Agent Technologies, Inc.

Increasing Profitability through Product Standardization

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Executive Summary

As demand for customized products increases, new product designs proliferate, frequently using different designs for similar functions. These new designs, although created to meet customer demands, can create numerous inefficiencies such as: increased operating costs, complexity in procurement and communication and a decrease in delivery speed.

How will your business face the challenge of reconfiguring components to meet different customer needs, eliminating redundancy, generate cost savings while reducing multiple platforms?

This white paper outlines several issues that businesses must address in order to become effective in creating value by systematizing and standardizing products, engineering processes and production methods. We will address:

- reduction in the number of subcomponents with redundant functionality
- storeroom cost reduction
- engineering cost reduction

Agent Technologies, Inc. can provide a number of services targeted at assisting in the deployment of standardization strategies, including consultation on:

- systematizing and standardizing products
- standardizing engineering processes
- standardizing production processes

Agent Technologies, Inc.'s services for *systematizing and standardizing products* assists in helping you identify product families using proven methodology and best-of-breed features.

Agent Technologies, Inc.'s services for *standardizing engineering processes* allow you to reduce engineering costs by focusing on models that are customizable and reduce design time.

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Product standardization is essential for organizations seeking to efficiently customize their products. By 2005, 45% of mobile phones will be customized. By 2006, drugs will be customized for genetically identified, at-risk populations. By 2015, up to 30% of automobiles will be customized to some degree from cosmetic features to safety features [1]. Indeed, the made-to-order segment is growing quickly. However, without product standardization, manufacturers will increasingly see costly expenses for their made-to-order goods.

2. Current Problems Without Product Standardization

Currently, companies face many challenges if they do not rigorously standardize or systemize their products. These challenges include:

Engineering Issues

- Slow delivery in design of deliverables
  (Many engineering hours in engineering different subcomponents)
- Slow cycle time and inefficiency when engineering custom orders

Sales and Marketing Issues

- Delays in turnaround on requests for proposals

Manufacturing Issues

- Delays and inaccuracy in creating designs and drawings

Corporate Issues

- Increased Operating Costs
- Decreased Profitability

3. What is Product Standardization?

Product standardization is the process of eliminating redundant products, platforms and processes and systematizing these elements into a defined structure for future growth and cost reduction. *Standardization focuses at using standard parts and part derivatives in same function applications.*

When standardization occurs, product offerings (sometimes referred to as Stock Keeping Units or SKUs) are eliminated and systematized for greater efficiency. This is especially important in product categories where customers focus principally on price. If one product is relatively the same as another, offering multiple SKUs will not be that important to the consumer and will be a poor source of revenue.

When standardization occurs, platforms are also eliminated and systematized for greater efficiency. Prior to standardization, many manufacturers find themselves maintaining multiple platforms because of their different product offerings, acquisitions or because of the selective implementation of new technology. Eliminating multiple platforms can result in dramatic cost savings in operating *expenses*. Recently, a large consumer products company eliminated 13 of its 14 global manufacturing platforms, deciding that all of its global production facilities will use one standard platform. The company is expecting a cost savings of 500 million dollars over the next five years.

4. What are the Benefits to Product Standardization?

Product standardization offers a number of benefits for organizations, including operating cost reduction, increased speed in product delivery and increased profitability.

4a. Storeroom Cost Reductions

Organizations can expect significant savings in operating costs after standardizing their products. With the reduction of inventory, storeroom costs (the inventory carrying costs for an item) are greatly reduced. Storeroom costs for an item tend to be approximately twenty five percent of the value of the item per year, due to taxes and storeroom operation costs. In reducing inventory, this cost savings is significant.

4b. Product Supplier Cost Reductions

Another operating cost reduction that many companies find is in leveraging economies of scale. Instead of ordering many different parts, the process of product standardization creates the opportunity for a company to order large quantities of only a few parts. This can lead to significant savings from vendors.

4c. Engineering Cost Reductions

Another important, yet frequently overlooked, savings regarding product standardization is the reduction of engineering costs. After an organization standardizes their products, platforms and processes, engineers do not have to focus on new system design and development. This means that new and relatively inexperienced engineers can be utilized because they are given a template to follow with defined standards in place. Engineers can then focus on productivity instead of designing a new system for each new product. This savings in engineering time while using entry-level and relatively inexperienced engineers is significant.

4d. Increased Delivery Speed

Another important benefit to standardizing products is in the reduction of production and delivery time. Product standardization allows for time to be saved throughout the sales, engineering, manufacturing and delivery process. Using a standard template, engineers can quickly add products to existing platforms. This increased delivery speed will increase the utilization of engineers and allow for quicker delivery time your customers.

5. Standardization Considerations

There are several items that must be considered prior to implementing a product standardization program. These areas include considering your organization's usage of commercial parts, fabricated parts and standard assemblies/subassemblies.

5a. Commercial Parts

When utilizing commercial parts in a product standardization program, there are several considerations to keep in mind.

1. One must first understand if the product is available in the *global market*. If a commercial part is to be used on platforms globally, the commercial part must be readily available from a reliable vendor.

2. A second consideration in product standardization is to understand the *stability* of the commercial part. If the part has a record of changing frequently, the standardization process will not have the desired affect. It is critical that a commercial part be stable, in order to work within a standardized process.

3. Another consideration is *price*. Consider the multiple-use of a commercial part from a single vendor with a proven track record. Even though the vendor may not offer the cheapest price on a one-up part, the fact is they can payout because of quantity use over a longer period of time.

4. Another consideration is the *breadth of application* a part can be used in. A part with a broader range of flexibility will last longer than a part with narrow application potential.

5. Another consideration is asking, *"What does the customer use?"* Parts and vendors that *are widely available in your customer base* will be more accepted as a standard. For example, if most of your customer base uses Allen Bradley PLC-5, then the standardization on the customer base will more broadly accept the component.

6. Identify commercial parts that are more *configurable* and which have a broader use within the product lines. These parts will be essential for customizing products.

5b. Fabricated Parts

Unlike manufactured parts, considerations when working with fabricated parts in product standardization have more to do with machining and assembly complexity than price and availability. Establishing standards around the use of parts will go hand in hand with standardizing fabricated assemblies. If common parameters are determined for all of the applications, fabricated parts can be designed and used over and over again. For example, if one dimension is standardized, standard fabricated parts can be used over and over again on a machine.

Once a standard is established for a set of fabricated parts, each one can be optimized to reduce costs in the fabrication process. One example is conveyors on a converting line. One manufacturer recently went from individually engineered conveyers to a single design with a modified vacuum plate design for different product line widths. With this standardization in place, the cost of conveyers was cut in half.

5c. Standard Assemblies/Sub Assemblies

The ability to develop standards for upper level assemblies opens the door for configuration engineering and a reduction in assembly cost. This area is by far the most complicated. Each product and product line needs to identify common product structures and the parameters that differentiate the product lines and their derivatives. This level is the most constraining of the standardization process. It requires a great deal of system thinking and top down design skill

5d. SKUs and Product Categories

Before cutting Stock Keeping Units (SKUs), it is imperative to carefully look at the product categories in which you sell. In premium categories, for example SKUs should be trimmed very cautiously. Because there is typically high customer loyalty for these highly innovative SKUs in premium categories (such as premium breakfast cereals or analgesics) SKU proliferation “tends to be a good thing despite the cost.” [2]. Tylenol, for example,

“comes in regular, extra strength, and children’s dosages; in normal and extended relief; in tablets, caplets, gelcaps, geltabs, and as a liquid; in combination with other over-the-counter medications; in packages that are child-proof and, for arthritis-suffers, in packages that are extra easy to open-all of these and more in a variety of sizes.” [3]

Altogether, Tylenol is sold in at least seventy SKUs. In measuring sales, Tylenol's historic annual growth rate is "clear evidence that consumers take a positive view of this level of choice and variety." [4].

For non-premium product categories, SKU reduction makes good sense. In product categories where customers focus principally on price, one product is relatively the same as another, thus offering multiple SKUs will not be that important to the consumer and will be a poor source of revenue.

In summary, the product standardization process can require a great deal of planning and review of considerations such as the utilization of commercial parts, fabricated parts, standard assemblies/subassemblies and product category.

6. Product Standardization Checklist

As your organization considers product standardization, use this checklist to help strategize and plan:

1. *Identify all components.* Identify the part/part family or products/product family that currently exist. Identify how they are used and the feature and/or benefit of using the component.
2. *Justify the existence* of all components.
3. *Identify all redundant components.*
4. *Eliminate all redundant components.* Rigorously drop all components that are duplicated.
5. *Justify the existence of all components* using only one product family.
6. Eliminate or at least create a plan to *eliminate components* with redundant functionality (if possible).
7. *Determine assemblies and sub-assemblies* from justified parts.
8. Eliminate or at least create a plan to *eliminate assemblies/sub-assemblies* with redundant functionality (if possible).
9. *Design engineering strategies*.
10. *Determine price breaks* from the product's supplier. For example, identify quantity discounts if a large quantity of one part is ordered, versus many smaller orders for many separate components.

7. Agent Technologies, Inc. and Product Standardization

Agent Technologies, Inc. provides a number of services targeted at assisting in the deployment of standardization strategies, including consultation and assistance on:

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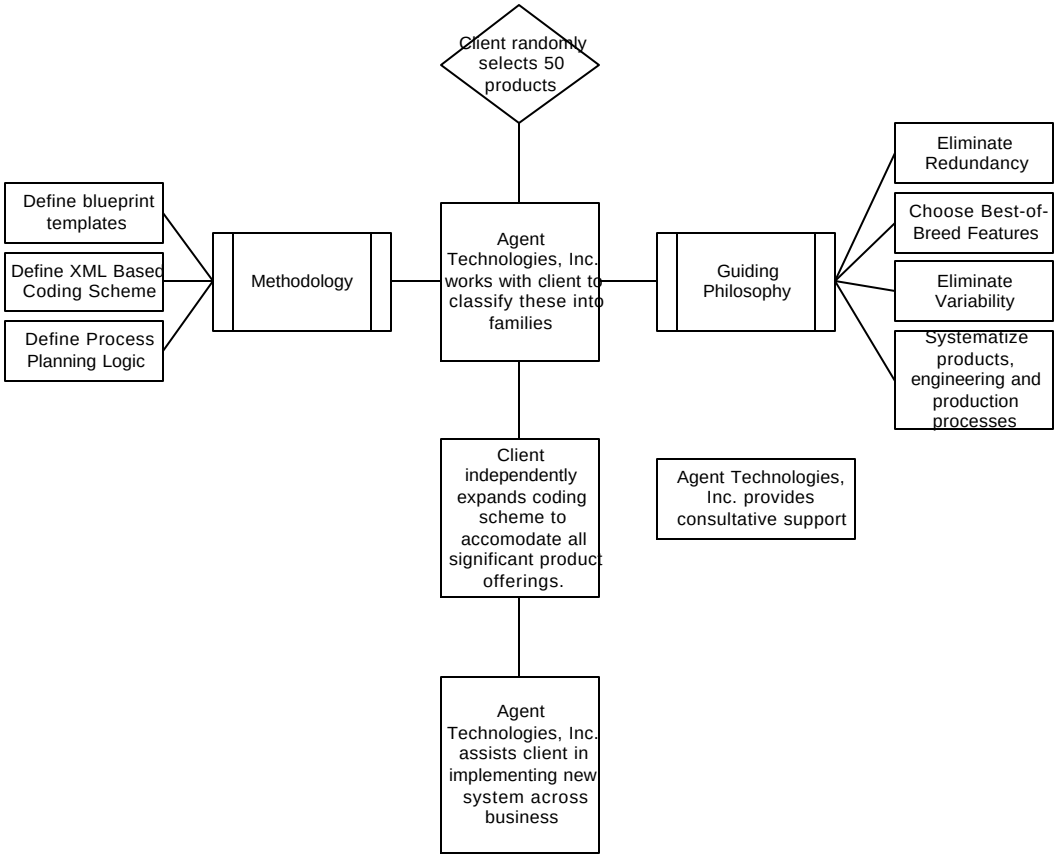
The following diagram describes a proven method utilized by Agent Technologies, Inc. for a product standardization program.

Agent Technologies, Inc. Standardization Process



8. Challenges to Implementing Product Standardization

It takes some forethought and work to determine the functional requirements for each part and subassembly in a standardized system. The structures need to be defined in a way that parameters are defined and the parts can change to meet the varying requirements. A discipline to stay within constraints of the standardized products is essential to making money with standardized engineering. Engineers by nature want to create a much-improved solution to meet each specific customer requirement. This effort often leads to highly specialized solutions that are more expensive and difficult to manufacture, requiring a great deal of new learning in the fabrication and assembly process. Establishing the critical few standard components and only customizing where unique value can be added is the key to successfully win in a highly competitive market.

9. Summary

As manufacturers look for ways to become more efficient, Agent Technologies, Inc.'s services are ready to help optimize the process of product standardization. This process will dramatically lower operating costs and improve delivery time. It will position your organization for custom made-to-order products using standardized products, platforms and processes while realizing greater saving and increased profitability.

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10. References

[1] *Institute for the Future and Peppers & Rogers Group*, Consumer Research Report, 2001.

[2] *The Complexity of Reducing Complexity,* Vijay Vishwanath and Jonathan Mark, Bain Strategy Brief, 1997.

[3] ibid

[4] ibid