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The Sustainability Advantage in CPG:
Accelerating Success with Eco-Design

for Dassault Systèmes

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Cambashi Inc. - The Sustainability Advantage in CPG: Eco-Design for Profit #U3008

Executive summary

Three times as many consumers today are interested in buying eco-friendly products than just 15 years ago.[1] One in five seek out the most environmentally friendly product available to them and half of all consumers consider a product's sustainability when deciding which product to buy. Taking note of this trend, CPG companies — both brand-owners and private label providers — are redesigning products and processes to ensure that they meet the product sustainability targets expected by their customers.

Sustainability has benefits beyond appealing to consumers. Companies that report sustainability efforts are shown to have higher median gross margins than those not undertaking such efforts. According to a PricewaterhouseCoopers study, companies that achieved recognition for their sustainability efforts had 15% higher gross margins and outperformed "non-sustainable" companies on a number of other key financial measures.[2]

Environmentally conscious product design — from material selection to manufacturing process design through value chain decisions involving suppliers and finished product logistics — requires access to data and business processes that consider environmental impact, profitability and consumer appeal. Eco-design development processes and data are most effectively managed using a Product Lifecycle Management (PLM) approach, ideally based on software solutions that foster collaboration and reuse of intellectual property, provide accurate audit information and traceability, and measure, track and optimize compliance.

Eco-design is no longer optional. Consumers want to know what is in the products they buy, and CPG companies must embrace sustainability as a business strategy to remain competitive. In fact, most food and beverage company executives agree that sustainability should be embedded throughout their subsidiaries and supply chains. This is not currently the case for many companies, and nearly every CPG company has work yet to do on sustainability.

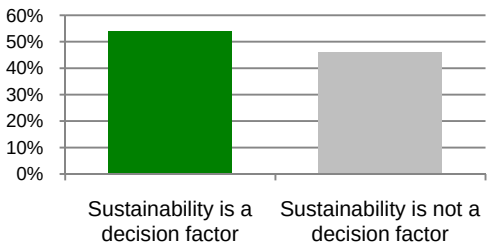
Winning companies will build sustainability into their business models because of the financial and competitive rewards that this strategy brings — not to mention the long-term environmental benefits. Sustainability-driven strategies can lower material and energy costs, decrease waste, reduce liability exposure due to regulatory and certification requirements and improve brand equity. Building environmental compliance into the product development process allows your experts to focus on their highest-value tasks: consumer-centric design of products that enhance your brand.

1 © GfK Roper *2008 Green Gauge Survey*, cited at 2009 NRFConvention and Expo by Neil Stern and Willard Ander, authors of *Greentailing*

2 © Grocery Manufacturers association, 2009 Financial Performance Report, p50

Consumers demand sustainability

Research shows that one in five shoppers considers sustainability to be the deciding factor in their selection and three others are influenced by it. So, for example, five consumers stand in front of a display of dozens of bottles of laundry detergent. Three will choose the brand that offers the best perceived value: the biggest bottle for the lowest price. One will select the brand that meets "soft" criteria such as "smells nice". The final consumer joins a growing number of buyers who choose products based on how "green" they are, by selecting the most environmentally friendly product available to them. Figure 1 shows that, in total, over half of consumers consider sustainability when deciding which product to buy[3] — a significantly higher number than just a few years ago.



Source: Grocery Manufacturers Association (GMA) /Deloitte Green Shopper Study 2009

Figure 1: According to a recent survey, fifty-four percent of shoppers interviewed consider sustainability one of their decision-making factors and are 'Leaning Green'

End-consumers and business partners are increasingly driving CPG companies' strategies for developing sustainable products and services. This interest has accelerated radically in the past five years. It only makes sense to examine the environmental impact of products, production processes and value chains. Many in CPG are now redesigning business strategies with sustainability as the centerpiece.

- In the case of laundry detergent, this may be a bottle that requires less plastic or a more concentrated solution that weighs less to ship, reducing fuel consumption. An IRI consumer survey shows that "Though currently just 2% of the total detergent market, the growing demand for biodegradable, non-toxic and plant-based products is reflected in a 66% increase in green product sales during the past year within a category that has overall flat sales."[4]
- For food, "green" may mean the use organic produce, sustainable farming techniques, and lower packaging content to reduce waste.
- In beverage and other consumer categories, fair trade, packaging and product impacts, and social responsibility for employees and suppliers are all critical elements of purchasing decisions. For many people, the choice is clear: when possible, consumers will opt for the sustainable alternative. When considering employment options, many include the environmental and social policies of prospective employers in their final decision.

Consumers today are often confused about which product represents the most sustainable choice. There are few standards that help consumers compare products to one another, and it is something

3 © Grocery Manufacturers Association, *Finding the Green in Today's Shoppers*, p5

4 © Information Resources, Inc. (IRI) Sustainability Survey summary: *Consumers Consider Sustainability when Picking CPG Brands*

Importance of getting clearer information from retailer and/or manufacturer on how green a product is	
Very important	21%
Important	36%
Somewhat Important	28%
Somewhat Unimportant	7%
Not at all Important	8%

Source: March 2010 NRF Webinar The Consumer and Sustainability, presentation by Willard Ander, co-author of *Greentailing*

Figure 2: Consumers want clearer information about a product's sustainability impact, and it appears that regulations will eventually require such labeling.

that consumers seek. Figure 2 shows that many consumers would like more sustainability information available about the products they buy[5].

Business benefits can be significant

The term "sustainability" was first defined by the World Commission on Environment and Development in 1987 as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." In practice, it is the combination of crafting products that appeal to consumers, have minimal impact on the planet, and enable the enterprise to thrive by developing profitable products. In fact, Weatherchem identified this "Triple Bottom Line of People, Planet and Profit as a broader way to measure success" as its top CPG trend for 2010.[6]

For many consumers, the choice is clear: when possible, they will opt for the sustainable alternative.

Profitability, the last "out" of the triple play, is a key reason to go green. In addition to affecting consumer perception of a brand, sustainability efforts have bottom-line impact:

- Using less energy in manufacturing lowers both overhead and product costs, freeing up capital that could be invested in expanded sales coverage, new product innovation or capital improvements, leading to improved competitive position.
- Rethinking material usage and making changes to lower quantities (minimized packaging) and more sustainable materials (recycled or recyclable) can reduce waste and emissions and often lower materials costs.
- Product, packaging and supplier changes for green initiatives should also factor in the supply chain and logistics impacts. Often, sustainability for CPG companies lies in lower fuel and energy consumption (and thus lower costs) during transportation, warehousing, and handling of ingredients and finished goods.
- In all cases, lowering costs improves margins in markets where raising prices is difficult and allows CPG companies to offer eco-friendly products at competitive prices. Most consumers expect sustainable products but are not prepared to pay more for them.
- Finally, a corporate policy of sustainable design practices also helps CPG companies stay ahead of regulatory requirements, avoiding costly and brand-damaging recalls and penalties.

5 © 2007 Greentailing Survey by Neil Stern and Willard Ander, in 2008 book *Greentailing,* Wiley ISBN 978-0-470-28858-0; from NRF webcast March 24, 2010 http://www.nrf.com/modules.php?name=Event_Calendar&op=viewlive&sp_id=188

6 © 2009 Weatherchem, Top 10 Consumer Packaged Goods Sustainability Trends for 2010.

The process of re-evaluating products and production processes for sustainability will shift the focus back to product design. This in turn opens the door for innovations that improve the customer experience.

Emerging regulations governing CPG products and their labelling can open up new markets and reduce exposure to legal actions arising out of non-compliance. Greater regulation is inevitable; building a compliance strategy today can position CPG companies to meet future requirements.

CPG suppliers are increasingly required by retailers such as Walmart to produce goods in more environmentally and socially responsible ways. They must now prove their compliance with retailers' sustainability mandates such as Walmart's "responsible sourcing" guidelines.

Companies that achieved recognition for sustainability efforts had 15% higher gross margins.

Similarly, brand owners such as Procter & Gamble (P&G) "score" supply chain partners on factors such as electric and fuel energy use, water use, hazardous and non-hazardous waste disposal and gas emissions. Kimberly-Clark (K-C) Professional business unit is designing products that either use recycled fiber or virgin fiber from suppliers with forest-management certifications or that has lower packaging needs, or that consumers will use less of than similar products[7]. These are examples of a systemic approach to implementing eco-design throughout the partner base and the product line.

All of these efforts pay off. According to a study by PricewaterhouseCoopers, in 2008 companies that achieved recognition for their sustainability efforts had 15% higher gross margins and outperformed non-sustainable companies on a number of key financial measures.[8]

Sustainability-driven strategies can lower costs, decrease waste and improve market share. How can your company or brand get in on making sustainability a core strategy?

The mandate is clear, the process is not

P&G and K-C are not alone. In the UN survey, 81% of CEOs said their companies have embedded sustainability into their companies' strategy and operations, up from just 50% in 2007. Whether the mandate comes from the top executive, was started by an outside market force, a trading partner, a competitor, or consumer demand, sustainability is a requirement today.

Among CPG CEOs, 63% felt that sustainability efforts were very important and 35% reported that sustainability was important to the future success of their businesses[9] as Figure 3 shows. Although almost all of these CEOs agree that sustainability should be embedded throughout their subsidiaries and supply chains, only half report that this is in place today.

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[7] © 2009 Kimberly-Clark Corporation *Sustainability Report Summary*, p 8

8 © Grocery Manufacturers Association, *2009 Financial Performance Report*, p50

9 © UN Global Compact-Accenture CEO Study 2010, *A New Era of Sustainability*

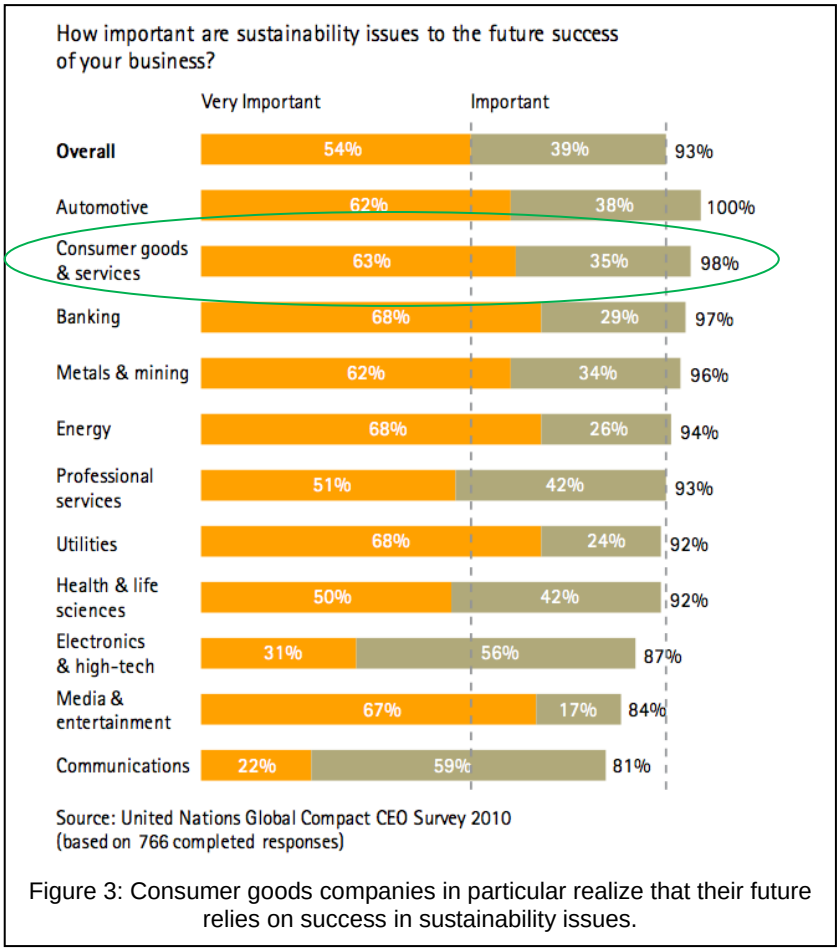


Figure 3: Consumer goods companies in particular realize that their future relies on success in sustainability issues.

PLM enables sustainability

Companies typically start out on a sustainability effort by gathering information to assess the environmental impact of their products and production processes for the product or process under question. They examine bills of material to identify product components, work through ERP systems for sourcing information, contact suppliers for raw material information … Then someone wades through mountains of data in disparate forms, trying to come to conclusions about existing products and manufacturing processes. Clearly, this piecemeal approach will be inadequate in the long run. Major retailers and brand giants require repeatable, demonstrable business processes.

The UN study referenced earlier found that 49% of CEOs cite the complexity of implementation across functions as the most significant barrier to implementing an integrated, company-wide approach to sustainability.[10] Fortunately, this major challenge can be addressed by a product lifecycle management (PLM) strategy.

> The complexity of implementation across functions is the most significant barrier to implementing an integrated, company-wide approach to sustainability.

PLM is a holistic strategy that views a product not just as the finished item on the store shelf, but through its full lifecycle. This is central to eco-design, which considers the environmental impact of a product from material selection to disposal, combining environmental sustainability and profitability at all stages. As a product moves from concept through product development to

10 © UN Global Compact-Accenture CEO Study 2010, *A New Era of Sustainability*

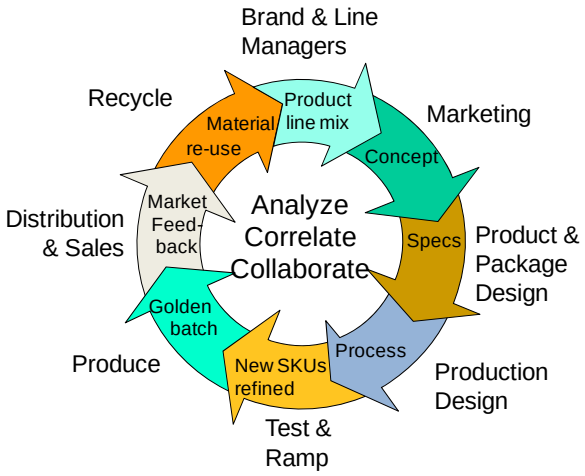


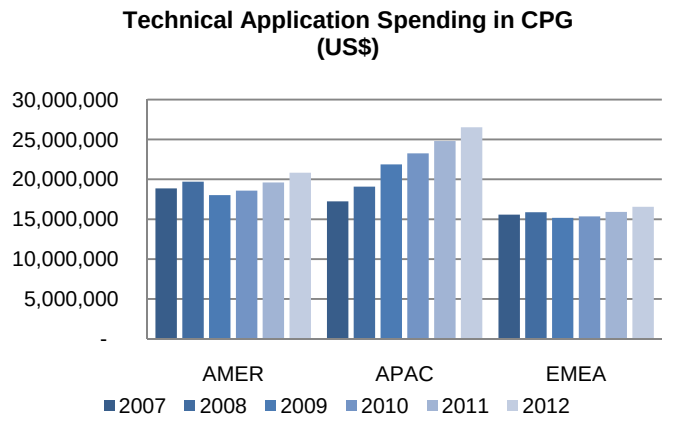
Figure 4: PLM supports multiple CPG business processes and views a product, package and supporting processes through all phases of the lifecycle and thus all teams in the company and supply chain.

market testing and into full scale production, distribution to many markets, changes and product line extensions, and eventual retirement from the market, it involves every department in the organization. K-C's CEO mentions design for environment, lifecycle thinking and source reduction as ways to help customers and consumers make more sustainable choices.[11] Figure 4 shows a conceptual view of this business process with a PLM system at its core.

A PLM-enabled, structured process that starts at a product's conception and manufacturing process design offers advantages that a purely reactive approach cannot. It enables manufacturers to create their own internal compliance procedures and policies and develop the reliable, repeatable processes that are essential to avoid being seen as "greenwashing," or appearing hypocritical about environmental compliance. Consumers want to know what is in the products they buy, and being able to offer this information (on the package, for example, or in advertising) is increasingly required to remain competitive.

PLM fosters customer-centric design

Many CPG companies already use elements of PLM for product design and engineering, packaging and production planning. PLM offers the depth and breadth of applications CPG companies need in order to deploy sustainability strategy successfully. Figure 5 shows the growth of spending among CPG companies on technical applications, mostly those involved in PLM.



Source: Cambashi Market Observatory 2010

Figure 5 CPG companies are expected to ramp up spending on technical applications such as CAD, simulation and PLM/PDM.

These PLM users report faster innovation, the ability to explore many more design alternatives, more efficient use of existing intellectual property and other resources, and repeatable

[11] [11] © 2009 Kimberly-Clark Corporation *Sustainability Report Summary*, p2

processes that guide product development. All of that improves the success rate of new product introductions and helps to deliver higher quality, customer-centric products to the market.

PLM software enables companies to manage information about their products within a single-version-of-truth environment — from initial concept through manufacturing to service and disposal — that can encompass internal and external stakeholders. By involving the entire supply chain in reducing the product and packaging footprint, eco-design in the context of PLM enables the management and analysis of enormous volumes of product data to ensure the lowest environmental impact during the product's lifetime.

PLM software enables companies to manage information about their products within a single-version-of-truth environment.

PLM ties together all product-related processes, data, and non-product documentation. For sustainability efforts, PLM can manage requirements for compliance with emerging government and value chain partner regulations; manage data about materials used in products and packaging; and facilitate data exchange with supply chain partners to gather substance information.

PLM technology enables designers to conceive of and virtually experience a product, accelerating the product development process. A PLM solution suite can "bake in" design practices that build sustainable products and manufacturing processes and is a flexible, integrated solution that can adapt to existing product development processes. The components of a PLM solution suite are shown in Figure 6. PLM technologies typically include:

Data management and collaboration: A product data manager or PLM engine that manages the design process, controls access to information and, in the case of eco-design, provides information on the materials and constituents that make up the entire product should be at the heart of any sustainability strategy. In a true PLM environment, this is the component that effectively integrates all of the business process for seamless and constant data sharing among applications and departments.

PLM Application	Roles in Product Lifecycle
Data management and collaboration platform	Manage data, process workflows, support non-engineering input, analyze and report on products at all stages, integrate applications
3D CAD	Design creation, manipulation and experience of products & packaging – new, changes, extensions; working with suppliers and customers on specifications
Simulation or CAE	Engineering analysis for product and packaging optimization
Digital manufacturing	Production process design and optimization for new plants and processes, upgrades and partners
3D lifelike communication	Experience and document interactions with products; manuals, training, work instructions assembly; virtual shopping with consumers for retail focus groups and testing

Figure 6: PLM technologies play a number of roles in the lifecycle, all of which can assist with eco-design.

3D Computer-aided design (CAD). Within a PLM architecture, 3D CAD can be integrated into a data architecture that enable a designer to create, manipulate and experience the types of materials used in a product or package and make a decision on whether the product meets the sustainability criteria for the company. This early visibility into the

sustainability metrics enable changes to be made while they are still inexpensive and have limited overall impact on project schedules.

Simulation (or CAE). By iterating between CAD and CAE, designers can arrive at the solution that optimizes the appearance, performance, and functionality of their design. PLM's collaborative environment enables designers to try out alternatives to find lower material usage, lighter materials for packaging, and configurations that are easier to manufacture yet meet the design specifications. Kimberly-Clark, for example, is using simulation widely in its business. Combining configurable processes with a data management platform keeps activities aligned and allows both experienced and novice users to benefit from consistent data and appropriate processes. The system reduces the turnaround time for the product design validation and testing process, and allows rapid changes to those processes.

A PLM approach to simulation keeps activities aligned, employees productive, and product design validation and testing speedy.

Digital manufacturing. Modeling digital factories can play a huge role in eco-design for those CPG companies that own their own manufacturing facilities or have significant impact into their partners' facilities. Designers can fine-tune products and manufacturing processes to one another to maximize efficiency and minimize use of raw materials and energy while maximizing re-use.

3D lifelike communication. PLM allows designers to explore the buyer's experience with virtual shopping, and fine-tune it to exceed their expectations before a product is ever produced or sold at retail. Since the majority of buying decisions are made at the "first moment of truth" at seeing the product on the shelf, the ability to visualize this early in the design process is valuable. With environmental impact increasingly on consumers' minds, sustainable packaging is a key consideration.

CPG customers report that their PLM infrastructures have led to significant decreases in design cycle times; improved communication between product and package developers, manufacturing engineers, and others involved in bringing the product to market; fewer physical prototypes; and faster time-to-market. CPG companies can provide a rapid, creative response to customer requests and market pressures for new ideas, offering optimized high-performance products that lower everyone's costs all along the supply chain from raw materials to transportation.

PLM maintains product data down to its lowest detail level – every design using a particular material will have access to all that is known about it: who supplies it, what it is made of, whether all environmental regulations have been met, original source location and so on. Add in a "design for sustainability" mindset from product inception, enforce the scorecards and metrics the design team should use during their part of the process, audit manufacturing – and you get instant feedback: Is the product compliant in the country of sale? Where will it be on the major retailers' sustainability scale? Will it meet my trading partners' criteria? And does it meet my company's sustainability objectives and strategies?

Sustainability for the future

Strategies fostering sustainability will increasingly be part of the core fabric of successful organizations and will define the leaders in their respective markets. These winners will build

sustainability into their business models because of the financial and competitive rewards that this strategy brings — not to mention the long-term environmental benefits. Sustainability-driven strategies can lower material and energy costs, decrease waste, reduce liability exposure due to regulatory and certification requirements and improve competitive standing with consumers. These strategies lead to financial benefits as well, improving brand equity while increasing revenue and profitability.

Collecting and managing supplier data to ensure compliance with internal and external compliance standards and managing eco-design processes is significantly easier and more cost-effective when reports and analyses can be produced via a PLM infrastructure. Building environmental compliance into the product development process can focus your experts on their highest-value tasks: designing consumer centric products that enhance your brand.

> Companies are starting to realize that their own sustainability is dependent on their actions towards the environment.

Eco-design is no longer optional. Consumers want to know what is in the products they buy and CPG companies must ensure sustainability from the moment each product is conceived to remain competitive. Those who can move rapidly and cost-effectively to an eco-design strategy will be able to delight environmentally conscious customers and consumers while maintaining margins and accelerating market momentum.

Moving forward with eco-design

- Consumers want to know what is in the products they buy – and, while not regulated today, consumer products will ultimately have to display labels akin to food. Will you be ready?
- Sustainability strategy development and execution require highest-level executive buy-in. This is not an IT or R&D initiative, nor is it a sales and marketing project to “greenwash” reality!
- Focus on sustainable processes, not sustainability for individual products or projects.
- Prioritize initiatives using business cases -- replace the worst offenders first for greatest impact.
- Consider that PLM technology helps tie together all of a CPG organization’s product development and operations functions to accomplish the common goal of product sustainability.
- Track impact of sustainability activities on core metrics—e.g., material or energy costs.
- Develop an innovation agenda that builds sustainability principles from design and throughout the lifecycle of product development.
- Starting – even in a small way – will pay off in benefits to the environment, with innovative products and an improved brand image.

About the Sponsor, Dassault Systemès

As a world leader in 3D and Product Lifecycle Management (PLM) solutions, Dassault Systèmes (DS) brings value to more than 115,000 customers in 80 countries. A pioneer in the 3D software market since 1981, DS applications provide a 3D vision of the entire lifecycle of products from conception to maintenance to recycling. The DS portfolio consists of CATIA for designing the virtual product - SolidWorks for 3D mechanical design - DELMIA for virtual production - SIMULIA for virtual testing - ENOVIA for global collaborative lifecycle management, and 3DVIA for online 3D lifelike experiences. DS enables CPG brand manufacturers, private label providers and retailers to leverage these solutions to easily revitalize their brands and stay competitive in an ever-changing market. For more information about DS and our CPG specific solutions, visit http://www.3ds.com/cpg or call 800.382.3342.

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