<sup>8</sup>

By using these three different portals within the system, Johnson Controls can get a much better perspective on everything that occurs within the supply chain instead of just monitoring the suppliers. It was also a great advantage for the company to take its time and build and test in order to get the best final system. The company also found an advantage by having the ability to hold off on immediately being forced to use all of the new technology since it had already had an effective portal network system in place and was able to not only rely on that while a new system was being build, but it was able to utilize everything it learned from that network in order to create the best next generation of system possible. The company has such great confidence in the new system that they have created that they are expecting to see a significant impact on the company’s overall profits within either the second or third quarter of usage.

One of the most effective things that the company has done recently is to establish a system for how they hire their supply chain management professionals. The key to the system that Johnson Controls is using is based on first identifying exactly which need they have for people within the supply chain management department and then hiring people based on specific fit to the direct need, instead of the standard of hiring people qualified for the department and then specifying what their specialty would be within the group. In order to accomplish this, the company has outlined a five-step process in order to complete this task in the most effective manner. “The first involves matching supply chain goals and objectives with organization requirements. The second involves providing supply chain personnel delivery and management

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<sup>8</sup> MRO Today

criteria. The third is identification and prioritization of skills, tools, and programs required for success. The fourth involves conducting and managing the skills assessment process. The final step involves utilizing the results to build and develop the team.”<sup>9</sup> In order to accomplish this, the hiring managers look at a great number of things in order to match prospective employees to the appropriate position; such as expertise, software knowledge, negotiation ability, contract management etc. By looking at a variety of attributes of potential additions, a better evaluation of the position and employee can be established, which creates an overall tremendous benefit to the overall supply chain, which has been demonstrated by the fact that the group who proposed and implemented this program has been able to lower the total cost of ownership significantly in just one year.

While they have done a great deal to deal with the technology and personnel available to the supply chain management department that has been very effective and helpful to the department and the company as a whole, one of the biggest things that the supply chain has done is overhaul the manufacturing techniques that are used to make their products. The most recent innovation has been the establishment of a software program created by a company called Factory Logic. This system is based off of the Toyota Production System and is primarily focused on the idea of lean manufacturing. This innovative software is based on the idea of building a manufacturing software program that is based around the principles of lean manufacturing. The idea is that this software will allow for the company to more effectively manage their factories and inventory, while still being able to introduce effectively the principles of lean manufacturing.

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<sup>9</sup> Purchasing.com

#### **5.4.4 Johnson Controls and Nypro Supplier Management**

One thing that Nypro and Johnson Controls have concentrated on a great deal in order to help optimize their respective Supply Chains is that they have concentrated a great deal on their Supplier Management. They have done so with very similar methods, by taking an active role in the Supply Chain Management and operations of all of their suppliers. This has stretched from providing Supply Chain consulting for suppliers to actively helping to create a company to function as a particular supplier to the company.

Nypro has put a great deal of work in order to make sure that they have a fantastic relationship with their suppliers in order to make sure that they receive the best services. They have put such an emphasis on this that it has become one of the three major areas of concentration of the Nypro Supply Chain; along with Sourcing and Program Management. Nypro has accomplished this by helping and providing consulting services for their suppliers and customers in order to help them in dealing with possible problems and Supply Chain excellence.

This commitment to supplier management has been in place for years and is demonstrated extremely well by the fact that Nypro has even gone as far as to help to create a company in order to accommodate a supplier need. This company was the Automated Assemblies Corporation (AAC). The company was formed in order for Nypro to have a supplier of robotic injection molders for the factory lines. The company now exists as an independent subsidiary of Nypro, and only about 25% of the business of AAC is provided by Nypro. While AAC does a great deal of business outside of Nypro, they still have a fantastic relationship with Nypro and has given Nypro a dependable supplier of robotic injection molding machines and AAC is still receiving a substantial amount of support from Nypro in all facets of its business practices.

Johnson Controls has also a well established reputation for supplier management. This is epitomized by the fact that Johnson Controls has established the Johnson Controls Institute (JCI) in order to provide information and expertise for their numerous suppliers. JCI provides a substantial amount of resources to all varieties of suppliers of Johnson Controls, from the long-time and established suppliers to companies trying to form who need a jump start. The main effort of the Institute was to allow current and potential suppliers to operate as effectively as possible. By attaining optimal supplier management from this institute, Johnson Controls has received a level of stability and prosperity from its supply chain that has given it one of the best Supply Chains on a regular basis.

One of the biggest successes of the JCI was the establishment of ARD Logistics. Originally a small plastics manufacturer based in Atlanta, Georgia called Regal Plastics, the owner of the company turned to Johnson Controls in order to provide assistance in changing the business model of the company from a plastics manufacturer to a Supply Chain Management and Logistics firm. This led him to begin taking classes at the JCI and gaining the experience to begin forming alliances with other companies and growing his business out until it finally became ARD Logistics, which is now one of Johnson Controls largest logistics providers in the Southern United States.

This relationship between the two companies has provided a great deal of benefit to Johnson Controls, in the form of a thriving Logistics provider for a large portion of the United States and has turned a downtrodden plastics manufacturing facility to a large and prosperous Logistics and Supply Chain company, and all of this was made possible by the fact that Johnson Controls took the initiative to get involved in the operations of its suppliers by establishing the JCI.

## 6 Methodology

In order to obtain the desired result of this project, it was necessary to lay out an appropriate course of actions. This started with gaining the software requirements from the Supply Chain engineers at the Nypro. Once these were obtained, it was then needed to obtain which software packages needed to be studied in order to receive the best result. Fortunately, this was also provided by the engineers in the department. This list was compiled from the numerous companies that had previously contacted Nypro about software.

Once all of the necessary background information was compiled from Nypro, the next step was to create a spreadsheet that had all of the pertinent information in an easily accessible and readable format. While this spreadsheet was being created, the contacting of companies was occurring. This was done through several methods, the main one being e-mail and an alternative method being by phone. This contact was made in order to get the information that Nypro would need to begin setting up meetings with companies to gain a more in depth analysis of which software package would be the most applicable.

The spreadsheet being completed, the next aspect of the project was to begin a basic analysis of which software packages should given a more in depth analysis of the software by Nypro. After this list was compiled, the next stage of the process was to analyze the lists of Supply Chain best practices in order to compile a list of alternate software packages that Nypro should consider at a later date when more resources become available.

Once Nypro has the final spreadsheet and recommendations from this project, the next step for Nypro is to take the list of recommended software packages and bring the suppliers into Nypro in order to provide demonstrations of what the software can do for Nypro. This will also include the final data on how much the software costs, how long it will take to install and what exactly

can the software provide to Nypro. This will provide Nypro with the final and extremely clear picture of what software they will finally invest in.

Once this is finally completed, the Nypro Supply Chain department can then turn its attention towards more specific software solutions for some the more targeted problems that Nypro needs to deal with. This information pertaining to some of the smaller software systems is also included in the final spreadsheet that is provided in this project, so Nypro will have the same starting block as they had when selecting their major Supply Chain software. This will help to streamline that software selection process and lead them to getting the best possible software solutions for their more targeted problems.

## 7 Analysis

### 7.1 *Spreadsheet Set Up*

In order to start the overall analysis of the potential software packages, it was required to take into account the basic requirements made by Nypro on what it would need in order to get the most out of their potential software system. This was obtained in a meeting with one of the engineers within Nypro and she explained that the four basic things that they needed out of their software were: Value Chain Collaboration, Demand Planning, Capacity Planning and Manufacturing Planning.

Once these four basic requirements were taken into account, it would be necessary to select the companies that would be used in the analysis. This was decided by the engineers with the Supply Chain Management Department. They gave out a list of 12 companies that had contacted them about software packages that Nypro was interested in purchasing from.

This list was composed of software packages that performed a variety of different functions. Some were major software packages that provided every function that a Supply Chain software system could and some only performed one very specific task. The spreadsheet (Which can be found in its entirety in Appendix) is condensed in the following spreadsheet which demonstrates what information could be found from the company contacts and company websites.

## 7.2 Software Breakdown

Table 7- Spreadsheet Breakdown

Company	Logility	Supply Chain Connect	Blinco Systems
Function	X	X	X
Estimated Cost	X		
Estimated Duration	X		
Estimated Cost Reduction	X	X	X
Estimated Sales Increase	X		X

Company	Neptune Web	Kinaxis	Ultriva
Function	X	X	X
Estimated Cost			
Estimated Duration			
Estimated Cost Reduction			X
Estimated Sales Increase			

Company	CEVA Logistics	SCA Tech	Datacraft Solutions
Function	X	X	X
Estimated Cost			X
Estimated Duration		X	
Estimated Cost Reduction			X
Estimated Sales Increase			

Company	Sterling Commerce	Cambar Solutions	Visible Inventory
Function	X	X	X
Estimated Cost			
Estimated Duration			
Estimated Cost Reduction		X	X
Estimated Sales Increase			X

### ***7.3 Software Requirements***

With all of the background work taken care of, a spreadsheet was made for the subsequent data to be entered into. The information on the spreadsheet was split into the five main things that Nypro would need from these companies. The biggest one of them being, what the software actually will do. The other data inputs were; Cost, Installation Duration, Projected Cost Reduction and Projected Sales Increase.

The function proved most important to the analysis since, first of all, Nypro's main need from the software was very specific and if the software could not do that, then it wasn't immediately useful. Also, the function was the most important since the other pieces of information were only based on vague estimates and thus, much less reliable. The other factors could also only be accurately analyzed with an investment in major forecasting models by either Nypro or the supplying company.

## 7.4 Selection Process

Table 8- Suppliers that meet Requirements

<b>Company</b>	<b>Logility</b>	<b>Supply Chain Connect</b>
<b>Function</b>	Value Chain Collaboration	Online Auctions
	Demand Planning	Value Chain Collaboration
	Capacity Planning	Inventory Management
	Mfg. Planning	Logistics Visibility
<b>Estimated Cost</b>	936,900	N/A
<b>Estimated Duration</b>	5-7 Months	N/A
<b>Estimated Cost Reduction</b>	10% Reduced Carrying Cost	Visible Inventory Decrease 30 %
	20% Increase Planning Productivity	Increase Inventory Turns
	10% Increase Asset Utilization	
	10% Reduced Obsolescence	
<b>Estimated Sales Increase</b>	1% Increase Sales (~11.45M)	
	1% Increase Buyer Productivity	

<b>Company</b>	<b>Blinco Systems</b>	<b>Sterling Commerce</b>
<b>Function</b>	Value Chain Collaboration	Inventory Management
	Demand Management	Order Management
	Inventory Management	Supply Chain Visibility
	Logistics Management	Transportation Management
		Warehouse Management
<b>Estimated Cost</b>	N/A	N/A
<b>Estimated Duration</b>	N/A	N/A
<b>Estimated Cost Reduction</b>	Reduce inventory up to 75%	N/A
	99.5+% order fulfillment	
	100% invoice accuracy	
<b>Estimated Sales Increase</b>	Increases productivity of 30-300%	N/A

<b>Company</b>	<b>Ultriva</b>
<b>Function</b>	Value Chain Collaboration Capacity Planning Inventory Management
<b>Estimated Cost</b>	N/A
<b>Estimated Duration</b>	N/A
<b>Estimated Cost Reduction</b>	Reduce order-to-ship lead times 50+%
	Improve on-time delivery performance 20+%
	Reduce work-in-process inventory <40%
<b>Estimated Sales Increase</b>	

The software packages

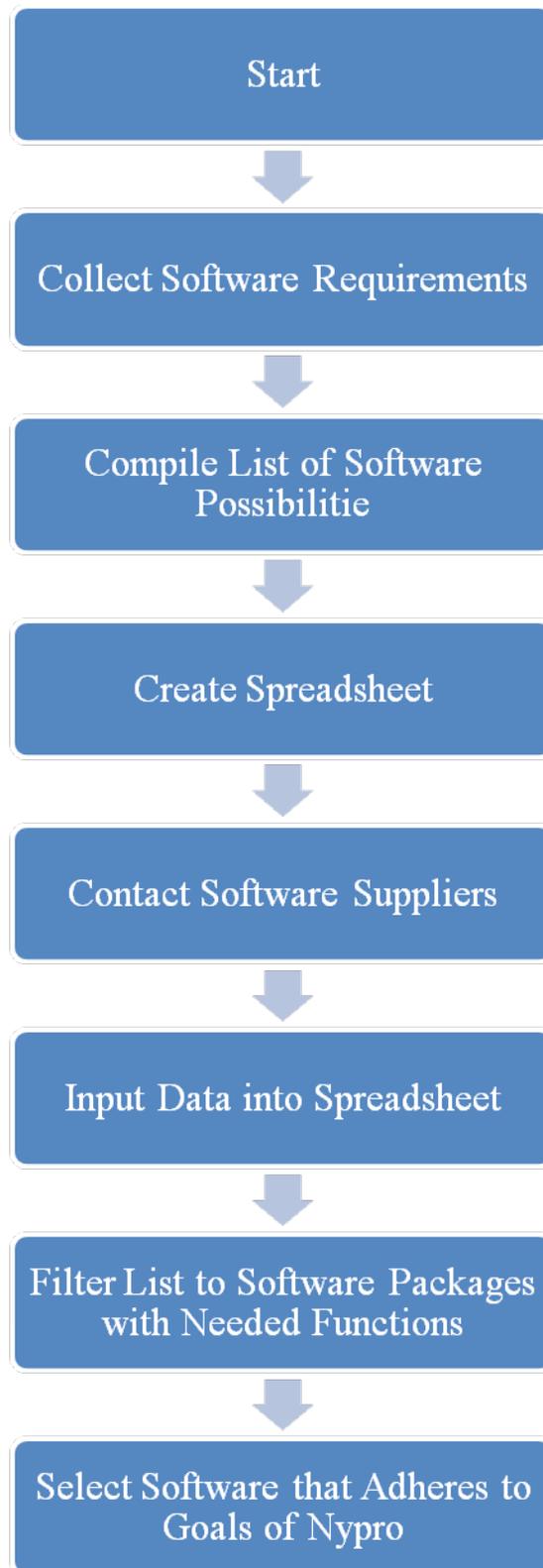
that are listed above are the only on the list that met at least part of the basic requirements laid out initially by Nypro. Since there were companies that offered only a few of the basic requirements, the decision then came up; whether to invest in one major system to accomplish all of the basic required tasks, or to invest in several systems that each do a very specific task. There ended up being three software packages that ended up offering all of the necessary requirements; Logility, Blinco and Sterling Commerce. All of the other companies either offered only a few of the basic requirements, or were a system that performed a function outside of the core functions needed by Nypro.

The selection of the overall company came down to the basic functionality of the software and how well that it they held to the goals and Key Performance Indicators that Nypro strives for; the biggest of those being Supplier Management. This goals boils down to the need for Nypro to

more easily and effectively manage the numerous amount of suppliers that they are currently using.

However, there were a slew of other companies that did not offer any of the core functions that Nypro was looking for in their primary software package. These packages, for the most part, only performed one or two very specific tasks. These ranged from eCommerce and web design to electronic Kanban systems to eAuction software. It is because of the specificity of the software provided by the companies that the software that they offer is highly effective for the task it is designed to do. This can make those kinds of software incredibly effective in a large company, like Nypro, to assist the company in managing their major day to day functions.

**Table 9- Selection Process**



## **8 Recommendations and Conclusion**

In this project, the major goal was to provide Nypro Supply Chain engineers with the basic information regarding all of the numerous different software packages that they have been offered. This is being accomplished so that Nypro can implement a great deal more improvements to their overall Supply Chain. However, Nypro also has some very specific requirements as to what their software needs to do for them. The biggest thing is that the software must provide four basic functions of Value Chain Collaboration, Demand Planning, Capacity Planning and Manufacturing Planning.

The decision over what software Nypro should invest in boiled down to two major options; they could either purchase one major system to accomplish all of the functions or they could split the functions over several different pieces of software. While the one system would be cheaper overall and easier to manage, it most likely would not have all of the capability of the smaller and more targeted software packages. With this in mind, the decision mostly came down to which choice would best fit with Nypro's Key Performance Indicators and goals for next few years.

This is why my recommendation is for Nypro to invest in one major system to do all of the necessary functions. This stems from Nypro's overall goal to consolidate their suppliers. While utilizing numerous suppliers to provide the software that they need would provide a system with more capability, since Nypro is such a large company, a larger system would provide a much more manageable system. This has become one of the most important things to Nypro as they strive to streamline their Supply Chain.

With this recommendation in mind, there are a few software packages that I strongly suggest that Nypro give serious consideration. These companies are Logility, Blinco Systems and Sterling

Commerce. These three companies all provide Nypro with the four major functions that they are looking for in their major software and have all seen favorable reviews from third party assessments. By focusing on these three companies for the final decision, Nypro will be able to save a great deal of time and money in researching and forecasting what their software could potentially do for them.

While these three companies will give Nypro a good springboard to start building their Supply Chain software system, there were also a great deal of other software packages that are available to Nypro. These smaller software packages all do functions that are outside of the core functionality that Nypro is looking for initially, but several of the companies are providing functions that have proven increasingly valuable to global Supply Chains. Things like Transportation Management Systems, eAuction software and Logistics Planning have all appeared on the annual Supply Chain Best Practices lists. They have also been seen in the Supply Chain Management strategies of many of the AMR top 25 Supply Chains.

It is because of this that I am suggesting that after Nypro puts in place their new major Supply Chain Management software system, the engineers in the Supply Chain Management department reassess their resources and consider investing in some of these smaller software packages.

While they would not provide as much functionality as their main software, they will provide a high quality smaller function that in the long run would prove extremely valuable. Another benefit of these smaller software systems is that they are a great deal cheaper some of the more major software systems and tend to provide a greater final output because of the scope of its functions.

However, there are great deals of small, very specific software packages designed to improve a Supply Chain. Hence it is important to focus on a few of the more important and effective of them. The ones I am recommending that Nypro take a closer look at get their recommendation from a combination of their adherence to Nypro's goals and Key Performance Indicators and how important they have been rated by the top lists of Supply Chain Best Practices lists.

One of the most important packages that I think Nypro should consider is Supply Chain Connect's eAuction software. This is not only rated as one of the cheapest and most effective methods of Supply Chain Management by the Best Practices lists; it is also one of the goals set out by Nypro to start using eAuction software for their suppliers. Some of the other software packages that could also prove to be valuable to Nypro are Electronic Kanban Software (Datacraft), Inventory Stocking (Visible Inventory) and Cost Modeling (SCA Tech). All of these software models have been proven as effective in the manufacturing industry and will assist Nypro in meeting their future Key Performance Indicators.

## 9 Industrial Engineering Capstone

This project primarily came down to one major decision, should Nypro invest in one major system in order to meet their needs or should they split the functionality over several different software packages. This decision was affected by numerous different factors, however the biggest of the factors being which system will hold best to the Key Performance Indicators and goals of Nypro.

The other possible factors, such as cost, installation duration and overall benefits, only served a small purpose since at this stage of the study, the numbers produced in those areas are so vague that they provide little to no solid data in which to use. However, they will provide a fantastic analysis tool later in the study once resources can be devoted to those areas. This study is important because it will allow Nypro to save time and money once they reach the stage where they will need to invest time and money in further investigation of potential software.

The system that was set up in order to make a decision on which software to recommend, was to build an easy to read spreadsheet would allow an easy interpretation of which software would provide Nypro with exactly which software can give them everything that they need.

Accompanying this spreadsheet will be my recommendations on which software packages that should be concentrated on.

The recommendations that were made were based on one of Nypro's core goals, which is Supplier consolidation. The recommendation of concentrating their software into one major system that can cover all of their primary needs in their software will allow Nypro to more easily manage their suppliers by only having them only have to work one supplier to make sure the system works to its fullest potential.

Once they have taken this spreadsheet and recommendations of which major software systems to concentrate on, Nypro can then bring in the software suppliers to demonstrate exactly what their software can do for Nypro. From there they can come to a final conclusion on which system will work the best for the company and department.

Once they have the major software installed and up and running within the company, Nypro should look towards some of the smaller, more targeted software packages in order to get the most use out of their new software system and their overall Supply Chain. This will depend largely on which goals Nypro decides to concentrate on in the coming years. While there are some definite goals that Nypro wants to achieve through technology, like eAuction software, there is a great deal of variety in some of the other goals that Nypro has in its goal to become a 2 billion dollar company. These things could range from logistics and transportation management to inventory control to a concentrated effort towards forecasting and cost modeling.

All of these things would prove to be extremely helpful to Nypro's growing Supply Chain and all of them can be improved through the use of technology and software. However, in order to get the most out of their investment in technology, Nypro will have to concentrate on specific areas. Since Nypro future goals are so numerous, the information provided by this project will provide Nypro with the basic information on where to look for specific technologies that they may need in the coming years to continue growing as rapidly as they have been.

## 9.1 Implementation Strategy

Table 10- Implementation Process



## 10 Appendix

### 10.1 Software Package Spreadsheet

Table 11- Spreadsheet

<b>Company</b>	<b>Blinco Systems</b>	<b>Sterling Commerce</b>
<b>Function</b>	Value Chain Collaboration	Inventory Management
	Demand Management	Order Management
	Inventory Management	Supply Chain Visibility
	Logistics Management	Transportation Management
		Warehouse Management
<b>Estimated Cost</b>	N/A	N/A
<b>Estimated Duration</b>	N/A	N/A
<b>Estimated Cost Reduction</b>	Reduce inventory up to 75%	
	99.5+% order fulfillment	
	100% invoice accuracy	
<b>Estimated Sales Increase</b>	Increases productivity of 30-300%	
<b>Company</b>	<b>Logility</b>	<b>Supply Chain Connect</b>
<b>Function</b>	Value Chain Collaboration	Online Auctions
	Demand Planning	Value Chain Collaboration
	Capacity Planning	Inventory Management
	Mfg. Planning	Logistics Visibility
<b>Estimated Cost</b>	936,900	N/A
<b>Estimated Duration</b>	5-7 Months	N/A
<b>Estimated Cost Reduction</b>	10% Reduced Carrying Cost	Visible Inventory Decrease 30 %
	20% Increase Planning Productivity	Increase Inventory Turns
	10% Increase Asset Utilization	
	10% Reduced Obsolescence	
<b>Estimated Sales Increase</b>	1% Increase Sales (~11.45M)	
	1% Increase Buyer Productivity	

<b>Company</b>	<b>Ultriva</b>	<b>Cambar Solutions</b>
<b>Function</b>	Value Chain Collaboration Capacity Planning Inventory Management	Order Management Warehouse Management
<b>Estimated Cost</b>	N/A	N/A
<b>Estimated Duration</b>	N/A	N/A
<b>Estimated Cost Reduction</b>	Reduce order-to-ship lead times 50+%	3% Order Index = 1% Increase Profit Margin
	Improve on-time delivery performance 20+%	Significantly reduce carrying costs
	Reduce work-in-process inventory <40%	Minimize shipping costs
		Decrease investment in inventory
		Eliminate returns and reshipping costs
<b>Estimated Sales Increase</b>		

<b>Company</b>	<b>Neptune Web</b>	<b>Kinaxis</b>
<b>Function</b>	eCommerce Solutions Website Design	Value Chain Collaboration Demand Management
<b>Estimated Cost</b>	N/A	N/A
<b>Estimated Duration</b>	N/A	N/A
<b>Estimated Cost Reduction</b>	N/A	N/A
<b>Estimated Sales Increase</b>	N/A	N/A

<b>Company</b>	<b>Datacraft Solutions</b>	<b>Visible Inventory</b>
<b>Function</b>	Electronic Kanban System	Inventory Stocking
<b>Estimated Cost</b>	\$20,000 Initial ~\$5000 per Month per 5 slots	N/A
<b>Estimated Duration</b>		N/A
<b>Estimated Cost Reduction</b>	50% Decrease in Inventory Increase Inventory Turns (<10x)	20% Increase Productivity 50% Decrease Cycle Time 2-3x Inventory Turns
<b>Estimated Sales Increase</b>		General Increase Increase Gross Margin

<b>Company</b>	<b>CEVA Logistics</b>	<b>SCA Tech</b>
<b>Function</b>	Logistics Planning	Demand Management Cost Modeling
<b>Estimated Cost</b>	N/A	N/A
<b>Estimated Duration</b>	N/A	3-4 Months
<b>Estimated Cost Reduction</b>	N/A	N/A
<b>Estimated Sales Increase</b>	N/A	N/A

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