"The best way to predict the future is to invent it."

— Alan Kay, noted computer scientist

2016

THE FUTURE VALUE CHAIN

gci
GLOBAL
COMMERCE
INITIATIVE

Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

(intel)

Contents

Foreword

Why should we worry about the future when we already have too much to keep us busy today?

There are many reasons:

- Globalisation is having a huge impact on how consumers shop and buy – and how the industry meets their needs.
- Technology is moving at a pace we have never seen before.
- Energy costs are volatile and supplies are dwindling.
- Demographics are shifting as the population ages and migration impacts more of the world's economies.
- Consumer awareness of sustainability and social responsibility is increasing.
- Diversification of channels, including the Internet, is redrawing the industry landscape.

These forces, among others, have the potential to significantly alter the industry's value chain over the next decade.

In May 2006, the Global Commerce Initiative (GCI) initiated a project to understand the forces that will affect our industry over the next 10 years.

The Purpose of this project was to create a vision and enable a dialogue among industry participants to understand how the industry should address or influence these forces in order to assure long-term success.

The Scope of the vision is the value chain to 2016. The Global Commerce Initiative chose this 10-year timeframe to provide a realistic view of the future, rather than an "anything goes" futuristic scenario.

The Objective is a study that:

- Gives the consumer goods industry a comprehensive, more "connected" view of trends.
- Identifies those trends over which we have very little control, but that will have significant impact on the way we operate.
- Identifies trends over which the industry has more control and the ability to influence their course or impact.
- Identifies key areas where we believe companies must collaborate in order to manage the value chain in 2016, based on decisions we make as an industry.
- Identifies areas of work that the GCI will include in its future scope.

This report is in no way prescriptive or exhaustive. The report is intended to encourage debate and dialogue on the forces and trends that will shape the future.

The Call-to-Action, however, requires the industry to step up and address three identified challenges:

1. The industry must *Develop New Ways of Working Together* – including sustainable changes in culture, collaborative business planning and new measures and rewards.

2. The industry must more readily and freely *Share Information*, embracing the concept that the best way to manage increasing complexity is through transparency.

3. The industry must *Redefine the Value Chain*, addressing new requirements of the physical flow of goods, driven by forces like volatile energy costs and a growing population density.

The Global Commerce Initiative intends to use this report as a catalyst for discussion within the industry and within each of our companies. Further, GCI will undertake the projects identified above to help shape the future.

We look forward to your continued support as we move forward.

José Luis Duran
Chairman of the Management Board, Carrefour group

A. G. Lafley
Chairman, President and Chief Executive,
The Procter & Gamble Company

Co-Chairmen, Global Commerce Initiative (GCI)

We applaud this GCI initiative to look at the forces that will shape our industry for the next 10 years and beyond, focussing on meeting the constantly evolving marketplace expectations.

This report identifies actions that should be taken across the industry and across the globe. To meet these challenges it will take hard work and true collaboration from all parts of the industry. We look forward to helping harmonise these efforts within all our organisations.

Andrew Morgan
President, Diageo Europe
President, AIM - European Brands Association

Roger Corbett
Chairman, ALH, Australia
Chairman, CIES - The Food Business Forum
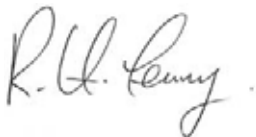
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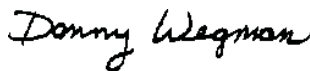
Anders Moberg
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Chairman & Chief Executive Officer, Supervalu, Inc.
Chairman, Food Marketing Institute (FMI)

Richard H. Lenny
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Chairman, Grocery Manufacturers Association (GMA)

Danny Wegman
President, Wegmans Food Markets, Inc.
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Joseph C. Andraski
President & Chief Executive Officer,
Voluntary Interindustry Commerce Solutions (VICS)

Executive Summary: Building the Future Value Chain

The speed of change and a sense of urgency will drive the evolution of the value chain over the next decade. Is the industry ready? Are you ready?

When Dutch retailer Royal Ahold opened its first store in Shanghai in 1996 it took just three years for Chinese consumers to adapt to a new way of shopping—that is, not buying the livestock at the "wet market" anymore. "This was three times faster than the 10 years it took for Europe to make the shift from service shops to supermarkets in the 1950s," said Ruud van der Pluijm, Vice President, B2B eCommerce, Royal Ahold. "How much faster will those kinds of changes take place on our way to 2016?"

This rapidly accelerating speed of change and a sense of urgency about the future led the GCI to enlist the help of leading retailers, consumer products manufacturers, logistics service providers and technology companies to develop a vision of the future value chain. The premise was that by 2016 the retail and consumer products industry will have changed, but in what ways?

To answer that question, it's necessary to consider both the external and industry forces driving change and their impact on the value chain. The key contextual or external trends that will shape the industry in the coming 10 years can be grouped into five areas:
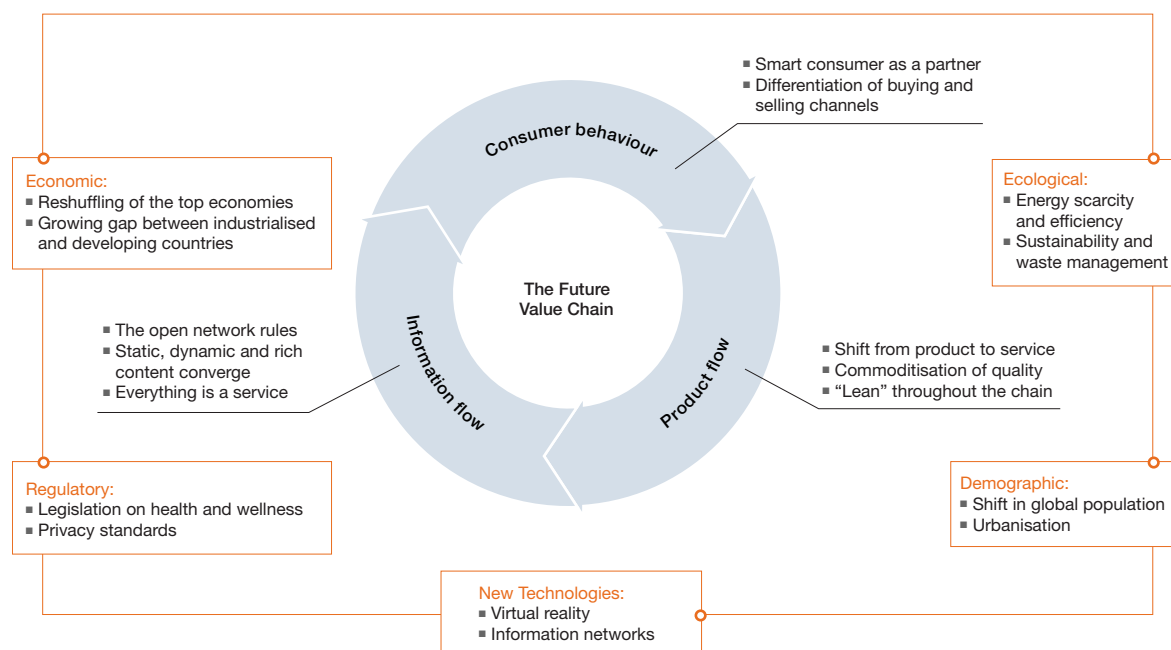
- **Economic issues**, including the reshuffling of the world's top economies, the growing gap between industrialised and developing countries, as well as a focus on social responsibility among the more developed countries in areas such as fair trading.

- **Ecological issues**, including energy and fuel scarcity and efficiency, sustainability and waste management.

- **Changing demographics**, such as the shift in global population, urbanisation and cross-border migration.

- **New technologies**, such as virtual reality, quantum computers and information networks, have the potential to make data, people and objects accessible everywhere and immediately.

- **Regulatory forces**, including extended legislation on health and wellness (for example, labelling of products) and privacy standards.

A "Typical Family"

Many of the trends discussed in this report are illustrated by reference to a fictitious family. The family is based on a middle-class, Western style of life. In a report of this nature it is not possible to envision the situation in 2016 for families across all social classes in all geographies. History has shown that many of the emerging nations follow the trends set by Western lifestyles and that they often do so by moving there more rapidly than we did in the West. New technology often leads to leapfrogging developments, skipping the evolutionary phase. A good example is the widely accepted use of satellite technology over the more traditional land lines.

Readers should be encouraged to assess what these trends might mean for both the established as well as the developing markets across their distribution channels. Will these trends speed up a commonality in value chains or lead to a wider diversification? Geographies, economies and social groupings will always be diverse, but many will be subject to the trends identified in this report. How they will have changed by 2016 is what we as an industry must start to think about.

Forces and Trends Driving the Future Value Chain

Economic:
- Reshuffling of the top economies
- Growing gap between industrialised and developing countries

Regulatory:
- Legislation on health and wellness
- Privacy standards

New Technologies:
- Virtual reality
- Information networks

Ecological:
- Energy scarcity and efficiency
- Sustainability and waste management

Demographic:
- Shift in global population
- Urbanisation

Consumer behaviour
- Smart consumer as a partner
- Differentiation of buying and selling channels

Product flow
- Shift from product to service
- Commoditisation of quality
- "Lean" throughout the chain

Information flow
- The open network rules
- Static, dynamic and rich content converge
- Everything is a service

The Future Value Chain

External forces such as economic, ecological, demographic, technological and regulatory developments will significantly alter the global landscape in the coming decade. These external forces provide the context in which the retail and consumer products value chain exists. At the same time, there will be key industry trends that will impact the value chain, particularly in the areas of consumer behaviour, information flow and product flow.

While these trends are largely outside the control of the industry, retailers and consumer products companies must consider the impact of these external forces on their business and determine how best to respond to the changes that will be brought about as a result of their impact.

At the same time, there will be key industry trends that will affect the future value chain, particularly in the areas of consumer behaviour, information flow and product flow. These include the emergence of the "smart consumer," differentiation of the buying experience, rich-media information, greater personalisation, the shift from products to services and solutions, and the commoditisation of quality. In contrast to the external or contextual forces, the industry does have the power to shape these internal forces.

Inventing the Future

The convergence of these external and industry trends will drive the evolution of the value chain. Turning this vision into reality will require that the industry focus on six critical areas of opportunity for growth and improved performance.

1. **Shopper dialogue:** The industry has an opportunity to better serve shoppers by creating a two-way dialogue with them, helping them make more informed decisions, and linking the store and the home with emerging in-house and consumer technology.

2. **Information sharing:** Companies must be prepared to share standards-based data free of charge. Sharing information (such as supply chain events) between trading partners will result in an improved information flow and, as a consequence, improved collaboration to better serve the consumer. A resulting collaborative information platform could become the basis for further supply chain solutions, like demand-driven ordering and collaborative promotion planning.

The Value Chain in 2016

Company Cultural and Behavioural Changes
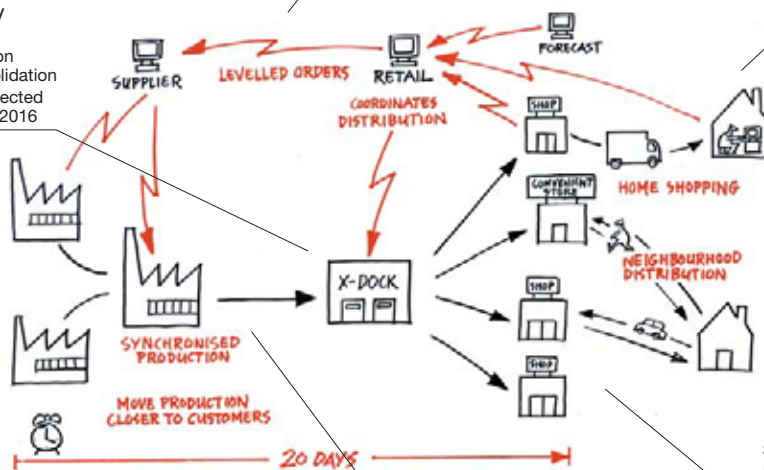- Shared services
- Shared information/collaboration

Information Sharing
- Open platforms for distributed data-sharing models

Shopper Dialogue
- A new interface with the consumer

Integrated Logistics/ Home Fulfilment
- More collaboration on transport and consolidation
- Home fulfilment expected to reach 20-25% in 2016

SUPPLIER
LEVELLED ORDERS
FORECAST
RETAIL
COORDINATES DISTRIBUTION
SHOP
HOME SHOPPING
X-DOCK
CONVENIENT STORE
NEIGHBOURHOOD DISTRIBUTION
SHOP
SHOP
SYNCHRONISED PRODUCTION
MOVE PRODUCTION CLOSER TO CUSTOMERS
20 DAYS

Sustainability
- Economic development
- Environmental protection

Synchronised Production
- Working from one demand signal
- Integrated upstream suppliers

3. **Synchronised production:** The industry must use the improved dialogue with the household and the technological connection with the customer to help the industry make more informed decisions, share plans and better synchronise production with actual demand. This also relies on full integration of upstream suppliers of raw materials, ingredients and packaging. Distributed manufacturing, flow consolidation and a "final assembly" model may play a role in the move towards "lean" production.

4. **Integrated logistics/home fulfilment:** As the industry is confronted with less available energy and fuel, more city regulations, increases in working capital and a sharp rise in home shopping, it will move from retailer brand-centric logistics to geographic-centric logistics. Strategies will include consolidated distribution, dynamic route planning, and more effective transport sharing and backhauling.

5. **Sustainability:** Sustainability aims to achieve a higher quality of life for everyone. Economic development, social development and environmental protection are mutually reinforcing components. The three key objectives are: eradicating poverty, protecting natural resources and creating sustainable production and consumption.

6. **Company cultural and behavioural changes:** Building the new value chain vision starts with information sharing within and between enterprises. Other critical cultural and behavioural changes will include organisational development, improved trust, and new measures and rewards to support the better alignment of strategic and tactical thinking.

The following pages provide a close-up look inside the value chain of 2016, the forces that will shape it, and actions that may help the industry and individual companies prepare for this future state.

2016: A Day in the Life…

06.00: *It's Monday morning, and Maria wakes to an ambient mood call on her multifunction personal mobile device (PMD). Her PMD displays news headlines (ads are blocked, except for those in her pre-selected categories of interest), a mass transit update and results from her favourite soccer team's match yesterday.*

Maria wakes her husband, Albert, and two children, Michael and Catherine. As they get ready for the day ahead, Albert checks the daily news extracts on his personalised service, while the children send quick messages on their PMDs to their friends to plan their school day.

07.00: *As the family sits down for breakfast, Maria activates the digital home terminal using voice recognition. The terminal alerts her to groceries that need to be ordered based on a scan of the refrigerator and cabinets by the household information platform (this easy-to-use system manages all information regarding the household and is available for the whole family to use – wherever, whenever).*

Automated agents compare brands, prices, promotions, and negotiate and select items from retailers and manufacturers based on the family's preferences and profile. The agents know the family's needs because they are allowed insight into the household information platform in exchange for the best deals and special offers.

The platform enables Maria and Albert to keep track of replenishment signals, wish lists from the children, event planning, etc. The grocery list is consolidated, including meal solutions for the week's dinners, Maria hits "order" and "debit" and indicates a pick-up time for that evening after work.

08.00: *After dropping Michael and Catherine off at school, Maria drives Albert to the train station where he heads into the city. She continues on to the bus station and boards the bus to work; an on-board reader reads her RFID tag and debits the cost from her account. Screens show promotional offers from stores on the bus route and she orders a new book using her PMD.*

This scenario and others like it will be made possible by an evolved value chain.. Of course, variables such as income, education and location will make a difference in the consumer scenarios of 2016. However, much of the technology, connectivity and corresponding consumer conveniences will be available to varying degrees to consumers in Western Europe and North America, as well as in emerging countries in Eastern Europe, Latin America, Africa and Asia. As a result, there will be more value chain behaviour commonalities than we may think.

Follow along as we provide a picture of what the world looks like for Maria and Albert and their family in 2016 – as enabled by the future value chain.

As the World Turns:
External Forces Driving Change

The world in which we live is changing at a pace that many consider to be faster and more seismic than at any point in history. A number of external forces provide the context in which the retail and consumer products value chain exists. Consider some of the dramatic changes that we can expect to witness in the coming years and the ways in which they will likely impact the industry's value chain.

Economic Shifts Will Affect Consumption, Production and Logistics

Maria works for a non-governmental aid organisation that focusses on reducing poverty in underdeveloped countries. The huge gap between rich and poor has become an increasingly significant economic issue in 2016.

Globalisation will have a huge impact on how consumers shop and buy. New buying power will come from developing nations like China. In 2005, the top four economies (as ranked by GDP) were the U.S., China, Japan and India. With an even more global market in 2020, the order is predicted to be China, U.S., India and Japan.[1] Chinese consumption spending will likely represent approximately 11% of global consumption spending in 2014 or US$3,700 billion in value, compared with 3.8% in 2005 (up from an estimated 2.9% in 2004).[2] At the same time that economies such as China and India make huge gains, many developing countries will not be able to close the gap.[3]

This reshuffling of the world's economies will impact consumption trends, production and logistics as the retail and consumer products industry attempts to meet the needs of these rapidly growing countries. Part of this response will be the need to understand that the world is not one market. So while globalisation will expand the product offerings available to consumers, at the same time we will likely see increased consumer demand for local and regional products.

In the U.S., another trend is visible: the decline of the middle class.[4] This is resulting in a gap between the affluent elite and the working class, creating two distinct groups of consumers who will need to be approached differently.

In addition, as the more developed nations get wealthier, the industry is likely to face continued scarcity of human resources for manufacturing, distribution centre and retail jobs. A key challenge going forward will be determining how to make the industry more attractive to potential employees.

Ecological Trends Will Lead to a More Sustainable Industry

With the volatility in fuel prices, Maria now takes the bus to work and Albert takes the train into the city, reducing their weekly commuting costs significantly. They use their car primarily for leisure travel.

Energy management leads the list of critical ecological issues that will impact the industry over the next decade. Energy efficiency will become crucial and will have a profound effect on stores, transport and consumer behaviour. As fuel and electricity become scarcer, costs will rise, including:

- **Direct costs:** fuel and electricity, impacting the costs of production, raw materials and packaging, getting the products to the stores, operating the stores and consumer mobility.

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[1] Economist Intelligence Unit, ranked by GDP, $ trillion PPP 2020 (purchase power parity), 2006.

[2] "The Rise of Chinese Consumer Revisited," Credit Suisse, 2006.

[3] Institute for International Economic Studies

[4] "U.S. Losing Its Middle-Class Neighborhoods From 1970 to 2000, Metro Areas Showed Widening Gap Between Rich, Poor Sections," The Washington Post, Blaine Harden, June 22, 2006.

The competitiveness of companies will depend heavily on the degree to which they are prepared to understand and use the potential of new technologies for the benefit of consumers.

- **Indirect costs:** inflation and reduced spending, leading to a decrease in share of wallet.

Growing consumer awareness of sustainable sourcing, manufacturing and consumption, animal welfare and other ecological dimensions will drive their behaviour and the choice of products they buy. For some consumers, this will become as important as price. Companies are also recognising the need for greater corporate responsibility. Increased emphasis will be placed on broad areas such as waste management as well as more narrow aspects such as specific sustainable product sourcing.

Demographic Changes Will Drive Population Shifts and Diversity

Michael and Catherine attend a multicultural school; such schools have become increasingly common as cross-border migration increases. The growing diversity of the student population is apparent in the number of languages heard echoing through the halls.

The global balance of population shifted dramatically between 1950 and 1995, and it will change even more significantly between now and 2050. For example, Europe's share of the world's population will decline while Africa's share will grow substantially. The population growth in emerging countries will strain the industry's ability to supply product and may lead to a shift in production in these growing areas.

At the same time, increased life expectancy and falling fertility rates will result in an aging population in high-income developed countries. As a result, the declining ratio of working people to retirees will put pressure on social services, pensions and health systems in those countries. Governments will seek to mitigate the problem through such measures as delaying retirement, encouraging greater participation in the workforce by women and relying on migrant

workers. Increasingly, the retail and consumer products industry will need to turn to these groups to solve the human resource shortage that it will face in the coming years.

Two major trends in the movement of people will characterise the coming years: urbanisation and |cross-border migration. By 2016 more than half of the world's population will live in urban areas. The explosive growth of cities will force the industry to rethink store, warehouse and manufacturing locations, as well as transport and distribution systems.

Cross-border migration will increase in the next decade as the result of divergent demographic trends such as the globalisation of labour markets, and political instability and conflict. This trend will cause increased social and political tension and perhaps alter national identities even as they contribute to demographic and economic dynamism.

New Technologies Will Benefit Businesses and Consumers

Albert just received a major software upgrade to his personal device. This was distributed wirelessly, so all he had to do was accept the upgrade this morning. The device looks and behaves like it is completely new. The new software will help him pick up critical information from the corporate systems when issues arise.

By 2016, quantum computers will be reality and chips will have a capacity of one terabyte (1 million megabytes). Software agents will manage auctions, work and personal diaries and take care of many other daily jobs. Information will be available everywhere and through one personal device. Virtual reality will exist for a variety of products and services, not just video games. Security of data and privacy will be critical and biometry will be a key to ensuring secure access and authorisation.
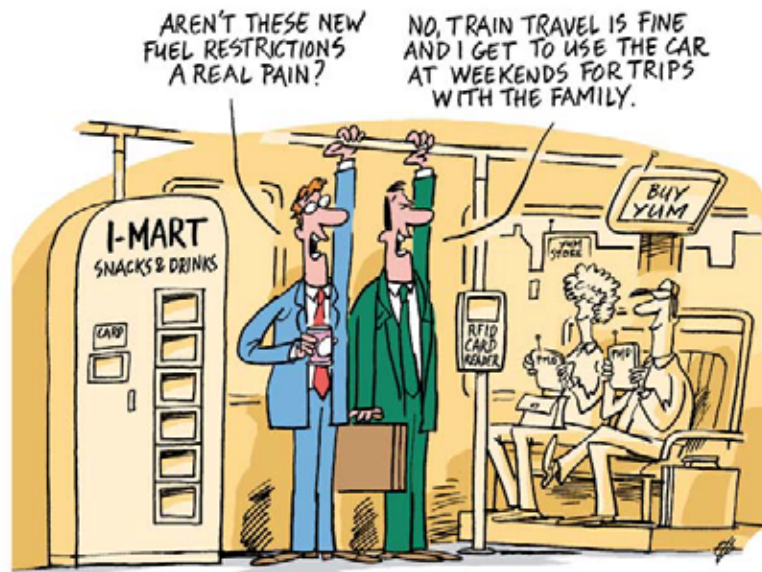
Technologies such as mobile logistics, RFID, telematics and wireless broadband will enable greater machine-to-machine communication. Many of these technological developments offer companies the opportunity to make better use of demand signals and data. This means the industry must develop more flexibility in capacity and inventory, necessitating a move from "push" to "pull." Data will be stored in the network; intelligence will be created by the links to the network, which will make all kinds of data available, including point-of-sale and supply chain data.

The Universal Mobile Telecommunications System (UMTS) and similar systems that follow will be fully exploited and cars will be entirely driven by technology. The "Babel fish" will finally be a reality, as a mobile translator will overcome any language barrier.[5]

New technologies have a huge impact on our lives. The competitiveness of the companies in the consumer goods industry will depend heavily on the degree to which they are prepared to understand and use the potential of new technologies for the benefit of consumers. The new consumer is and wants to continue to be more knowledgeable. Information about the product (and brand), including nutrition, sourcing, sustainability and social responsibility, all add up to the value delivered.

With this will also come the explosion in Internet use, particularly in countries such as China and India. This growth will result in more well-informed, more demanding consumers with the ability to gather information and connect anytime, anywhere.

Regulatory Interest Will Increase

High fuel prices are only one reason Albert now takes the train to work. Parking fees at the office car park were imposed by the local government to help curb the use of cars and reduce emissions. Guidelines on environmental impact failed to make a significant difference, leading to more stringent governmental regulations.

Governmental and regulatory impact on the value chain will continue. Over the next decade, governments will likely increase regulatory requirements as a result of economic, sociodemographic and ecological developments. Anticipated changes will likely include:

- Heightened environmental regulation (e.g., prohibiting vehicles from entering the centre of big cities during certain hours, and restrictions on CO_2 emissions).
- The shifting payment landscape as we move to a cashless society.
- Focus on obesity and diet (e.g., product labelling referring to health and wellness).
- Government-driven innovation in the value chain (e.g., EU projects on transport optimisation).

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[5] The Babel fish was a fictional animal used for simultaneous language translation in Douglas Adams' novel *The Hitchhiker's Guide to the Galaxy*.

Inside the Value Chain:
Industry Trends Driving Change

- Consumer Behaviour
- Product Flow
- Information Flow

2016 Consumer Behaviour: Top Trends

Consumer is "Boss"	
Consumer Trends	Retailer/Manufacturer Reaction
- Changing demographics - Health and wellness - The "smart consumer" and converging technology - Differentiation of the buying experience	- Consumer behaviour analysis - Differentiation of selling experience - Innovation and product "life" - New roles and new ways of partnering

At the same time that the industry is buffeted by external forces, internal trends will also drive the evolution of the value chain. One critical difference, however, is that the industry has the power to shape these internal trends and influence how they develop. Change is expected to come particularly in the following areas.

2016 Consumer/Shopper Behaviour

During a break at work Mia checks her PDA and sees that she has received an SM confirming her grocery pickup time and an alert from her favourite restaurant with lunch specials. She makes her lunch selection, debits the cost and indicates a delivery time. Later in the afternoon, Mia is alerted by her PDA to several updated price specials on her grocery order. She indicates RM Meantime, during their school lunch break Catherine and Michael use their PDA to make plans with friends to attend an evening concert later in the week.

Trends in consumer behaviour can be grouped into those that specifically impact the consumer and those that can be categorised as retailer/manufacturer reactions or responses to changing consumer behaviour patterns. Consumers will be impacted, to varying degrees, by external forces, including demographic, regulatory, economic and ecological changes.

Changing demographics will significantly influence consumer and shopping behaviour in the coming years. For many wealthier older consumers, retirement will mean the start of a new, active life with strong buying power. For others, the rising costs of health care and medications will reduce their buying power. In addition, the cost of pension provision and social care contributions may reduce the spending power of younger and middle-age consumers who are working.

Health and wellness will be key. Consumers are looking for healthy options across all product categories and lifestyles. Improved information and labelling, education and community programmes are among the many ways to respond to this important movement.

Companies will take on new roles within the value chain and explore new ways of partnering.

In fact, tomorrow's multi-dimensional consumers will expect **greater differentiation in the buying experience.** A single consumer will demonstrate a range of different shopping behaviours depending on specific circumstances. For example:

- Speedy, low-cost replenishment for basic requirements.
- Solution-driven shopping; more holistic approach to meeting life's needs.
- Self-expressive shopping, driven by desires and designed to reflect the shopper's individuality in terms of lifestyle and fashion.
- Sense of discovery; impulse-oriented, highly emotional shopping.

Although consumers themselves may grow more sophisticated in some respects, they will also look for simplification, time savings and time management. Increasingly, the **"smart consumer"** will use **converging technology** to run the home as a business, providing companies with the opportunity to connect to the household information platforms that will likely emerge.

Retailers and manufacturers will respond to evolving consumer behaviour in a number of different ways. We expect to see more emphasis on **consumer behaviour analysis**, as well as consumer-driven process modelling, more detailed market segmentation and more personalised marketing.

Providing **a differentiated selling experience** will be critical to success. For example, some supermarkets of the future will aim to create a real "experience" for customers. A small mobile computer will guide the way to the desired articles and give shoppers tips on special offers and promotions along the way.

Shoppers will also be able to get more details about products: Which company supplied the steak? Would white or red wine be better with it? How many calories does the dessert have? Buying clothes? The dressing room will spot if a customer would like to try on a blouse. A screen will show which skirt or pants match the blouse. It will also show available colours and sizes.

Innovation within the value chain will come from new sources. For example, more new product/service ideas will be developed in collaboration with small and medium-size innovators. In some cases government will stimulate innovation by providing innovation subsidies for this sector.

In addition, companies will take on **new roles within the value chain and explore new ways of partnering**. Retailers will act like suppliers; retailers will become brand managers; suppliers will act like retailers; in some cases, suppliers will become retailers. Partnering will become pervasive as companies find it necessary to create "value networks." The key to enabling a more streamlined and collaborative future value chain will be the improved aggregation and especially the use of both retail customer and consumer data, which |will become as critical to the industry as operating data. The 2016 generation of business intelligence or specialised "knowledge workers" will play key roles in deciphering the data.

- Consumer Behaviour
- Product Flow
- Information Flow

2016 Product Flow: Top Trends

Product Characteristics

- Shift towards services
- Virtualised products
- Product complexity
- Customer-driven R&D
- The commoditisation of quality
- Brand ownership

Product Chain

- Global sourcing – Global SCM
- Minimum inventory
- Lean provisioning
- Multi-channel shifts

2016 Product Flow

Maria and Albert do much of their shopping online with products delivered either to their home or to a local neighbourhood convenience store that also serves as a consolidated kiosk and pick-up centre for online orders, other post deliveries and the dry cleaner. They still like to go to shops, but only for major purchases, not for basic household replenishment. They've recently been researching new home entertainment centres in anticipation of the upcoming Olympics. Because they consider this to be a piece of furniture, they want to be able to touch and feel it, something that isn't possible to do online.

Product flow trends will consist of those related to product characteristics and those impacting the flow.

The industry will experience a **shift towards services and solutions,** leading companies to rethink product development with an emphasis on these aspects. The outcome of the consumption experience, rather than the features and functions, will become much more important to the shopper. Retailers and manufacturers that succeed in this will have a greater chance of achieving "lock-in" with customers—that is, where a particular store or product is the only consideration and a consumer will not accept nor seek an alternative.

One of many such examples is the car-sharing company Zipcar, which shows how this move towards solutions, not products, is evolving. Members, frequently living in cities, share cars rather than owning their own. The appeal of Zipcar is the service—the ability to get from one place to another—not the product itself.

In the retail and consumer products business, consider online dinner providers. Consumers first visit a company's website, select a certain number of dinners and a date and time to pick up their meals. On the selected date, they visit the meal assembly session nearest to them, where the ingredients for their meals have been prepared. Consumers assemble and customise the dinners, pack them up and take them home. The uncooked meals can be frozen, and then defrosted and cooked in the days or weeks ahead.

The importance of services related to health care and wellness will also grow, giving both manufacturers and retailers the potential to transform themselves into lifestyle providers.
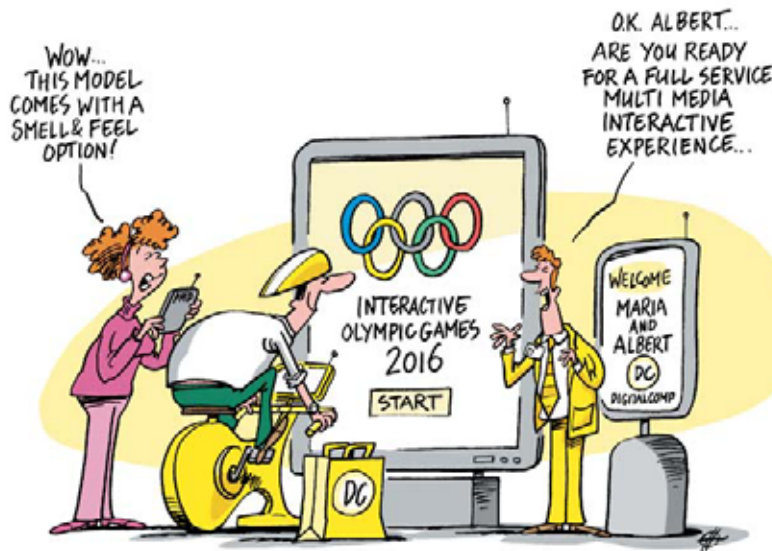
Virtualised products and services, extending beyond music, video, books, newspapers, games and photos, will emerge. These may take the form of a complete product or service enhanced by the addition of information or a virtual component to that product or service. Digital media will be available in the format and place you want it—a photo linked to a picture, an album or a video.

As item functionality becomes more sophisticated to meet consumer wishes and demands, **product complexity** will also increase. Greater complexity in products such as multimedia equipment and phones combined with greater assortment will result in a rise in online information gathering. This complexity also will lead to either higher levels of support and helpdesk functionality or greater speed of product obsolescence.

In addition, **customer-driven product development** will be enabled by improved qualitative consumer insights and direct customer feedback. Consumers increasingly will be pulled into the R&D process, in much the way they are involved today in bringing innovations to new-generation iPods®, gaming and LEGO Mindstorms.

"Most often, innovation comes from the core community of users," said Søren Lund, director of LEGO Mindstorms, in a press release announcing that the company will release as open source the firmware of the LEGO Mindstorms microprocessor. "We're excited to see how our open approach will push new boundaries of robotic development and are eager for all enthusiasts to share their creations with the community."

Procter & Gamble's Tremor serves as a similar example in the retail and consumer products industry. Members of this community, consisting primarily of teens, help develop relevant product ideas such as new video games and marketing programmes targeted at teens.

Offshore manufacturing will lead to lower costs of production for high-quality goods. Speed to market and reduced design cycles will make imitation easier, which has the potential to lead to the **commoditisation of quality**. Product differentiation will be harder to maintain. An example of this development can be seen in the cycling world where the prices of high-end bicycle features have dropped by two-thirds since production was outsourced to China.

Increased emphasis will be placed on lean provisioning, with companies attempting to maximise consumer satisfaction while minimising waste in the value chain.

When products can be sourced virtually, even by the consumer, brand becomes increasingly important. **Brand ownership** carries the elements of trust in service, quality and reliability.

In the next 10 years, the value chain will be driving towards **global sourcing and global supply chain management**. However, longer supply chains can lead to more risks and regulatory hurdles, necessitating improved contingency planning. Ultimately, with oil supplies running low, it is possible that more localised chains might reappear.

Being responsive to consumer needs will lead to "Fast, Fresh and Responsive" becoming an industry mantra. Lead times will be shortened, resulting in either faster or fresher products. To achieve this, increased emphasis will be placed on **lean provisioning**, with companies attempting to maximise consumer satisfaction while minimising waste in the value chain. Waste can be reduced by the **"minimum inventory flow"** concept that is typified by products moving through the value chain in a continuous way, with a minimum of intermediate stock.

Channel diversification will also impact the flow of products, particularly as consumers make more frequent use of home delivery and local convenience stores. "The implications for store design and format design will be significant," said Dan Jones, founder of Lean Enterprise Academy and co-author of Lean Solutions. "No one format will win, but we expect to see new forms of convenience retailing as companies attempt to move closer to the consumer."

Companies will increasingly look to enter markets through new channels to maintain their competitive positioning and as an avenue for growth. In the next 10 years the rules binding traditional store formats will continue to break down. By 2016 supermarkets, for instance, may offer "total lifestyle" services covering all requirements from the cradle to the grave.

2016 Information Flow: Top Trends

The Network Rules
Information Anywhere/Anytime

End-Consumer Information

- Rich-media information
- Personalised focus
- Consumer community enrichment

Value Chain Information

- Demand capturing and aggregation
- Real-time visibility
- Intelligent decisions using agents
- Service orientation
- Standardisation

2016 Information Flow

Albert is a supply chain manager for a consumer goods manufacturing company. Managing huge amounts of data through the network used to be a challenge. With the emergence of global networks and companies being prepared to freely share data supported by global standards, his job has now become more focussed. Intelligent agents in the network highlight issues that need addressing, allowing Albert to be more proactive in problem solving.

The key information flow trends include those that relate to end consumers and those that impact the value chain.

Trends relating to information flow involve the way in which information is delivered to and received by consumers and how it is used by the different partners of the value chain. The value chain will increasingly be built around the dialogue with the household. Retailers and manufacturers will have more frequent and higher-quality contact with consumers and shoppers to improve products, identify new product needs, anticipate purchases and respond to actual demand.

Consumers' willingness to share their personal information with companies will increase over time with greater Internet use and presuming their experiences in sharing data are largely positive.

This will be dependent on the consumer having confidence in the privacy and security measures in place covering this type of activity. Most importantly, however, they will expect to get something of value in return, such as tailor-made promotions or added convenience. Companies will also develop clearer market segmentation based not on who the consumers are (age, gender, etc.) but on how they act (their buying behaviour separate from traditional demographic cohorts).

Increasingly, consumers will want access to more information and the ability to see it all in one place. **Rich media** offers that potential. Consumers will be able to access rich-media information through a variety of formats and devices available in multiple locations, including in the store. These types of devices offer retailers and manufacturers the potential to influence consumer buying behaviour in a direct, measurable and real-time manner at the point of purchase. Information thus becomes location, time and person specific.

Personalised focus will be another key information flow trend. Personal profiling, as well as personalised buying and behaviour patterns will increase, as will more personalised and customised offerings such as special prices, special products related to consumer preferences (for example, allergies and health), promotions and service levels.
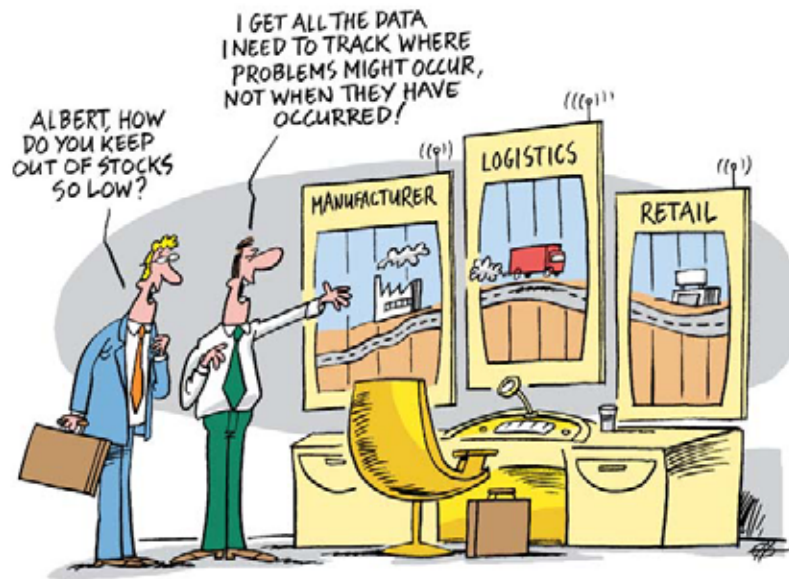
New technology and devices will also contribute to more personalisation and customisation. Consider, for instance, the emergence of products such as Cellf™ Genetic Assessments from Sciona, Inc. Sciona's genetic tests analyse an individual's DNA, diet, lifestyle and nutritional supplementation using a proprietary software programme to generate a confidential and personalised report containing information and an action plan designed to help an individual to manage his or her potential risk of negative health, all based on the individual's own DNA.

Consumers will also access information in a more collaborative fashion over the next decade, through channels such as **communities of interest** and "Wikipedia"-style collaboration. This will accelerate consumer-focussed innovation and enable more interactive consumer feedback towards retailers and manufacturers. Consumer portals will provide a platform for the interchange of experiences and comments on products.

One illustrative example is Amazon, which lets consumers submit their own product descriptions and link them with certain items. For instance, in an example from David Fry of Fry Inc., an online shopper might find his own description of a ski parka *("great coat for thrashing in the powder at Aspen")* more meaningful than the descriptor assigned to the product on a retailer's Website *("Men's/Outerwear/Skiing/Parkas/ Columbia Double Whammy")*, which could be filed for personal use or pushed out to friends under his own description.

All types of information, both consumer-information and value-chain information, will increasingly be **available anywhere/anytime**. Mobility is the key word here. An explosion of advanced mobile devices will enable consumers and employees to have access to relevant information at any moment and in any place.

The backbone for all this information sharing will be a network of databases and server applications that allow companies to structure and control the flow of information in an efficient way. In 2016, **the network rules**. This network will provide an ever-increasing collective intelligence, and will include the rules of how information is treated. Databases (data warehouses) will play an increasing role and shared databases will be created in order to avoid redundancies and will be able to deliver information on demand.

Collaborating for Change

The potential value to be delivered by these trends will not occur on its own. Left to their own devices, companies may potentially act in isolation or in limited partnerships. The industry needs to work in a more collaborative fashion across the total value chain to deliver the cultural and infrastructure changes necessary to meet the 2016 vision and ultimately consumers' needs.

The **capturing of demand signals** will take on greater significance within the value chain in the coming years. Demand will be captured early on (and not just at the moment the goods are sold at the point-of-sale) via facilities like online ordering or mobile shopping devices. This will also enable the capturing of "true demand" (the product the consumer really was looking for, instead of the product the consumer actually was "forced" to buy). Also, demand signals from consumers can be aggregated in new ways. For example, United Consumers in the Netherlands is providing specific discounted deals based on aggregated demand for commodities such as energy and fuel. It is also possible that consumers will share their future requirements with selected players in the value chain. This would allow for replenishment directly to the consumer, bypassing the need for stock in the value chain.

Real-time visibility will be an important factor in the new value chain. RFID technologies in combination with standardised and free data-sharing platforms will allow a near real-time insight into the chain for all interested partners.

All this information will enable **intelligent decision-making**, and this requires sophisticated supply chain management. Decentralised decision-making will be key and will be supported by a new generation of agent technologies. The gap between planning and execution will be closed. New "plan-while-executing" processes will combine decision support and execution, in a real-time, flexible, situation-driven manner.

To manage the increasing diversity and complexity of the information flow, the industry will place greater focus on **service orientation**. Services are the new building blocks for technology infrastructure, applications and business processes. This pervasive design pattern (combined with global standards) allows extensive reuse of functionality and will enable true plug-and-play at the business process level. Companies can start to use other companies' "menus" to complement their own capabilities, resulting in a truly collaborative value chain.

Open standards are a key prerequisite for collaboration. The GS1 system will be widely adopted in order to enable greater collaboration, enhance supply chain visibility and create a more streamlined and seamless flow of information. This involves foundational standards on identification keys, business messaging, Global Data Synchronisation and EPCglobal.

The Value Chain Vision: Welcome to 2016

Maria plans to visit her local store on the way home from work to collect some items for the family meal. Albert has some jobs to do around the house and he will stop at the local DIY to check if they have what he needs; he has already ordered some materials for direct home delivery. The children rarely use the "shops"; they only go when it is a family occasion to look for something special. The family is happy to let the in-home systems monitor their needs and arrange solutions.

The convergence of external forces and industry trends will lead to the evolution of the industry's value chain. The interactions between all partners in the chain, as well as the internal operations of each partner, will evolve to respond to the technological, economic, ecological, regulatory and demographic changes discussed in the previous chapters.

One overarching goal of this evolution is to greatly reduce the lead time from design to product and from raw material at source to the consumer (see diagram below). While 20 days may seem unrealistic in some industries, the timescale is meant to be indicative of the step changes that will occur as the industry evolves towards this vision in 2016.

Evolving Value Chain of 2016
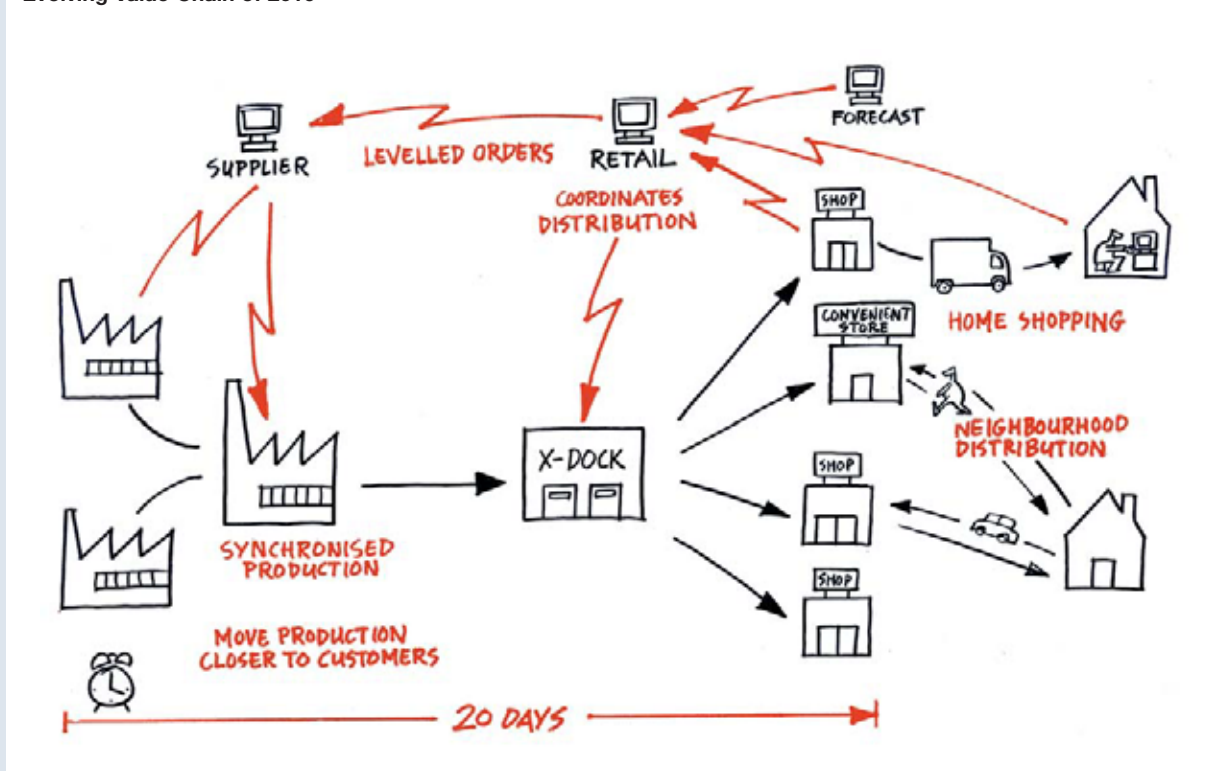
It is important to recognise the interaction of all the processes and treat the value chain as a "whole," not as silos.

More real-time information about the actual status of the chain, shared in a standardised and flexible way, will be the basis for this step change. However, it may also be necessary to re-evaluate the physical layout of the chain and redesign supply lines, production locations and the distribution network. On top of this, collaboration around production and distribution will need to intensify in order for the products to flow through the chain with minimal inventory. Even though there are physical boundaries to the flexibility of the value chain, delaying the final choice of what will actually be produced is certainly possible in many areas.

As an example, a global furniture manufacturer will need to specify its capacity needs for plywood well in advance to make sure that production is capable of meeting demand. However, the choices of design can be made much later, within the boundaries of capacity. Similarly, the actual production can be made flexible where "regular" items are a fixed part of the production planning, leaving slots that can be used to quickly respond to irregular demand patterns.

And even during distribution, delaying the final choice of allocation to sales channels can improve the flow of goods. Just like oil can change ownership several times during its voyage at sea, so could the flow of goods be seen as one large set of moving inventory that can be reallocated based on diverse constraints and priorities. The ability to redirect or split the flow of goods dynamically using advanced planning, scheduling and routing systems will be essential for the future distribution network. Many of these decisions will need to be made automatically, with human interference only on rare occasions.

Special attention will be paid to the famous "last mile to the consumer." In addition to the regular shop where consumers will collect their items, other ways to bring products (more frequently as part of a service) to the home will be considered. A good example of this is the local convenience store that can serve as an outlet for the online orders from a much larger grocery assortment.

While this report concentrates on the fast-moving consumer goods sector of industry, the trends explored can be applied to many other sectors. Delivery of the "product or service" to the end consumer could well see a merging of delivery agents from many different sectors. Health care, postal, parcel, social services (home meal services) and horticulture are just some of the examples where a combined delivery service could meet industry and environmental needs.

All these improvements will be modifications to the current supply chain model, but will basically still leave all parties involved.

Taking a New Approach

How can these improvements be achieved? One approach could be to combine the principles of "lean" production and "lean" consumption to create the "lean" value chain. This methodology is based on the following principles:

- Solve the consumer's problem completely.
- Minimise the consumer's total cost and the provider's total cost.
- Provide exactly what is wanted.

Moving to a Home-Direct Model
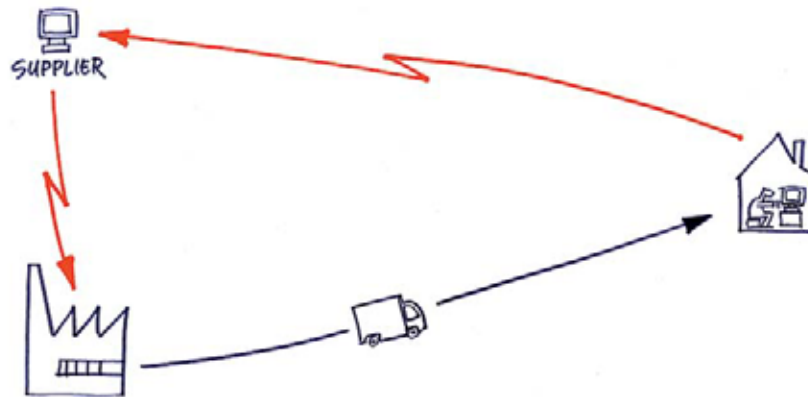
- Deliver value where it is wanted.
- Offer value when it is wanted.

These basic rules should be applied to all the processes in the chain. For example, treat the manufacturing process as the "consumer" of raw material, the packaging line as the "consumer" of finished products, and the finished-goods warehouse as the "consumer" of packaged goods. By treating each part of the chain in this way, waste in materials, labour and assets can be minimised. It is important to recognise the interaction of all the processes and treat the value chain as a "whole," not as silos.

Is this going to be an easy change? To quote Dr. James Womack and Professor Dan Jones, founders of the Lean Enterprise Academy. "Travelling the full path from mass to lean consumption is not the work of a year or a decade. Indeed, we have only just begun. Mass consumption is deeply rooted and not just in consciousness. It resides in assets and organisations on a vast scale. All those big boxes and failure-industry bureaucracies won't go away quietly or easily."

So the challenge to industry is how to move in this direction, given the inherited base from which we start.

The Home-Direct Model

A more radical change to the value chain is imaginable with the emergence of a home-direct model, where a significant percentage of goods, across many categories, move from production directly to the consumer's home.

Consider how one of the world's leading companies addressed the way in which its manufacturing plants could be serviced in terms of materials and packaging: Toyota adopted the "water spider" approach. The water spiders will flit across the surface of a pond going from one feeding spot to another. In much the same way, Toyota has used this principle to set up delivery mechanisms within its plants to "flit" between work teams, keeping them supplied with the items they need to keep production flowing.

Can we set up a similar "water spider" type network for servicing consumers? Can we have "vans" flitting around out neighbourhoods servicing our needs?

A middle-class family in the Western world in 2016 will have undergone considerable culture changes, and convenience will be one of the mantras. Reacting to changes in the environment and the services being offered, the consumer will no longer be prepared to act as the "picking and delivery" agent for the majority of shopping needs. They will not drive to stores to pick and collect commodity items; they will expect these to be delivered. Delivery will be based on "personalised ordering agents" managing the replenishment of commodity items.

The home-direct model will not replace the evolved value chain; rather the two will co-exist. Manufacturers, retailers, logistics service providers, local postal services and specialised local companies will play an important role in this development; each one has the opportunity of becoming the "delivery agent."

On the Way to the Future

Developing a model is one thing. Making it real is quite another.

Clearly, a transformed value chain won't happen on its own. Significant changes within the industry will need to take place to bring the future vision to life. Some of these changes will require mindset shifts and some will be more tactical in nature.

While discussing the different future scenarios at its GCI Executive Board meeting, the members identified a number of opportunity areas. Taking advantage of these areas of opportunity will make it possible for the industry to invent its own future

Shopper Dialogue: Creating Two-Way Communication

Maria and Albert are very focussed on health and wellness and are careful about the foods they serve, particularly for Catherine who has several food allergies. Accessing a centralised database through their household information platform, they are able to easily check ingredients in different products and factor these into their preferences.

The industry has an opportunity to better serve shoppers by creating a dialogue with them, helping them make more informed decisions, and linking the store and the home with emerging in-house and

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The Value Chain in 2016

Company Cultural and Behavioural Changes
- Shared services
- Shared information/collaboration

Information Sharing
- Open platforms for distributed data-sharing models

Shopper Dialogue
- A new interface with the consumer

Integrated Logistics/ Home Fulfilment
- More collaboration on transport and consolidation
- Home fulfilment expected to reach 20-25% in 2016

Sustainability
- Economic development
- Environmental protection
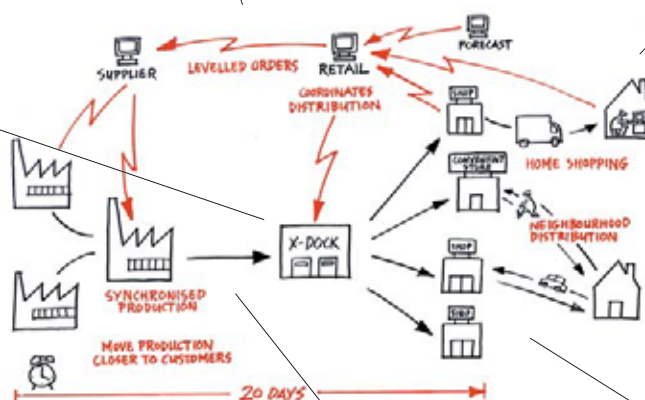
Synchronised Production
- Working from one demand signal
- Integrated upstream suppliers
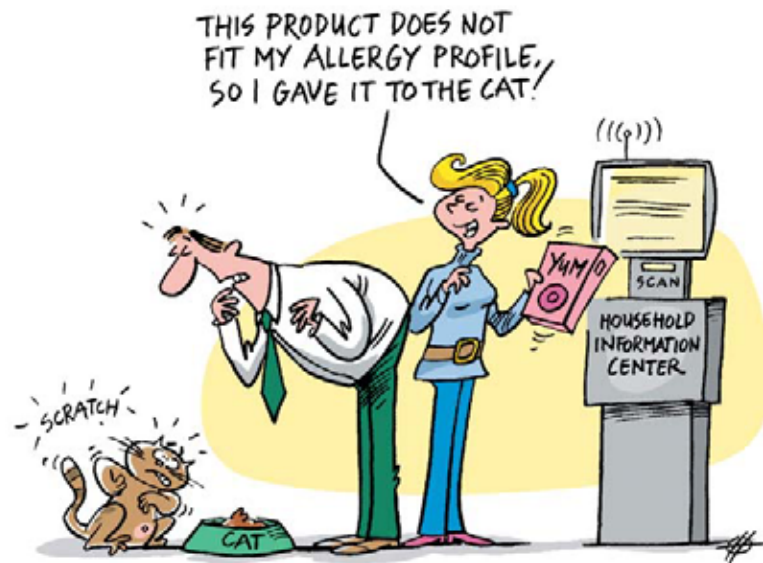
consumer technology. Devices like the PDA (personal digital assistants) or PMT (personal mobile tools) enabled with technologies like software agents will allow for information retrieval and communication without restrictions on time and geographic situation. While the shopper can capture generic or customised "offers," the industry can capture "responses" like an order, denial, a comment or a request for more information. In this way, both parties enter into a dialogue.

A key area of communication between the industry and consumers will be health and wellness. Consumers will look for trusted and accurate information. The industry will need to respond via agreed-upon and consistent forms of communicating information to consumers. Privacy standards focussed on areas such as health/wellness information, payment cards and loyalty programmes will be critical.

To enable an effective dialogue with the consumer requires the development of a new-generation marketing model for the industry. This model will focus on a new and collaborative information flow. Product data will be divided into:

- **Generic data,** such as traceability information and rich-media product data, including images, will be available for everyone.
- **Differentiating data,** such as special promotions, will only be available to certain customers or customer clusters.

All data will be fed into the databases and networks of the retailers, manufacturers and logistics providers. This pool of information then will be used in-store, in-home or "out there"—that is, through different types of advertising/marketing channels—via a range of formats and media.

The way a company uses the information from the pool depends on the marketing goal and consumer demand. The industry will be able to send a selection of information to clearly defined clusters or to individual people and households within those clusters, thus creating improved transparency and opening up a two-way dialogue.

To implement the new marketing model, five critical challenges must be overcome.

Improving the marketing toolkit: Marketing needs to be better integrated with other functions in the organisation. A forward-looking approach is critical, rather than focussing on last year's figures as has traditionally been the case. Marketing must also move from a focus on products to a focus on solutions and services for the consumer, based on new ways of capturing consumer needs and delivering personalised marketing messages.

Creating and capturing consumer demand: Marketing plays a role in creating and capturing demand since both of these areas represent key touchpoints between companies and consumers. To create demand companies must utilise the new marketing toolkit and the new forward-looking approach towards marketing plans.

Collaborative Platform for Open Data Sharing
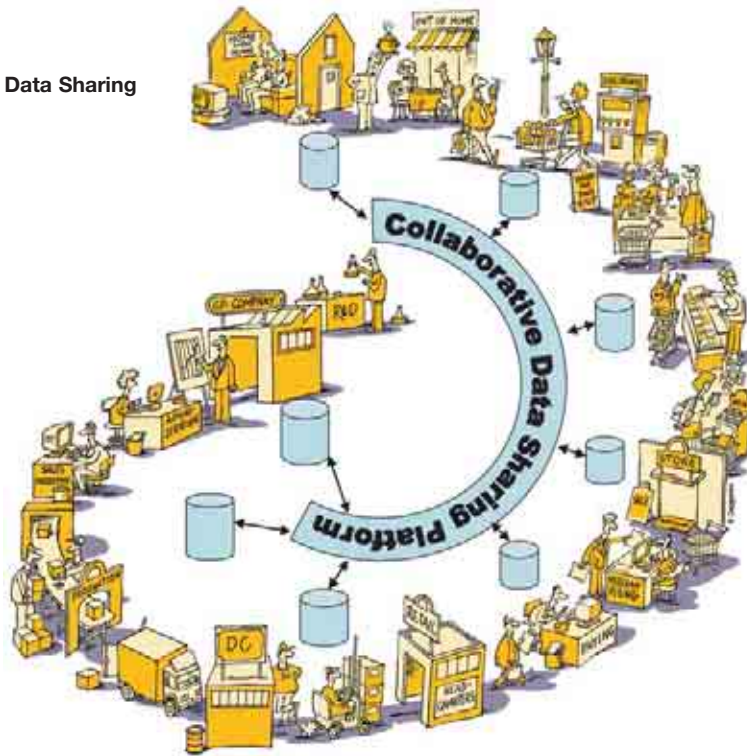
To capture demand the industry needs to first combine all the different pieces of consumer insights and other information to get a holistic 360-degree view of the consumer. New consumer technology, including personal mobile devices and household information platforms, will play an important role in capturing true consumer demand. However, these devices need to become interoperable, standards based and widely used.

Building consumer trust: In 2016 consumer trust will centre around consumers' willingness to share information in a largely virtual world. Through the development of a "digital persona" database, consumers will register certain types of information that they are willing to share with specific companies. The consumer will decide who those trusted retailers, manufacturers or other third parties are. Confidentiality will become a decisive issue.

Standardising the communication and information flow: The data that is provided to consumers—whether generic or differentiating—should be delivered using open standards. This will facilitate ease of use for customers with independent devices, for example. Standardising the communication and information flow will also make it easier to share real-time feedback data and act quickly on consumer demand.

Building loyalty: Building and maintaining customer loyalty is, of course, the holy grail. Promotions and other marketing tactics and tools must be created with a greater focus on loyalty. Improved co-operation among multiple value chain partners is particularly important in this case.

Information Sharing: Improving Collaboration and Information Flow

On the train, Albert checks his diary for the day so he can prepare himself for work. He has two key tasks today:

- *Tracking a new promotional pack that has some special production needs. Up-to-date information will be vital. In the past he had all kinds of problems getting accurate data, but with the new network things are much improved.*
- *Working with the cross-functional team on the proposed launch of a new product. This involves assessing consumer, retailer, logistics and production implications.*

In the value chain of 2016, a product will be tracked and traced using EPC technology. Building on the EPCglobal vision, each tier in the value chain stores its data locally as a node on the network. By following data and access standards all authorised users can access the information to resolve their business queries.

The network approach allows promotional activity to be managed in a proactive way. Intelligent agents in the "network" are assessing product flow against forecasted flows; they then work out where problems might occur, and not where they have occurred. Collaboration and data sharing are at the heart of the network.

By using the type of network or collaborative information platform illustrated in the diagram opposite, all the factors that will impact the new product launch can be pulled together:

- How production will handle the new product, which plant, initial capacities, supplier capabilities
- Impact on logistics
- Proposed channels to market
- Proposed marketing strategies and spending for these channels
- Impact on current products in that category (retailer perspective)
- Consumer impact on current products in that category

The ability to pull together data from these diverse sources and existing networks will create a new way of assessing the impact of new product launches and assessing their success as the launch evolves. The evolution of these types of networks is dependent on the following:

- **Consistent** use of common identification mechanisms across the chain, from bar coding to RFID tags, are all based on ubiquitous Global Trade Identification Number (GTIN), Global Location Number (GLN) or EPC code, just to name a few, guaranteeing unique identification of all objects in the physical world and their information flows.
- **Consistent** use of the Global Data Synchronisation Network (GDSN) as the mechanism for aligning product and location information among all members of the value chain.
- **Consistent** use of the GS1 eCommunication standards that cover transactional information, event information and market-driven information.
- **Consistent** use of the emerging networks, like the EPCglobal Network™.

Synchronised Production: Establishing Manufacturing Efficiencies

Albert has arrived at work this morning knowing that today is a critical time for the new product they have just launched. He can access the EPCglobal Network to get immediate feedback on how product distribution and sell

rates are going—vital information that he has to share with his colleagues in manufacturing. They now run the plant based on lean production concepts and can respond to changes in demand much better than they used to. Albert is pleased about this; his on-shelf availability figures for the new product are consistently showing up in the 99.8% range for all stores.

Retailers and manufacturers will have better knowledge of consumer demand. The industry must use this knowledge to better synchronise production with actual demand, especially with categories that have product lifecycles of less than a month (for example, in fashion). Rethinking and relocating production is one aspect in shortening the total time spent in servicing the customer, particularly the time-constrained shopper of 2016 living in an energy-constrained world.

Integration of upstream suppliers of raw materials, ingredients and packaging into this is vital. Synchronised production relies on the availability of both the manufacturing resources and the materials to make the product.

Distributed manufacturing linked to dynamic planning could simplify synchronised production and packaging flexibility. The industry may consider breaking manufacturing facilities into different models. Complex production could be handled in a centralised manner; with simple production, such as colouring or final finish (including packaging), conducted on a local level, possibly tied to a retailer distribution centre. Managing multiple production sites will create new complexity but the ability to produce in line with demand is essential for the new value chain.

Today many supply chains are driven by Economic Order Quantities (EOQs) and distorted by the "bullwhip" effect of manual intervention in the planning process. As the industry switches to "produce to demand" driven by the concepts of lean production, smaller batches and smoother production plans will emerge. This has the potential to lead to efficiencies in the production line and reduced cost.

Demand-driven ordering systems will emerge. Forecasting will not be abandoned, but since the value chain will operate in a much faster way than in earlier years, the impact of the actual demand data on the basic trend data will become more significant.
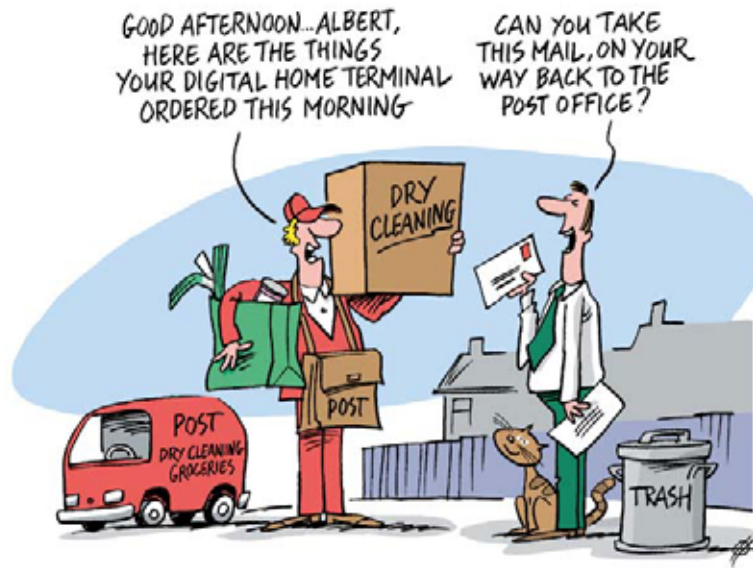
Integrated Logistics/Home Fulfilment: Lowering Transport Costs and Energy Usage

Although Maria and Albert generally pick up their online orders at the neighbourhood convenience store, they occasionally take advantage of the new service offered by their local post office, which picks up and delivers groceries, restaurant orders, dry cleaning and other items in a consolidated order.

Home shopping is expected to account for between 15% and 25% of all shopping in 2016. This will result in challenges such as how to handle order picking and fulfilment (in store, at the back of the store, separate local distribution centres). The degree of success that all parties achieve in implementing distributed production with integrated logistics will determine how well they will adapt to the home fulfilment trend.

Neighbourhood distribution covering the "last mile" to the home will improve. In some areas convergence will take place between home shopping and neighbourhood distribution, with convenience stores acting as central pick-up locations. Rising energy costs may also spark the emergence of bundled demand and bundled transport/delivery in the form of a single "mailman" delivering complete household needs—groceries, restaurant meals, pharmaceuticals—in one drop-off.

As the industry is confronted with less available energy, more city regulations and increases in working capital, it will move from retailer brand-centric logistics to geographic-centric logistics. One example is the shared cross-dock centre for the flower auctions in the Netherlands, which provides hyper-efficient logistics next to its price-setting function. Another example of shared logistics is the grouped delivery to stores in many historic city centres in Europe, where congestion has resulted in truck bans.

One of the parties in the value chain can be expected to take up the responsibility for integrated logistics for the entire chain. This may fall to retailers or perhaps to an independent third party. The compression of service times as well as ecological trends (especially oil shortages) will force companies to work together. This is already under way today at a number of companies in the industry.

Sharing of distribution centres—mixed centres—is a first step towards fully integrated logistics. To realise this, the industry must implement a transition plan for the existing legacy structure. Companies must also address financial issues, as well as challenges related to labour regulations, locations in which to build such facilities, etc. An additional challenge relates to the information flow.

ASSEMBLY   GLOBAL DC

INFORMATION FLOW

GLOBAL STANDARDS
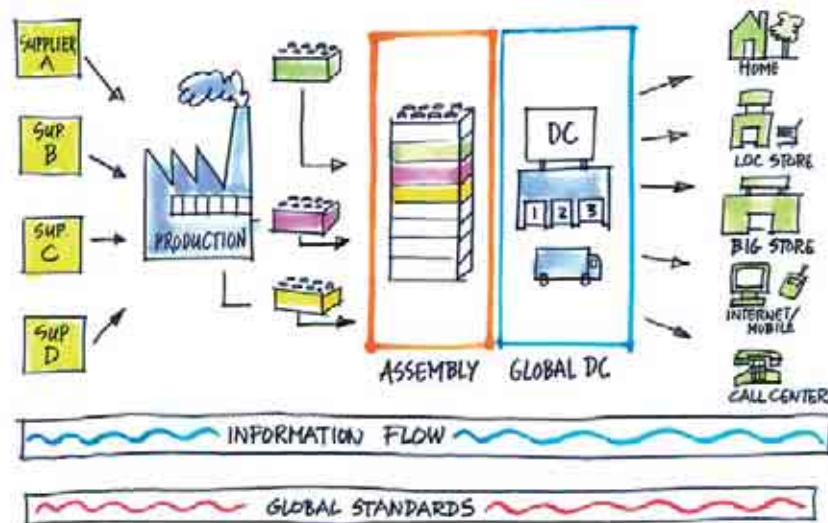
Ultimately one master consolidated distribution centre may be set up to service the stores of different retailers. This will involve viewing the value chain as a consolidated pool and will require competitor collaboration beyond what the industry has demonstrated so far.

Potential benefits would be significant: lower transport costs and energy usage, savings in working capital, and a faster, more responsive supply chain. A hybrid system may also appear for products such as private label or general merchandise. In addition, there will be short-term potential in setting up city consolidation centres, which could also be used for home-shopping fulfilment.

Complicating factors will include fluctuations from seasonal promotions, shared development of automated warehouses and the shared management model. In addition, leading market players may believe that this model eliminates the competitive advantage derived from logistics.

An additional prerequisite for consolidated distribution will be the adoption and application of GS1 standards within each company and in the interaction between companies. The information model has to be truly shared, and governance and the control of shared services must be clearly defined.

Sustainability: The Business Benefits of Going "Green"

Maria and Albert worry about environmental issues, particularly since they have two children. The automated agents in their household information platform help them keep tabs on sustainability, waste management, fair trade issues, environmentally friendly packaging and other ecological practices of many of their favourite stores and brands.

To tackle the ecological challenge the industry will move to an approach that centres around a Total Environmental Impact Model or lifecycle analysis and assessment (known as ecobalance). This model focusses on better understanding and managing the environmental impact of a given product or service throughout its lifecycle.

The industry can use this model to understand the environmental impact of possible activities and initiatives at each of the product lifecycle stages that will lead to a more sustainable way of doing business. Methodologies to manage this process are already available and known in the industry. Lifecycle assessment, for example, is a relatively young technique that only became popular in the early 1990s. In recent years lifecycle thinking has become a key focus in environmental policy making (for example, the IPP, Integrated Product Policy) as communicated by the EU, but also in Asia and the Americas.

Total Lifecycle Assessment
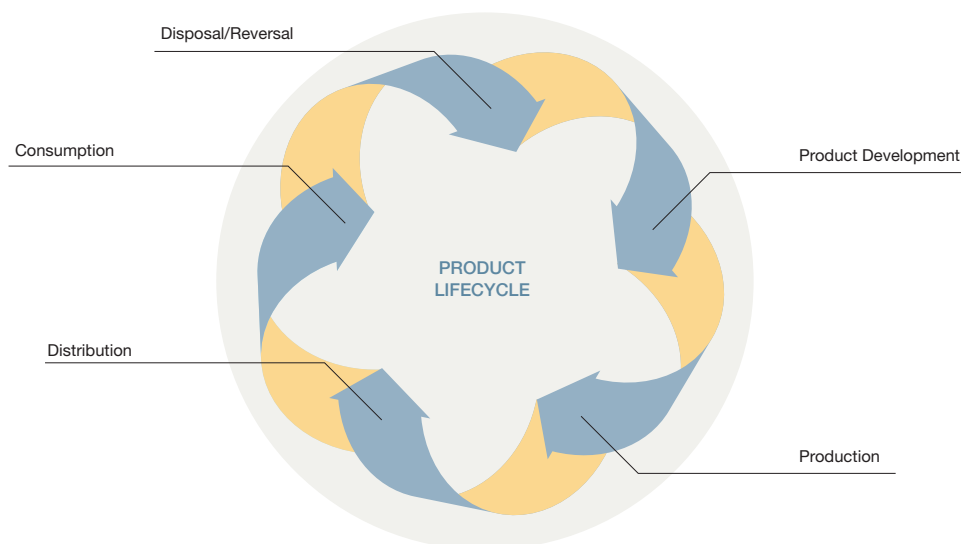
Lifecycle assessment can help organisations transform their businesses and make them more ecologically sound, while creating cost efficiencies at the same time. Many companies in the retail and consumer products industry are already moving in this direction. U.K. retailer Tesco, for example, has made a commitment to sustainable growth with a wide-ranging environmental programme that focusses on environmental management, efficient use of resources, reducing emissions, minimising waste, helping customers recycle more and sourcing products.[7]

Similarly, IKEA places significant emphasis on environmental responsibility, which is particularly evident in its forestry initiatives. For example, the company demands that the wood in its solid wood products does not originate from intact natural forests, unless they are certified. IKEA's long-term goal is to source all wood from verified well-managed forests, that is, forests that have been certified according to a forest management standard recognised by IKEA.[8]

U.S. retailer Wal-Mart also has an extensive sustainability programme. For example, the company is looking for ways to increase truck fleet efficiency by 25% in the next three years, and doubling it in 10 years. In an interview with *Grist* magazine[9], Wal-Mart CEO and President Lee Scott noted that "If implemented across our entire fleet by 2015, this would amount to savings of more than $310 million a year."

Manufacturers have also been very active in this area as well. Take the example of Kraft's sustainable coffee initiative. In 1993, Kraft, one of the largest coffee purchasers in the world, began supporting small sustainable coffee projects through its German subsidiary. Recognising the fundamental structural changes that were occurring in coffee production, including the then collapse of prices, the company significantly expanded its efforts beginning in 2001. Kraft now is approaching coffee sustainability in two primary ways: sustainability projects in areas such as Peru, Vietnam and Ethiopia; and partnerships and collaboration like the Rainforest Alliance, common Codes for the Coffee Community (CCCC) and the Sustainable Agriculture Initiative (SAI).[10]

To raise awareness inside the industry, business cases must be developed for the environmentally friendly value chain. The economic implications of the ecological challenge must be made clear. Companies must also see the potential for business benefits if they are to act in a more environmentally friendly

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[7] www.tescocorporate.com, accessed 5/18/06.

[8] www.ikea.com, accessed 6/19/06.

[9] www.walmartstores.com, accessed 5/17/06.

[10] www.kraft.com, accessed 8/25/06.

way. Growing awareness will make sustainability a long-term business consideration and affect companies in a number of ways:

- Product design: for example, limiting scarce resources such as timber and plywood
- Production methods and location: less pollution, using less energy and water or moving manufacturing closer to the consumer to lower transport costs
- Improved asset utilisation
- Smart packaging, such as packing more products in every shipment
- Store locations
- Transportation to the stores (use of public transport, for example)
- Waste management
- Pollution management

Greater environmental awareness will extend to the consumer level, leading the industry to become more transparent by introducing new approaches such as energy classification and certification for the retailer's supply chain, similar to those that exist for cars and houses. This will provide consumers with a picture of how particular companies stack up in terms of sustainability.

Efforts to reduce waste, transport movement and energy usage will not only benefit the industry's relationship with consumers, but can also lead to significant cost efficiencies within individual organisations. Thinking "green" can provide an additional value to the product and service.

Company Cultural and Behavioural Changes: Creating Trust, Killing Sacred Cows

Although Maria and Albert's family benefits from many of the conveniences of new technology and other developments, adapting to those changes wasn't always easy. Maria still laments the fact that her children no longer care about correct spelling or grammar. It is only a little thing but she gets upset when they send a message asking "ruok." Nobody communicates like they used to. Michael and Catherine have communicated with friends and family almost entirely via the Internet or mobile device. Maria realises that change must happen but is not always happy about it.

At the end of the day, the industry is an aggregation of businesses, and change must occur inside each company and between companies to fully realise the future value chain vision. Some of that change will be cultural, some will be behavioural, but all of it will be critical to the success of each organisation and the industry as a whole as we move toward 2016.

Building the new vision starts with information sharing within and between enterprises. Examples include:

- Inventory and out-of-stocks
- POS data
- Sales/order forecasts
- Initiative plans such as new item introduction, R&D and promotions
- Consumer insights; how companies can share different consumer insights to get all the information into their systems

Trading partners must create value for each other by better meeting the needs of the shopper.

A number of cultural and behavioural shifts must be instilled within individual organisations to realise the new value chain:

- *Shared work creates trust:* The industry has made strides in this direction. Ten or 15 years ago a joint retailer/manufacturer initiative to develop a vision of the future value chain would not have been possible. Yet there is still a need to establish higher levels of trust between trading partners and break down the barriers that exist both within and between companies. Increased collaboration should naturally engender more trust among players.

- *Joint value creation:* Companies must create greater value by looking at best practices both from inside and outside the retail and consumer products industry. Trading partners must create value for each other by better meeting the needs of the shopper. It is the shopper who rewards these companies with a purchase.

- *"Kill the sacred cows":* Companies must eliminate traditions and preconceived ideas that keep them from participating in new initiatives. Examples of progress that have occurred in value chains need to be shared throughout the industry, leading to an excitement and a willingness to do things differently.

- *Courageous and inspiring leadership:* Most changes begin at the top but they need to be implemented through the whole business. New ways of communicating about collaboration are needed.

- *Align strategic and tactical thinking:* There must be a balance between daily business and strategy. Companies will have to do a better job of bringing their tactical decisions in line with their long-term vision.

- *Incentive and reward system:* Changes need to be made to the traditional incentive and reward systems, which are based on the assumption that you can measure progress and performance largely through quantifiable metrics. Instead managers should also be compensated on the qualitative improvement of the business (e.g., sustainability) and not just the profitability.

In addition, organisational development and special programmes to strengthen this development will be critical to the success of the future value chain. Examples include:

People and decision empowerment: For change to truly occur, alignment has to be reached at every layer and decisions must be pushed further down in the organisation.

Cultural exchange programme: The exchange of employees between retailers and manufacturers can enhance the understanding of cultural differences and result in a mindset change among employees. This can create a shared vision across both sides of the fence and will remove the hesitation involved in sharing information with other parties in the value chain.

General learning programme (GLP): This ECR Europe initiative began about two years ago and is operational in 12 countries. This programme gives middle managers the opportunity to collaboratively manage business issues by aiming for sustainable changes in their behaviour rather than isolated project-based activity.

Are You Ready for 2016?

While the specific vision of the future value chain presented in this report may not be in line with the views of all readers, one conclusion is clear: Improved collaboration between all parties in the value chain will be essential in order to achieve a more efficient and effective value chain to better serve the needs of the consumer.

The long-term success of your company will be determined by your ability to exploit the opportunities highlighted in the report.

Have You Asked Yourself the Right Questions?

To be successful in this 2016 value chain, companies will need to have a number of key capabilities in place. To help determine your readiness for the challenges and opportunities that lie ahead on the road to the future value chain it is important to ask yourself a few questions regarding the key opportunity areas.

Shopper Dialogue:

○ Will you be able to manage effective two-way communication with your end consumers on an individual basis, using all kinds of new devices?

○ Can you analyse consumer response to identify issues that need quick resolution and feedback that influences future developments?

○ Can you manage a broad mix of different formats and delivery channels in a consistent manner?

Information Sharing:

○ Are you prepared to share data in a truly open and standardised way to improve collaboration with mutual benefits—free-of-charge?

○ Will your IT systems be flexible enough to deal with intensive external collaboration?

○ Can you handle the vast amount of data that will be generated by RFID, for example?

○ How close are you to a full, global and consistent implementation of GS1 standards in your company?

Synchronised Production:

○ Can you offer your products in a highly customised way, possibly as a service?

○ Can you dramatically shorten the throughput time in your end-to-end value chain, thinking in days rather than weeks or months?

Integrated Logistics:

○ Is your supply chain design able to cope with the impact of a barrel of oil costing, say, $200?

○ Will you be able to move to a situation where you share your logistics facilities and assets with other companies, including competitors?

Sustainability:

○ What is the effect of doubling the "energy waste reduction" targets that you have already set?

○ Will all your products in 2016 be based on sustainable sourcing of raw materials and packaging?

Company Cultural and Behavioural Change:

○ Are you able to maintain your growth target primarily through product innovation and in collaboration with new partners?

○ Will you be able to decrease your innovation cycle time dramatically?

○ Do you have a clear incentive scheme that rewards collaborative behaviour among your employees and partners?

At a Glance: Changes to the Value Chain

Opportunity area	Based on these external forces and industry trends:	Impact on:			
		Product Development	Production & Sourcing	Logistics & Provisioning	Marketing
Shopper Dialogue	■ "Smart" consumer ■ Joint innovation ■ New marketing approaches	■ Consumer-driven innovation ■ "Solution" focus ■ Speed to market	■ Improved demand signal ■ Sustainable sourcing	■ Home delivery impact ■ Product introduction	■ Two-way dialogue ■ New marketing toolkit
Information Sharing	■ Real-time visibility ■ Information platform ■ Standardisation ■ Demand of customer for product information	■ Accelerated by collaborative information platform	■ Improved real-time demand signal ■ Standard EPC identification system	■ Real-time inventory visibility ■ Greater accuracy with EPC tags	■ Multi-channel marketing consistency ■ Better consumer feedback ■ Target marketing
Synchronised Production	■ Consumer is King ■ Minimum inventory flow ■ Localised production ■ Reduced production cycle	■ Late customisation ■ Standardised packaging/labelling	■ Near real-time production (smaller batches)	■ Frequent customer replenishment ■ Shared deliveries	■ Personalised offerings ■ Speed to market ■ Improved product quality
Integrated Logistics/Home Fulfilment	■ Energy/fuel costs ■ Environmental impact ■ Regulatory Impact	■ Shelf-ready packaging ■ Size/package standards (unit loads – also for logistics)	■ Deliveries nearer to the customers ■ Optimal delivery ■ Near real-time production	■ Multi-client operations ■ Shared assets (DCs) ■ Collaborative optimisation of transport costs	■ Better service, consolidated home delivery ■ More channels to market ■ Better price and quality
Sustainability	■ Energy costs ■ Environmental impact ■ Regulatory impact	■ Package design ■ Product Lifecycle Management ■ Sustainable sourcing	■ Environmentally friendly production ■ Sustainable sourcing	■ Eco-friendly and optimised transport (full trucks, ship, trains) ■ Returnable transport items	■ Competing on "greenness" ■ Threshold on minimum sustainability level
Company Cultural and Behavioural Changes	■ Collaboration ■ Cross-border business will drive cultural change ■ Reward structures	■ e.g., Wiki-style collaborative design ■ Shared product innovation/development	■ Shared data ■ Collaborative Planning and Forecasting	■ Shared assets ■ Seeing the LSP as an integral part of your operation	■ e.g., Building a trusted relationship with the consumer ■ Collaboration

The Role of the Global Commerce Initiative

The Board of the Global Commerce Initiative has recognised the scale and scope of the issues covered in this report. The Board members identified and approved three projects that GCI should pursue. These projects are core to the competency of Board members and are aligned with the Board's strategic direction:

- New ways of working together
- Information sharing
- The 2016 value chain

The projects identified below are described at a high level; the GCI will work on more detailed plans and deliverables on an ongoing basis.

New Ways of Working Together

This project will be driven by identifying new ways of working together and will cover the following areas:

1. Identifying the three most critical areas for improved retailer and manufacturer relationships (e.g., annual trade negotiation cycle).

2. Take one of the identified areas and develop a best-practice template on how to make this activity more collaborative and efficient. This best practice would include setting a joint direction and objectives, empowering people to meet their objectives, developing reward systems and implementing change management.

Information Sharing

This project will be driven by the concept that the best way to manage complexity is through transparency. This project on bridging the information gap will cover the following areas:

1. *The business perspective:* Develop the business case for sharing the right information, at the right time, in the right place and in the right quality based upon an information model showing the total picture of data requirements, sources and flows.

2. *The consumer insights perspective:* Provide an overview of current and future potential of market research, consumer panel, market intelligence data and how that might be integrated within the business processes.

3. *The technical perspective:* Develop a concept for the collaborative information platform, providing access to all master data, event-driven data and consumer-driven data.

The 2016 Value Chain

This project will define the detailed "2016 Value Chain" flow of physical goods and will cover the following areas:

1. *Value chain model:* Develop a value chain model as a foundation for the discussion. This would include a series of flows representing the possible alternative value chain scenarios to support the various channels to market.

2. *Value chain platform:* Provide a global platform to discuss existing concepts for value chain collaboration such as integrated logistics and synchronised production. The platform will be based on developing a network of interested parties to facilitate the sharing of current thinking and the establishment of a database of existing projects under way.

3. *Value chain framework:* Develop a framework and checklist for value chain collaboration, such as consolidation facilities, integrated logistics and shared assets.

The Board recognises that previous work has been done in some of these areas and would wish to build on that work. In addition to the project work outlined above, the GCI will serve as a global platform co-ordinating the various activities and disseminating information on a global basis.

Appendix: The Making of "2016: The Future Value Chain"

To help develop the value chain model for 2016, the Global Commerce Initiative called on a wide range of industry players, including retailers, consumer products manufacturers, logistics service providers and technology companies.

The first step in the process was an intensive two-day workshop held at Capgemini's Accelerated Solutions Environment (ASE) in Utrecht, the Netherlands. Participating companies consisted of Carrefour group, Coca-Cola, Dairy Farm, DHL, Kraft Foods, Metro Group, Nestlé, Philips, Pick 'n Pay, Procter & Gamble, Royal Ahold, Unilever and Wal-Mart. Also participating were representatives from GCI, Lean Enterprise Academy, Intel and Capgemini.

The objective of the workshop was to consider the forces driving change and their impact on the value chain, as well as to develop a model for the future and practical solutions and guidelines for realising that vision. The session comprised three phases:

Phase I: Scanning the 2016 Landscape

The group began by studying trends and information on a wide range of topics that will influence the world as well as the industry in 2016, including:

- Economic, environmental, demographic and regulatory trends
- Trends related to consumer behaviour, product flow and information flow
- Technology trends that are already used on a small scale today but that may have a great impact in the future

Phase II: Focussing on the Future

Using the insights from phase one, the group built models of the future value chain, taking into account basic provisioning, impulse shopping and buying one-off large items. The group also explored how cost efficiency, service and convenience will likely influence the value chain in the future. By building these models it became clear what challenges the industry will face in the future and what opportunities lie ahead.

Phase III: Creating Solutions and Guidelines

The final phase focussed on how to turn the insights and models into reality. The group designed solutions for the challenges that will enable the players in the value chain to work collaboratively. Additionally, the team summarised the forces that are driving change in the value chain and looked at what the vision and solutions would mean for the industry as a whole and for individual companies.

The output from the workshop was aggregated and presented to GCI's Executive Board for review and input. The board is made up of retailers, manufacturers and partner organisations (see facing page). Breakout sessions at the spring GCI Executive Board meeting in Chicago examined the opportunity areas in detail and provided additional content that was incorporated into the value chain model and the accompanying report.

About the Global Commerce Initiative (GCI)

The Global Commerce Initiative (GCI) was established in October 1999 as a voluntary platform. Its mission is to lead global value chain collaboration through the identification of busines needs and the implementation of best practices and standards to serve consumers better, faster and at less cost.

It is a network created by the member companies and sponsors to simplify global commerce and link the value chains to improve consumer value.

GCI operates through an Executive Board composed of senior representatives of more than 45 companies drawn equally from manufacturing and retailing that do business across continents or via global supply chains. It works closely with eight partner organisations – the regional ECR Initiatives and VICS, four trade associations (AIM, CIES, GMA and FMI) and the standards organisations GS1 and GS1US – representing more than 1 million companies in the world.

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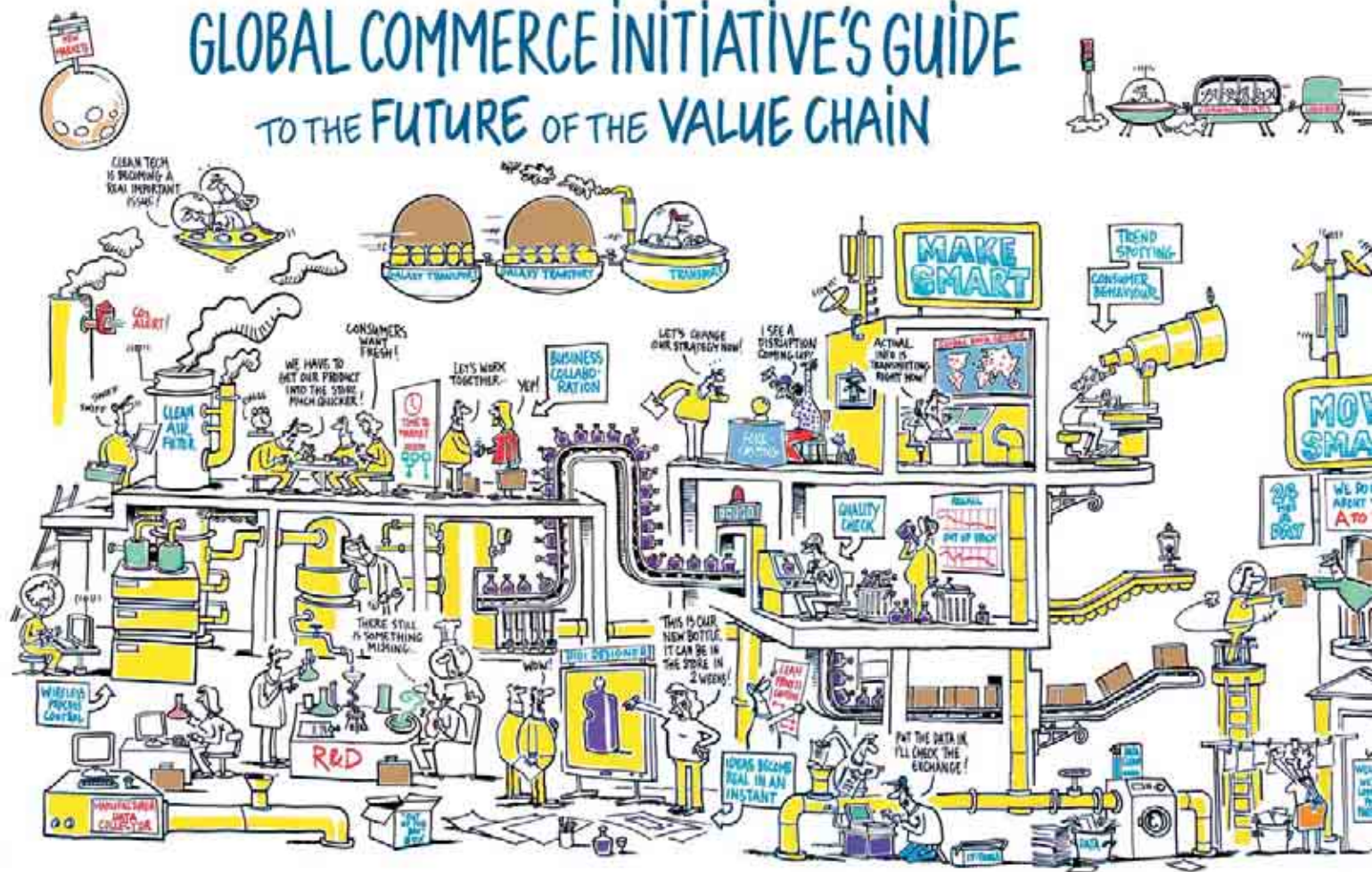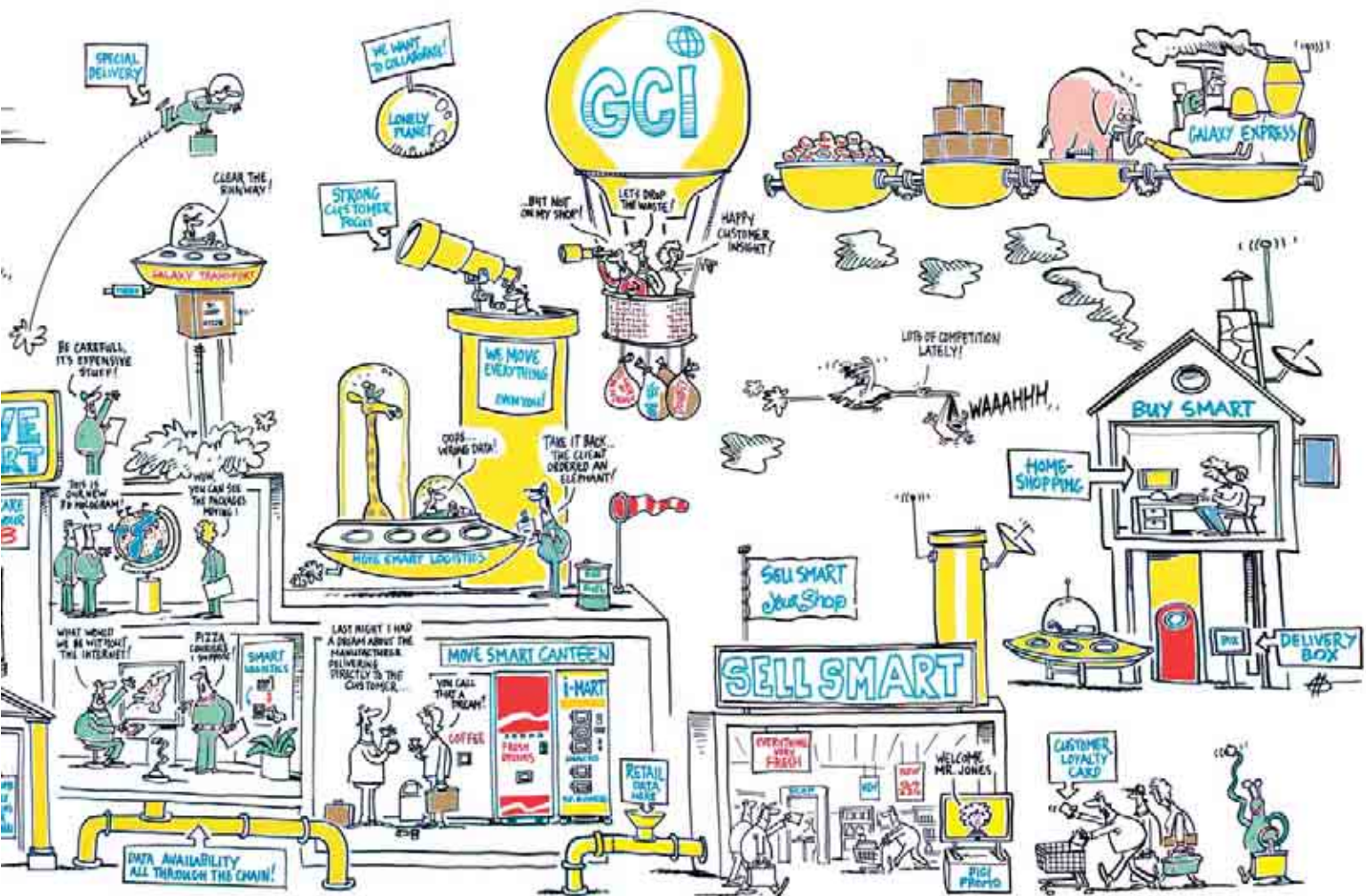
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GLOBAL COMMERCE INITIATIVE'S GUIDE TO THE FUTURE OF THE VALUE CHAIN

"The future depends on what we do in the present."

— Mahatma Gandhi

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