

# **PLM Solutions for the CPG Industry:**

The Impact of Formula Management and Specification Management

October 2008

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## Executive Summary

To maintain and grow shareholder value, Consumer Packaged Goods (CPG) and related process industry companies must find approaches to product innovation that can satisfy markets hungry for new products while simultaneously addressing local regulations and keeping cost and time burdens of new product development to a minimum. Increasingly, CPG companies are turning to Product Lifecycle Management (PLM) solutions better known to their peers in discrete manufacturing industries to attempt to overcome these challenges. As PLM becomes more familiar to the CPG industry, the question becomes: how can these tools be leveraged in a way that provides last business impact for these companies?

### Research Benchmark

Aberdeen's Research Benchmarks provide an in-depth and comprehensive look into process, procedure, methodologies, and technologies with best practice identification and actionable recommendations

### Best-in-Class Performance

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Aberdeen used five key performance criteria to distinguish Best-in-Class companies, including target product launch dates, revenue goals, product cost targets, development cost targets, and quality goals. The Best-in-Class:

- Meet these product development targets beginning at an 86% average, while the Industry Average meet these targets on averages ranging from 66% to 86%
- Meet product revenue targets 2.7-times as often and product cost targets 2.9-times as often as Laggard organizations

### Competitive Maturity Assessment

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Survey results show that the firms enjoying Best-in-Class performance shared several common characteristics, including:

- Central management of product formulas as well as materials and substance definitions
- Create product formulas in a structured manner out of materials and substance lists
- Manage regulatory compliance needs across regional markets through automated assessments to product bills of substances

### Required Actions

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In addition to the specific recommendations in Chapter Three of this report, to achieve Best-in-Class performance, companies must:

- Centrally manage product raw materials or ingredients and formulas
- Provide real time visibility into product changes and regulatory compliance

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## Chapter One: Benchmarking the Best-in-Class

Traditional users of PLM systems include companies that develop discrete products, products that have engineering representations such as a discrete Bill of Material (BOM) and 2D or 3D geometric representations. However, there are number of longstanding as well as emerging PLM providers that now provide solutions to address the challenges of processed goods manufacturers. PLM promises to improve product development processes within the CPG industry, but understanding how the value is delivered requires an understanding of the product development pressures faced within this industry.

### Product Development for CPG

Why are process goods manufacturers driven to improve their development process? As it turns out, there is no one dominant pressure but a variety of them. Instead, the pain these companies are distributed across a range of often strategically based pressures, related to market demand and opportunity (Table I).

**Table I: Top Five Pressures Driving CPG Companies to Improve Product Development**

Pressures	All Respondents
Demand for new product types	39%
Consumer demand for 'green' or eco-friendly products	33%
Race to be first to market with new product types around the world	23%
Compliance to regulations required for market entry	20%
Seek lower cost supply chains by leveraging local suppliers	20%

Aberdeen Group, October 2008

The top pressure reported by 39% of CPG manufacturers is customer demand for new product types. This can be contrasted with what Aberdeen typically finds among discrete manufacturers, organizations which consistently report time-to-market related issues as their top pressure. Aberdeen's June 2008 [Engineering Executive's Strategy Agenda](#) report found that shortening project schedules are the top factor driving improvements to product development, reported by 60% of engineering organizations, and nearly twice as often as the following pressure.

For CPG manufacturers, time is still a top pressure, but falls to third in priority. CPG manufacturers recognize that time-to-market is a competitive driver that directly affects the top line, there is a more influential driver: demand for new product types. The name of the game for processed goods

#### Fast Facts

Innovation is a particularly high priority in consumer goods, but taking advantage of innovation requires organizations to efficiently develop and produce products, to this end, the Best-in-Class:

- √ Meet product development targets beginning at an 86% average, while the Industry Average meet these targets on averages ranging from 66% to 86%
- √ Meet product revenue targets 2.7-times as often and product cost targets; 2.9-times as often as Laggard organizations

#### Aberdeen Analysis

Time-to-market related issues are frequently the top pressure driving organizations across industries to improve how they develop products, including findings from the following reports:

[Getting the Process Right: A Fresh Look at PLM and Product Development](#) September 2008

[Engineering Executive's Strategy Agenda](#), Aberdeen's June 2008

[Product Innovation Agenda 2010](#) December 2007

manufacturers is volume. Many of these companies strategically flood the market with not only new products, but new products within entire new application areas that are adjacent to existing markets. This proliferation of products creates new demands for these organizations such as creative new products with new packaging or launching products into new regions with all the labeling and packaging requirements of that market. As a result, innovation plays a large role in the strategies of many consumer processed goods manufactures.

In addition to a generic attention to consumer demand for innovation, CPG companies report a specific focus on green or ecologically-friendly products. As with so many other industries, green is a macro-economic trend in today's consumer goods market. The impact that green is making on product development is massive. Ninety-six percent (96%) of participants in Aberdeen's August 2008 [Greening Today's Products](#) are currently pursuing at least one green development strategy. Customers are demanding greener products, including biodegradable ingredients and eco-friendly packaging. As a result, offering a landscape in which consumer processed goods manufacturers can dramatically differentiate themselves.

Closely tied to that driver is regulatory compliance, reported by 20% of participants. Compliance often has a strategic component as well. In this case, CPG manufacturers are highly motivated to take advantage of global market opportunities which are often gated by regulatory requirements. Ensuring that a product, or a series of product variants, satisfies these varying regulations around the world is no small task. These regulations may apply to specific ingredients, the final product, the labeling or even the packaging. All of which could be within or even under specific regulatory definitions to certain precisions.

Lastly, a large driver in this market is a pressure to lower cost in supply chains by leveraging local suppliers, which can be related to direct product as well as operational costs. Many manufacturers are seeking to go global by sourcing at lower costs in a local manner. This manifests itself in a huge product development challenge in coordinating and verifying bill of substances for ingredients supplied by a huge number of suppliers. This localized and distributed supply chain inherently introduces risks of non-compliance, particularly when viewed in conjunction with the issue of regulatory compliance. However, if done right, this approach can yields large benefits in cost savings.

## **Challenges of Improving New Product Development**

However, when asked to prioritize the challenges of developing new products, CPG manufacturers did identify a dominant pressure: the difficulty of producing products at low volumes with scalable costs (56%). With shorter profitability windows, CPG companies must find ways to deliver more products and variants in order to grow revenue. If you go from one package to another or one product to another there are changes needed in the line to change out the right feedstock. For organizations that rely on

"Innovation is the driving force we see. Limiting raw materials is like painting with half a box of paints. You need all the colors all the time. We never formulate to a price, only a concept."

~ Dr. Stephen Smalls  
Technical Director, Product  
Development  
Allingham Beck Associates Ltd.

high volume runs to spread out the fixed costs of plants or equipment, changeovers for low volume products will eat into the cost structure. The challenge then becomes finding ways to produce variations of a single line in succession so that changes to the production line can be minimized. Ideally, an organization will be able to develop a number of variations on a product with only a few ingredient changes. Finding ways to do so can often have a critical affect on a CPG manufacturer's ability to profit from their products.

**Table 2: Top Five Challenges of New Product Development**

Challenges	All Respondents
Difficult to produce products at low volume with scalable costs	56%
Regulations vary widely from region to region around the world	29%
Difficulty in finding local suppliers to regional markets around the world	22%
Labeling requirements vary in regional markets around the world	18%
Difficult to keep track of changes made by suppliers to raw materials or ingredients and formula	17%

Aberdeen Group, October 2008

The following challenges fall into two major categories: the difficulty of managing regulations across global markets and coordinating supply chains.

Product and labeling regulatory variations in different regions of the world can constitute major challenges to organizations attempting to improve their product development processes. In the first case, the challenge emerges from differing regulations around what raw materials or ingredients can be used in products that vary widely around the world. In the second, the challenge emerges from differences in information required and limitations on claims that can be made about the product on labels in different markets. In this second case, it's not a simple as dumping derived information onto a label. Definitions of claims such as 'organic' or that a product is free from Genetically Modified Organisms (GMOs) vary considerably region by region. Formulators can adjust a product so that these specific claims can be made, which has consequences on the development of the product. It can become difficult to know when different product and label regulations are satisfied in which market, particularly when attempting to identify when regulations are violated as changes are made to the formula.

Differences across global markets and regions can present challenges for CPG manufacturers in other ways as well. As mentioned earlier, working with local suppliers is another major challenge. With the volume and variation of suppliers in local regions around the world, it can be difficult to identify the right vendor. Even with a qualified supplier, it can add more data

"The international regulatory environment is very difficult to stay on top of, especially without a dedicated regulatory function. There are so many changes, and it is very difficult to understand the requirements and impacts of each, and to manage them cost effectively."

~ Formulator  
Cosmetics & Toiletry  
Manufacturer

to manage and depends on the ability and willingness of the manufacturer to enforce compliance to regulations.

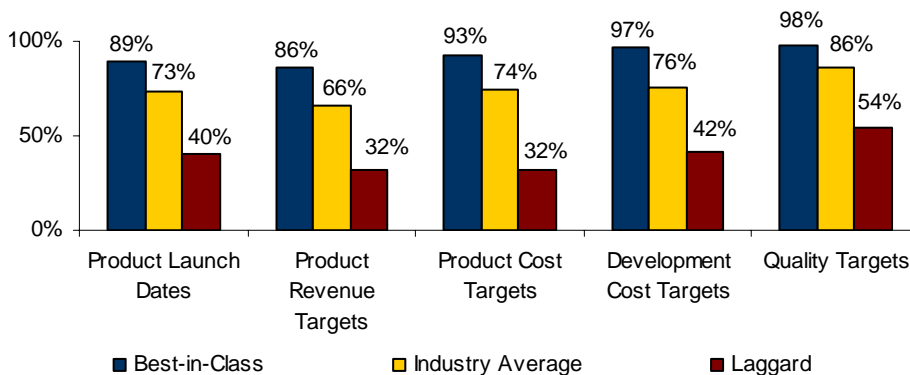
## The Maturity Class Framework

Between September and October 2008, Aberdeen Group surveyed over 140 CPG manufacturers about the strategies they are adopting to improve the performance their product development organizations. To determine what approaches can provide the most tangible business benefit, Aberdeen benchmarked respondents according to five key performance criteria. These criteria evaluated their ability to meet crucial engineering goals, including the percentage of products meeting the following:

- Product launch dates
- Product revenue targets
- Product cost targets
- Product development cost targets
- Product quality targets

Using these metrics, Aberdeen classified companies into the top 20% (Best-in-Class), the middle 50% (Industry Average) and the bottom 30% (Laggard) of performers. Figure 1 displays the performance gaps that define each category.

**Figure 1: The Maturity Class Framework**



Source: Aberdeen Group, October 2008

Meeting any one of these measures can often be accomplished by sacrificing performance in other areas. There is variation in the performance of among organizations in each category in the Maturity Class Framework across these metrics. However, what stands out about the Best-in-Class is the consistency with which these organizations meet all of these targets. While Laggards meet 54% of their product quality targets, they do so while meeting only 32% of product revenue and product cost targets. The Best-in-

Class by contrast, meet 86% of product revenue and 93% of product cost targets while still meeting 98% of quality targets.

In fact, product cost and product revenue present the two areas with the greatest differentiation across the Maturity Class Framework. While the Best-in-Class meet 30% more and 26% of their revenue and cost targets respectively than the Industry Average, the Industry Average in turn meet over twice as many of these targets as Laggard organizations. Balancing these concerns is critical to guaranteeing product profitability. You can develop a formula that represents an innovative and competitive product, but if it involves a substance or material that is brand new then costs and schedules can be difficult to predict using existing knowledge. Additionally, getting new materials and raw materials or ingredients approved by differing regulatory bodies can delay new product introduction, raising costs while potentially eroding revenue and market share.

### The Best-in-Class PACE Model

How do the Best-in-Class balance these concerns and overcome the challenges on their organizations to achieve their high level of performance? The answer involves a combination of adjustments to the product development process, coordination of product knowledge, and investments in supporting product lifecycle management technologies. Table 3 summarizes the capabilities that Aberdeen found to be most clearly tied to Best-in-Class performance.

**Table 3: The Best-in-Class PACE Framework**

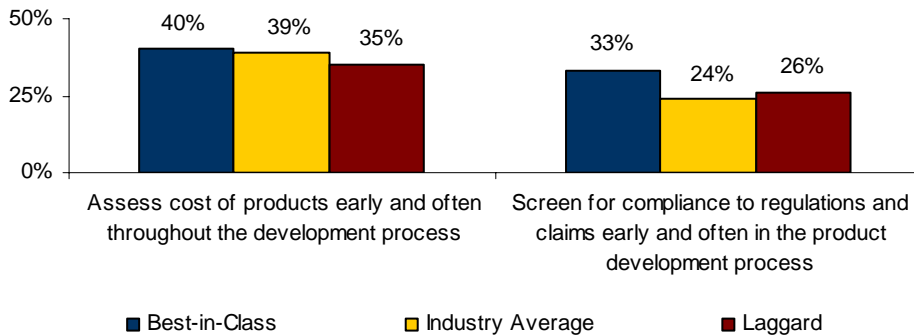
Pressures	Actions	Capabilities	Enablers
<ul style="list-style-type: none"> <li>▪ Demand for new product types</li> <li>▪ Demand for greener products</li> <li>▪ Race to be first to market</li> </ul>	<ul style="list-style-type: none"> <li>▪ Assess cost early and often</li> <li>▪ Screen for compliance early and often</li> </ul>	<ul style="list-style-type: none"> <li>▪ Build formulas out of predefined ingredients</li> <li>▪ Ingredient and formula specifications managed centrally</li> <li>▪ Baseline labeling and claims information generated automatically and then edited</li> <li>▪ Changes to formula result in automatic update of specification and compliance screening</li> </ul>	<ul style="list-style-type: none"> <li>▪ Structured formulation applications</li> <li>▪ Formula management systems</li> <li>▪ Search technology</li> </ul>

Source: Aberdeen Group, October 2008

### Best-in-Class Strategies

On a strategic level, the top actions adopted by the Best-in-Class to improve the performance of their product development organizations do not differ substantially from those adopted by their competitors (Figure 2).

**Figure 2: Most Popular Strategies of the Best-in-Class**



Source: Aberdeen Group, October 2008

The top strategy reported by the Best-in-Class directly addresses the area where the Best-in-Class are outperforming their industry peers at the highest rate. This strategy is not a highly differentiated strategy, leading one to assume that the execution of the strategy makes a bigger impact than the strategy itself (Chapter Two). In either case, the value here is that by accurately assessing costs earlier on, companies will end up funding the right product projects or initiatives. That will typically translate into more realistic targets for product costs and ultimately on-target margins more often than not.

The second most often pursued strategy of these leaders is assessing compliance to regulations and claims early and often in the process. This is directly related to the top pressures reported by CPG manufacturers around green and regulation and the related challenges of varying local requirements that impede organizations' ability to make improvements. The idea here is to gain visibility into the status of regulatory and claims compliance not only early and frequently because the product formula can change often and dramatically in the development process. With the Best-in-Class 27% more likely than Laggards to adopt, this is a more differentiated strategy than the early assessment of product costs; however, it still does not appear to be a critical contributor to the success Best-in-Class.

By contrast, there are some emerging strategies that are currently only in adoption by a subset of the Best-in-Class, but appear to be making a big difference for these companies (Figure 3). Following through on cost and regulatory assessments is the adoption of an 'initiative management' program by the Best-in-Class. This is an approach by which organizations attempt to selectively identify the product concepts that should be prioritized. Often based on an analysis of anticipated costs and projected revenue streams, this is an approach that can help organizations identify potential dead ends or initiatives to fast track. In addition if you know your costs you are more likely to understand the profitability mix for production. Different brands have different margins and if the company understands the

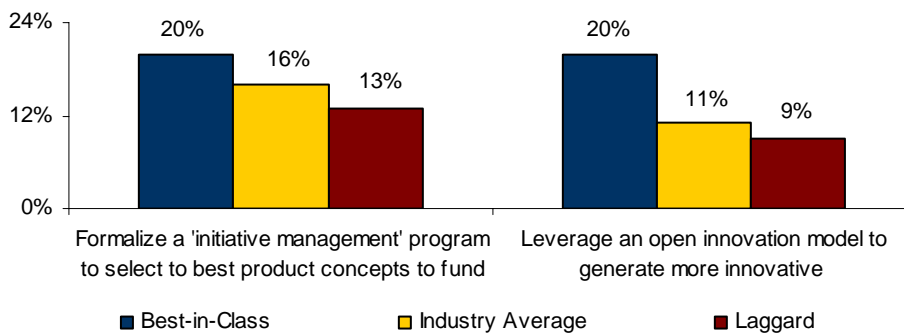
"We encourage experimentation at the laboratory level for those involved in new product development. Nothing substitutes for experience in handling and compounding formulations. Mistakes or surprises need to be made early in the process, not late. Getting samples from suppliers to test often still seems to be problematic. Our policy is that if the supplier does not provide these test samples we eliminate them from our consideration. This still happens for even large, well known suppliers today."

~ Manufacturing Director  
Soaps and Cosmetics  
Manufacturer

profit potential very well, it can market to drive the demand of those high margin products.

Another emerging strategy that is particularly differentiating is an 'open innovation' model. This is an approach that attempts to identify more sources of innovation by opening the process up to downstream stakeholders, outsourced suppliers, and sometimes even to customers as well. This is an approach that can address the pressure for more new products by providing formulators with a fuller stable of new product concepts to development. While only in adoption by 20% of the Best-in-Class, it appears to be making a significant difference for these organizations.

**Figure 3: Top Differentiation of the Best-in-Class**



Source: Aberdeen Group, October 2008

### Aberdeen Insights — Strategy

While strategic initiatives with respect to how an organization approaches the product development process can often seem like an attractive option, more often Aberdeen finds that the difference is in the details. The key point that should be drawn from the strategies of the Best-in-Class is the importance of visibility to the impact of product development decision on cost and regulatory compliance. That Industry Average and Laggard organizations often adopt an 'early and often' approach to the assessment of cost and compliance as well does not diminish their importance. In fact, as we will see in Chapter Two, the difference is often that the Best-in-Class have more information available.

In the next chapter, we will see what the top performers are doing to achieve these gains.

## Chapter Two: Benchmarking Requirements for Success

Aberdeen Group analyzed the aggregated metrics of surveyed companies to determine whether their performance ranked as Best-in-Class, Industry Average, or Laggard. In addition to having common performance levels, each class also shared characteristics in key categories of recipe formulation and specification management. These characteristics (identified in Table 4 through Table 7) serve as a guideline for best practices and describe how the Best-in-Class provide a deeper understanding of recipe data and market requirements as well as improve the efficiency of formulation.

### Case Study - Maintaining Visibility With Supply Partners

To greater and lesser degrees working with outsourced development is a reality of business for more manufacturers today and a challenge that must be addressed. For one manufacturer of skincare and soap products this involved a shift in business model away from developing products in their internal laboratories to working more closely with contract manufacturing partners.

The manufacturer ensures a high level of visibility and central control on projects in development across the design chain. They begin by costing projects programmatically, beginning at the brief stage and continuing through all interim stages to confirm that they remain within the financial expectations of the business. This involves taking into account all aspects of the project, from raw material costs, manufacturing overhead, and predicted advertising and promotion spend. Further, responsibility for projects is extended across the enterprise, with each requiring sign-off from finance, sales, operations, marketing, and technical departments before it can proceed.

This level of control allows the organization to maintain ownership of outsourced design processes. "Becoming a brand owner essentially takes you one step further away from the process. Trust in your partner and clear communication become more important than ever," notes a supply chain manager for the manufacturer. "You never completely overcome the challenge, but each time we go through the process we take what we learn forward."

### The Fundamentals: Formulation and Specification Management

Improving product development performance can often begin the central management of formula and specification data (Table 4). Both the Best-in-Class and Industry Average companies are considerably more likely than Laggards to manage their substance and materials definitions in a centrally managed system. As a result, when changes to a substance's specification, it propagates throughout all of the formulas in which it is used. As a result,

#### Fast Facts

The Best-in-Class are able to leverage a greater degree of visibility to product data and market regulations. They are able to do so through:

- ✓ Central management of product formulas as well as materials and substance definitions
- ✓ The creation of product formulas in a structured manner out of materials and substance lists
- ✓ The management of regulatory compliance needs across regional markets through automated assessments to product bills of substances

late stage issues are avoided. Additionally, the Best-in-Class are more likely to manage their product formulas in a centralized location. The benefit here is largely the same, providing a centralized location of formulas for reuse and speeding formula extension development. And to help towards that end, the Best-in-Class are more likely to use search technology to further enhance the reuse of subsets of formulas.

**Table 4: The Competitive Framework - Formulas and Specifications**

	Best-in-Class	Industry Average	Laggard
<b>Formulas and Specifications</b>	Raw material or ingredient specifications are managed in a central repository		
	53%	50%	35%
	Formulas are managed in a central repository		
	73%	67%	40%
	Formulas are created in a structured manner out of raw materials or ingredient lists		
	73%	62%	61%
	Search and reuse - search for existing whole or partial formula for reuse		
	73%	63%	27%
Formulator defines constraints that tool uses to find optimal set of raw materials or ingredients for the formula			
53%	41%	19%	

"We carefully look at the mix of raw ingredients we use to minimize inventory and use the same ingredients in multiple formulation. We then develop families of products based on these base formulations."

~ Manufacturing Director  
Soaps and Cosmetics  
Manufacturer

Source: Aberdeen Group, October 2008

However, what may make more of an impact is how this information is leveraged. To this end, the Best-in-Class are leveraging a greater range of specialized capabilities that help them take better advantage of this information.

Specifically, the Best-in-Class are more likely to have their formulators develop products in a structured manner out of centrally managed and defined materials. This enables more reuse of raw materials or ingredients. In addition, the Best-in-Class are using formula optimization as a starting point that lets the system do a portion of the fundamental work in putting a formula together. This enables them to then take it forward with fine tuning the formula to meet the needs of the market, which also helps these organizations to improve the efficiency of product development processes.

While these technologies can facilitate changes of substance and material specifications across formulas, the larger benefit is really in reuse. If you can increase the amount of formula subsets that are reused from formula to formula it can help contain product costs. How? The formula subsets that are reused will often be used in other products that have already gone to market and as a result their costing is more of a known quantity. This takes some of the unstable guessing out of the costing of new raw materials or ingredients or new subsets of formulas. Formula reuse can also help the

manufacturing organization identify the same internal or intermediate materials across products, such as across variants for gel products where the base remains the same as active ingredients or scents change. It can also help organizations manage the sourcing of raw materials, helping organizations reduce the number of vendors that supply the same material.

## Effectively Managing Compliance

The second most pursued strategy of the Best-in-Class is to assess regulatory compliance early and often in the development process. In a fast-changing environment such as product development, changes to formulas and specifications can take place very quickly, with each one having the impact on product or labeling compliance. In order to keep up with these changes, the Best-in-Class are leveraging new technologies to automate the propagation of changes from the formula to the specification and bill of substances which are then used automatically for compliance screening and labeling generation.

### Understanding Your Options: Trade Studies

Product formulas are never right the first time. Developing a final product invariably demands some iterative work back and forth, trying different and new combinations of raw materials or ingredients and formulas to get just the right product characteristics. This aspect of product development is often what creates the necessity to assess things like product cost and regulatory compliance early on. This is primarily true in the lab, but also plays a part in manufacturability studies especially for new product introduction.

The Best-in-Class use the capabilities of newer technologies to keep up (Table 5). Specifically, they ensure that the bill of substances is not only generated directly from the formula but it is also updated in real time as the formula changes. This is also true of product specifications. This enables the formulator to iteratively try new concepts and ideas without the repercussions of obsolescing any regulatory or cost analyses done in a prior iteration.

**Table 5: The Competitive Framework - Enabling Trade Studies**

	Best-in-Class	Industry Average	Laggard
<b>Trade Studies</b>	Bill of substances generated automatically based on formula / recipe		
	47%	46%	32%
	Changes to formula / recipe result in real time update to bill of substances		
	53%	43%	19%
	Changes to formula / recipe result in real time update to product specification		
	40%	31%	30%

Source: Aberdeen Group, October 2008

### Easing Product and Label Compliance

Banned raw materials or ingredients can vary from region to region, making them difficult for formulators to track. However, the ability to quickly assess regulatory compliance becomes easier with newer technologies. In fact, the Best-in-Class use these tools to ensure that formulators are automatically notified about banned materials. This corrective action stops the problem right up front where it originates. Additionally, the Best-in-Class use these new technologies provide automated compliance screening for the formulator as changes are made. Again, visibility into the resulting compliance to regulation is critical to providing insight into the impact of formula decisions that are made.

Developing the correct labeling information for market entry into various regions around the world is also problematic. Like product regulations, claims that can be made on labeling vary a great deal from region to region. The Best-in-Class adopt technologies to automatically generate required product specifications and labels, which provides formulators and others a baseline they can edit and fine tune them, rather than creating new materials from scratch.

"It is difficult to get the regulations right. They change all the time. We have a central person who is allowed to put information into our portal – this portal is where everyone can see what information is in the system and whether you meet all the requirements to use that product. This approach prevents us from using a material that can't be used."

~ Manager  
Food and Beverage  
Manufacturer

**Table 6: The Competitive Framework - Product and Label Compliance**

	Best-in-Class	Industry Average	Laggard
<b>Regulatory Compliance</b>	Formulator is automatically notified about banned raw materials or ingredients they should not use while formulating		
	73%	70%	39%
	Changes to formula / recipe result in real time update to product specification		
	40%	31%	30%
	Baseline regulatory and claims label specification generated and then edited		
	47%	39%	19%
	Baseline labeling specification information is generated and then edited		
60%	46%	32%	

Source: Aberdeen Group, October 2008

### Enabling Technologies

Traditionally, formulas have been developed using one-off spreadsheets spread on formulator's desktops around the lab, which is still the case for many manufacturers. Increasingly, specialized structured design applications are becoming available that are specifically developed to facilitate the development of product formulas. At the same time formula management

tools provide the ability to more effectively manage product specifications and formula data. In addition, search technologies enable a large amount of this reuse by allowing formulators to quickly and easily look for and find these formula components.

**Table 7: Technology Enablers - Formula Development and Management**

	<b>Best-in-Class</b>	<b>Industry Average</b>	<b>Laggard</b>
Structured formula design	29%	19%	19%
Formula management	67%	39%	45%
Search technology	60%	46%	35%

Source: Aberdeen Group, October 2008

The value offered by these new technologies is centered in the capability to build formulas out of a list of ingredients, materials or subset of another formula from a centralized formula management system. In other words, these tools provide the opportunity to reuse existing product assets in new ways. Regardless of whether it is a spreadsheet or specialized formula design application, the critical capability is building formulas out of standardized lists and getting that formula back into the formula management tool.

On one hand, reuse helps streamline product development processes, providing formulators with the ability to avoid redundant work or wasted effort searching for information. This can be done using spreadsheet files or across shared drives, but a formula management system can provide the advantages of central access to information and automated management of changes. These solutions can also provide the opportunity to track and manage raw materials or ingredients and changes across the supply chain as well as regulations across markets. This can provide a fuller view of products and provide the opportunity to optimize mixes of raw materials or ingredients to rapidly introduce innovative products and variants. Ultimately, this translates into the ability to bring more innovative products to market more efficiently.

**Aberdeen Insights — Technology**

What is playing out in the processed goods industry is very similar to other recent trends in product development in other industries. Many key assessments of the product, such as costing and regulatory compliance, are often delayed because of rapid changes. Increasingly development organizations realize the importance of these assessments is finding the means to perform these assessments in a way that is associative with formulas as they change. It's a subtle but absolutely critical ability that affects the top and bottom lines of the business.

## Chapter Three: Required Actions

Product lifecycle management solutions, such as formula design tools and formula management systems have the potential to help CPG organizations to overcome a number of a range of the challenges facing them today, as well as improve the efficiency of formulation, which can provide the opportunity to bring more innovative products to market more effectively.

However, it can be difficult for an organization to recognize how they can most effectively begin to use these tools. Few organizations will benefit by attempting to immediately leverage of these tools in the way exhibited by the Best-in-Class. Organizations will be best served by building from the capabilities they currently have in place rather than attempting to take full advantage of these tools upfront. The following actions will help spur the necessary performance improvements:

### Laggard Steps to Success

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- **Centrally manage raw materials or ingredients.** Central management of the raw materials or ingredients and materials formulators use to develop products provides a solid foundation for how the Best-in-Class develop products. This makes a wider range of knowledge available and more easily accessible to formulators, which can reduce effort wasted hunting it down. This also helps ensure that when changes are made, there is only one location where it needs to be made, keeping product knowledge more consistent as well. The Best-in-Class are 51% more likely than Laggards to centrally manage this information.
- **Transition to structured formulation.** With substance data centrally managed, the Best-in-Class are able to more efficiently develop formulas by repurposing substance lists. This can be contrasted with the use of spreadsheets or other unstructured means to formulation, which limit the ability to reuse knowledge.

### Industry Average Steps to Success

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- **Centrally manage formulas.** After central management of raw materials or ingredients and structured creation of formulas, the next step is the central management of the formulas themselves. The central benefit here is the ability to reuse existing formulas for new products. Seventy-three percent (73%) of the Best-in-Class central manage product formulas. In particular, the ability to identify similar formulas that can be tweaked to develop new products rather than starting from scratch can have significant impacts on development costs and schedules.
- **Enable real time visibility.** Once the basics are covered, the Best-in-Class ease the challenge of compliance automatically

### Fast Facts

Transforming product development performance to match the Best-in-Class can be a long road. Organizations are best served by identifying the areas where they can see the most immediate benefit and ensure they've satisfied the basics before they move on to advanced capabilities, and ensure that they:

- √ Centrally manage product substances and formulas
- √ Provide real time visibility into product changes and regulatory compliance
- √ Take advantage of structured formula design

generating bills of substances based on formula recipes and enabling automated compliance screening of these bills of substances, both as they are created and as they are updated. By automating this step, the Best-in-Class are able to take the mystery out of regulations and ensure as well as free formulators from screening for compliance to focus on developing new concepts.

## Best-in-Class Steps to Success

- **Automatically optimize formulas.** Fifty-three percent (53%) of the Best-in-Class further leverage automation to optimize the raw materials or ingredients used in a formula. This can effectively change the nature of formulation. Rather than begin from scratch, formulators define constraints and leverage automated recipe development to find a formula that meets those constraints. The bulk of their work can then be devoted to fine tuning the recipe to meet product needs. This improves efficiency and enables these organizations to explore a greater number of options more effectively.
- **Automatically develop baseline label specifications.** While, 60% of the Best-in-Class extend automation to include labeling product specifications, only 47% of the Best-in-Class automatically generate labeling that reflects product claims and regulatory data. This further improves these organizations' ability to manage regulations as well as take the heavy lifting out of label creation. Instead of working from scratch for every region, these companies enable formulators to simply refine automatically generated labeling to fit specific needs.

### Aberdeen Insights — Summary

While the findings from this benchmark for technology adoption are strong, these solutions in and of themselves are not the answer. Solutions applied to a broken development process will not fix the process. It's critical to review your development process, understand what needs to change and then determine how to enable it. Technology is an enabler and not a solution by itself.

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## Appendix A: Research Methodology

Between September and October 2008, Aberdeen examined the experiences, of more than 140 enterprises in the consumer packaged goods industry regarding their new product development programs and use of PLM. Aberdeen supplemented this online survey effort with interviews with select survey respondents, gathering additional information on their new product development strategies, experiences, and results.

Responding enterprises included the following:

- *Job title / function:* The research sample included respondents with the following job titles: manager (26%); vice president or senior vice president (8%); director (14%); senior management (11%), staff (13%).
- *Industry:* The research sample included respondents from consumer packaged goods (24%), food and beverage (9%), pharmaceutical / chemical (18%), and health and beauty aides (23%).
- *Geography:* The majority of respondents (54%) were from North America. Remaining respondents were from Europe (25%), South or Central America (13%), and the Asia-Pacific region (13%).
- *Company size:* Twenty-four percent (24%) of respondents were from large enterprises (annual revenues above US \$1 billion); 18% were from midsize enterprises (annual revenues between \$50 million and \$1 billion); and 56% of respondents were from small businesses (annual revenues of \$50 million or less).
- *Headcount:* Thirty percent (30%) of respondents were from large enterprises (headcount between 1 and 99 employees); 18% were from midsize enterprises (headcount between 100 and 999 employees); and 51% of respondents were from large businesses (headcount greater than 1,000 employees).

Solution providers recognized as sponsors were solicited after the fact and had no substantive influence on the direction of this report. Their sponsorship has made it possible for Aberdeen Group to make these findings available to readers at no charge.

### Study Focus

Respondents completed an online survey that included questions designed to determine the following:

- √ What is driving CPG manufacturers to use PLM solutions
- √ The challenges they face in successfully implementing and taking advantage of the solution
- √ The actions these companies are taking to deploy PLM effectively
- √ The capabilities and technology enablers they have in place to deploy and support their use of PLM

The study aimed to identify emerging best practices for PLM implementations for CPG manufacturers and to provide a framework by which readers could assess their own capabilities and plan their own deployments.

**Table 8: The PACE Framework Key**

Overview
<p>Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows:</p> <p><b>Pressures</b> — external forces that impact an organization’s market position, competitiveness, or business operations (e.g., economic, political and regulatory, technology, changing customer preferences, competitive)</p> <p><b>Actions</b> — the strategic approaches that an organization takes in response to industry pressures (e.g., align the corporate business model to leverage industry opportunities, such as product / service strategy, target markets, financial strategy, go-to-market, and sales strategy)</p> <p><b>Capabilities</b> — the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products / services, ecosystem partners, financing)</p> <p><b>Enablers</b> — the key functionality of technology solutions required to support the organization’s enabling business practices (e.g., development platform, applications, network connectivity, user interface, training and support, partner interfaces, data cleansing, and management)</p>

Source: Aberdeen Group, October 2008

**Table 9: The Competitive Framework Key**

Overview	
<p>The Aberdeen Competitive Framework defines enterprises as falling into one of the following three levels of practices and performance:</p> <p><b>Best-in-Class (20%)</b> — Practices that are the best currently being employed and are significantly superior to the Industry Average, and result in the top industry performance.</p> <p><b>Industry Average (50%)</b> — Practices that represent the average or norm, and result in average industry performance.</p> <p><b>Laggards (30%)</b> — Practices that are significantly behind the average of the industry, and result in below average performance.</p>	<p>In the following categories:</p> <p><b>Process</b> — What is the scope of process standardization? What is the efficiency and effectiveness of this process?</p> <p><b>Organization</b> — How is your company currently organized to manage and optimize this particular process?</p> <p><b>Knowledge</b> — What visibility do you have into key data and intelligence required to manage this process?</p> <p><b>Technology</b> — What level of automation have you used to support this process? How is this automation integrated and aligned?</p> <p><b>Performance</b> — What do you measure? How frequently? What’s your actual performance?</p>

Source: Aberdeen Group, October 2008

**Table 10: The Relationship Between PACE and the Competitive Framework**

PACE and the Competitive Framework – How They Interact
<p>Aberdeen research indicates that companies that identify the most influential pressures and take the most transformational and effective actions are most likely to achieve superior performance. The level of competitive performance that a company achieves is strongly determined by the PACE choices that they make and how well they execute those decisions.</p>

Source: Aberdeen Group, October 2008

## Appendix B: Related Aberdeen Research

Related Aberdeen research that forms a companion or reference to this report includes:

- [\*Product Innovation Agenda 2010\*](#); December, 2007
- [\*Global Design Strategies for Consumer Packaged Goods\*](#); February, 2008
- [\*Enabling CPG Innovation: The Roles of ERP and PLM\*](#); December, 2006
- [\*CPG Innovation Agenda\*](#); December, 2005

Information on these and any other Aberdeen publications can be found at [www.aberdeen.com](http://www.aberdeen.com).

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