

### Design Research

Design Research is one of the key Corporate programs carried out by Philips Design, providing new insights and territory for intellectual engagement and creating knowledge, competences and capabilities. Design Research consists of researching, experimenting with and developing new insights and methodologies, according to scientific principles, to create distinctive design services with a competitive advantage.

The Design Research program recognizes that design needs to change if it is to further enrich and interpret our cultures. It needs to respond to a new world, new economies, to the emerging needs of and expectations of people who want to participate and engage in transformational experiences. It needs to drive and build on the cultural qualities of this world, exploiting intelligent adaptive technologies in relevant ways.

For more information on Philips Design Research, please contact [Steven.Kyffin@Philips.com](mailto:Steven.Kyffin@Philips.com)

## Design Research



# The future of shopping

An investigation into the changing nature of shopping: Putting the power of shopping into the hands of the consumer *By Clive Roux and Brian Regienczuk*



**PHILIPS**

## Abstract

This paper is based on the findings of the Future of Shopping theme studied throughout 2003 as part of the Design Research program at Philips Design. It describes the key areas that led to our position on the Future of Shopping, and concluding with a glimpse at what we have gained through the research and how it can help to bring value to our customers.

The Future of Shopping focuses on understanding the evolution of the shopping experience and what changes technologies could bring to enhance the consumer's experience throughout the purchasing process. The research focuses on creating solutions that provide the consumer with the option to increase control of the retailer in order to enhance their experience – turning latest technologies that are now implemented at the back-end of retailing into frontend solutions, for the ultimate benefit of both consumers and retailers.

## About Philips Design

Philips Design is a global community of professionals, focused on delivering competitive value to its clients through design. It strives for innovation in both its design services and in the solutions it offers.

At its core is a multidisciplinary team of researchers and designers which, over the past ten years, has been addressing how design can best serve people's current and future values and needs. It continuously develops and experiments with the latest methods in design research.

## Introduction

Philips Design is a community of professionals, focused on delivering competitive value to its clients through design. Our Design Research provides the new insights and territory for intellectual engagement, creating knowledge, competences and capabilities across several themes. The Future of Shopping is one of these themes.

Our environments are becoming cluttered with technology and our technology is becoming increasingly complex. Ambient intelligence will allow for pervasive technology to become an integral part of our environments and allow for more fluid transitions and interactions between people and systems through the convergence of technology, business, geography, people and culture.

Philips, through its Lighting, Consumer Electronics, Domestic Appliances and Semiconductors divisions, is an active part of shopping today and has a stake in understanding where the Future of Shopping is going on many different levels. Philips Lighting is one of the top suppliers of lighting solutions and a key player in LED and other non-traditional lighting technologies that are a part of both systems in retail spaces and devices bought by consumers at retailers for home use. Both Philips Consumer Electronics and Domestic Appliances divisions are involved in selling products to consumers through virtual and physical retailers. They also work with retailers to improve product placement, both where and how the products are displayed, in physical and virtual stores. Philips Semiconductors is intimately involved in creating new solutions (ID tagging, mobile communication chips, etc.) that are a part of the manufacturing and retail cycle already, with more coming.

## Challenges

The two main challenges for Philips are the creation of meaningful products/systems and the presentation of these products/systems to their customers (both B2C and B2B). Today, companies need to know the current trends to inform their decision making process in this respect, but they also need to know that their partners in designing these products and solutions are aware of the consequences the near future may bring to these solutions offerings.

In order to deliver strategic value to our customers, Philips Design is actively involved in understanding how the near future will change the solutions we are designing we are also preparing design methodologies that identify what new solutions will become possible.

## 1. Putting the power of shopping into the hands of the consumer

The real revolution in shopping, over the next 3 to 10 years, will be realized as a transfer of power. The revolution will put the power of the retail system into the hands of the consumer. It will enable shoppers to easily control their own information, obtain meaningful information from the places they are shopping, as well as about the products and services they are shopping for. It will also enable them to make informed decisions based on their needs and desires.

By placing the consumer at the center of the retail system, any invasion of privacy would become a matter of choice for each individual consumer. The data they allow the retailer to capture, the premiums they pay, everything would revolve around whether the consumer felt the value or benefits exceeded the costs. Changing the way stores think about their customers allows for a broad range of solutions and experiences that will better meet the needs of consumers.

Philips Design is leveraging this understanding of where shopping is headed to create ideas and scenarios around how different industries and businesses can develop. Through design and research, we are helping show what is possible, providing achievable visions, 3 to 10 years out into the shopping horizon. Where will your industry and business be in 3, 5, or 7 years? Will you have leveraged your investments with the future in mind? Or, will you be struggling to keep up with your competition?



Figure 1: Example of products and applications that enable a consumer to decide how and when to share personal information

## 2. From escalator to RFID, a gradual move towards integration

Shopping can be traced back to 7000 B.C. (1) and the development of shopping can be plotted by following the changes that enabling technologies have brought, from the invention of money to large open span buildings, the first escalator to bar codes and air-conditioning. Along the way, advances in technology and changes in people's attitudes have made shopping as much a past-time and social experience as it is a necessity. Any study of the Future of Shopping needs to be as concerned with the changes occurring in enabling conditions as it does with the changing values, beliefs and needs of people.



Figure 2: Evolution of retail

In the last 20-30 years, retail has been gradually moving towards automated data systems that have largely affected the back-end logistics chain. These data management systems are now starting to move into the storefront with the resulting opportunity to connect all products and customers into the system. While an exciting prospect, which will present many opportunities, it also brings with it the possibility that people's privacy will be invaded.

### Beyond RFID

However, it is not simply the introduction of RFID (Radio Frequency Identity) tags, Near Field Communication (NFC), or other technologies to the front end of the shopping experience that will truly represent the Future of Shopping over the next 5 to 10 years. These precipitating factors only help to bring forward the major changes that will happen for retailers and other shopping locations such as malls, mixed-use communities, zoos, airports, and hospitals. Retailers will embrace their consumers and give the power and control back to these customers as systems become more complex and more integrated on the front end of stores.

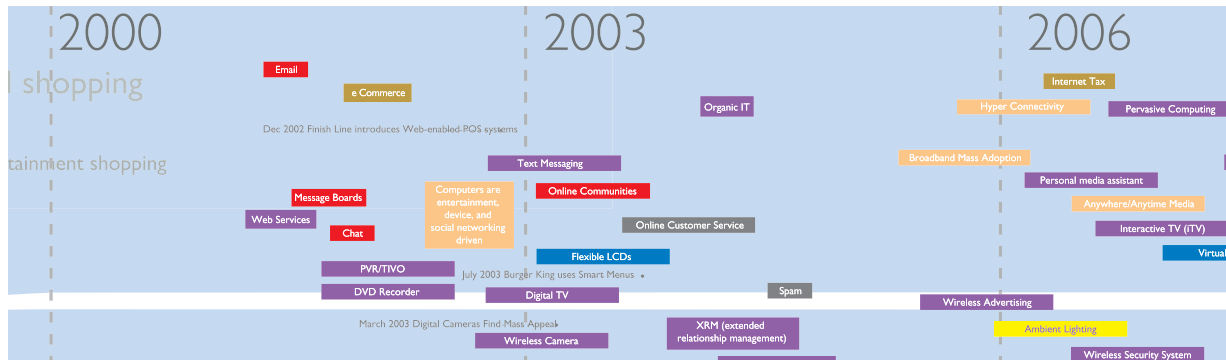


Figure 3: Detail technology timeline: evaluate contributing technologies that will enable the future of shopping

Philips Design has created a technology roadmap to help facilitate the idea creation process and to help validate the ripeness of contributing technologies needed to manifest each idea into a scenario. By incorporating real technologies into our scenarios, we start to provide achievable visions for industries and businesses, dreaming within bounds. These insights and tools can be customized for different industries and situations to help guide and validate scenarios applicable to each business involved in retail and shopping.

### 3. What is the consumer thinking?

In a study by Cap Gemini Ernest and Young, Intel, Cisco Systems and Microsoft, the top 5 in-store frustrations experienced by consumers could all be answered, at least in part, by technological solutions. These 5 frustrations are given as major reasons for consumers going to a competitor's store or shopping less at a particular store (2).

Consumers also indicated in large majorities that they would use service-oriented applications and devices if available in store and that these services, were they available, would lead 77% of the respondents to buy higher quality items. Nearly half answered that it might cause them to spend more time in the store. (2)

#### More interaction

People are looking for more interaction. In the present business model of efficiency and driving for the lowest price, it's unlikely there will be more sales assistants in the future. But with a number of new technologies becoming feasible for in-store use, there will be a time when there are more devices and technological solutions supporting the customer's shopping experience in better, more intuitive ways. Customers would reward stores who offer these services. Insights like these help us to explore ways that retailers can harness opportunities.

"Consumers have become increasingly demanding and frustrated with their in-store shopping experience" and they will reward retailers that help them save time, make the in-store experience easier, and treat them with respect, honesty and fairness (2). This is not really surprising given that the consumer now has the option of shopping

on-line, a channel that has grown in the USA from just under \$6 billion in the 4th Quarter in 1999 to just over \$17 billion in the 4th Quarter of 2003 according to USA Census figures (3). That is a growth of 25.1% over the same period in 2002.

#### On-line challenges, in-store shopping

Let's look at on-line shopping experiences. Think how hassle-free the virtual check-out process is and how technology is making it easier and easier for consumers to find information, compare prices, make informed decisions and ultimately buy something on-line. Compare that with the in-store problems of waiting in lines at the check-out, discovering that an item does not have a price tag on it, that the price is not the same or trying to find an assistant who is knowledgeable enough to help you.

Observe the lack of in-store information, people are struggling to understand the cost benefits of purchasing the more expensive product. Compare this to the on-line experience where the amount of information available actually helps consumers make choices. While by no means a perfect experience, as we all know, it is not surprising that by 2006 80% of European web users will go online to research consumer electronics purchases (4). This is an indication, backed by Philips Design's own research studies for the US consumer, that on-line experiences are enjoyed and valued more than real world experiences already in certain product and service categories.

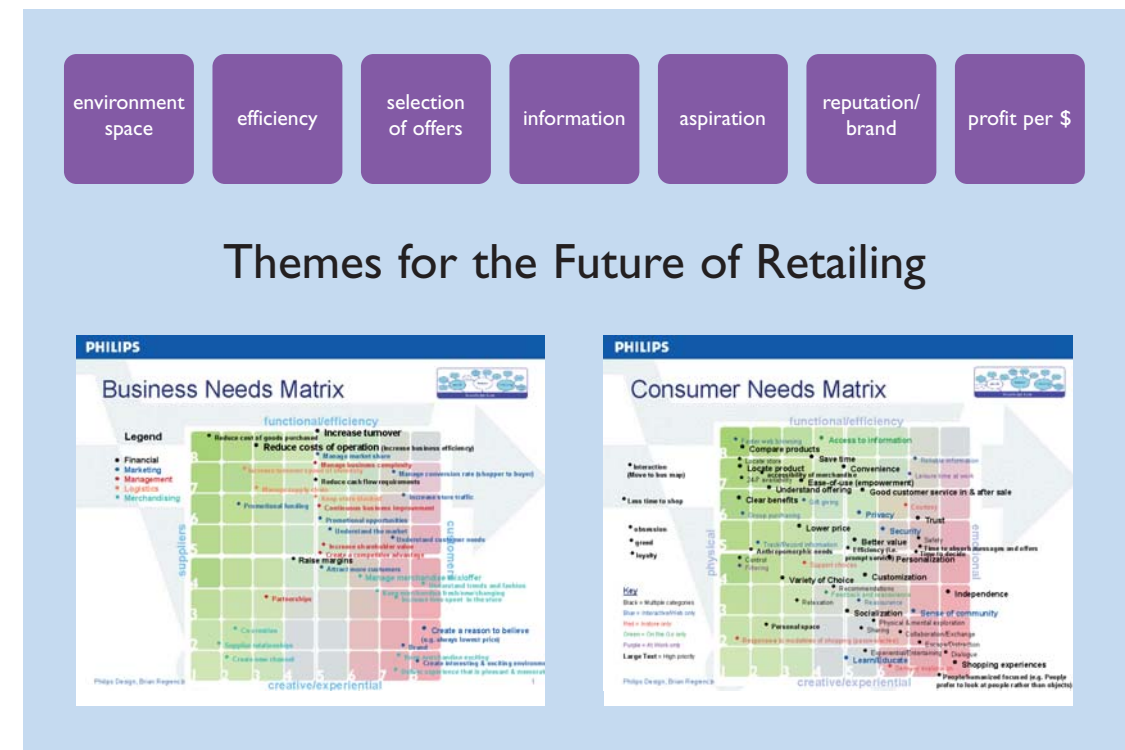


Figure 4: Mapping consumer and business needs to analyze the dominant themes to be addressed in the future of shopping

For many categories, there is a gap between the on-line and in-store experiences. Everyone expects the on-line experience to lack some of the tactile consumer needs (look and feel), but the in-store experience is not delivering everything people need in order to make a purchase decision. How long will it take retailers to “get this” and start to deliver better information and experiences by implementing technologies in the front end of stores?

### New design tools for shopping

Philips Design has leveraged its understanding of people and created a tool to help businesses visualize their consumer’s needs in more tangible ways. By mapping out consumer needs on various axes, we are able to help businesses evaluate unmet needs within context. Do you know what your consumers’ needs really look like? Not merely the top 3 complaints about the current shopping experience, but a larger more robust view along at least 3 axes that give your customer dimension and help you think about them in new ways.

We have also considered the business or industries needs, because a solution for the customer may not help grow a business. In mapping business needs, we were able to identify similarities between consumer and business needs to help us arrive at ideas that could be good for both businesses and consumers.

These business and consumer mapping tools, along with our technology roadmap and other research knowledge has enabled Philips Design to more meaningfully represent the Future of Shopping. Each of the scenarios we create ties back to both consumer and business needs. Our ideas are not just possible via technology, but are based around peoples’ needs and how technology can help better serve your business and your consumers.

## 4. Technology – Efficiency versus customer experience

In the last part of the 20th century, shopping has been consolidating and moving towards more mature business models driven by efficiency and economics. This movement towards mass-market retailing is driven regionally, with the USA in the lead. Roughly 80% of retail sales occur in Mass Market retailers in the USA versus about 30% for Europe and around 4.7% in Asia, according to the Harvard Design School Guide to Shopping. (1)

Efficiency is a never-ending quest; however, when the level of consolidation reaches levels of 80% it starts to beg the question, “what is next?”

### Disruptive technologies

Enter the Internet, which has suddenly made it possible to shop anywhere, anytime and for anything. It offers efficiency gains that break the existing paradigm. The Internet connects people, places and things together in ways we could not have dreamed of 20 years ago. And presently, it is an enabling technology that has not been integrated into the front end of retailing.



Figure 5: Understanding the technology trends and the future of shopping

Using our tools and research knowledge, Philips Design has already amassed a catalog of application ideas, some of which have turned into more detailed scenarios, around improving the front end of retail and empowering the consumer.

What is it that is so compelling about on-line shopping? Is it the amount of information available, the ease of use, the efficiency of comparing? When we look at examples like Amazon.com, it is clear that the ability to customize, personalize, and deliver relevant content suggestions each play a large role. A simple device such as a – cookie – is enabling this process. The real world needs similar solutions and one technological device that has the potential to enable this in real world retail stores is the Radio Frequency Identification (RFID) tag.

Developments in the cost of flat panel displays and electronic paper will lead to the proliferation of information and experiences based on digital content in-store. Already NCR and others are experimenting with, developing and deploying in-store kiosks. How can these be more integrated and flexible, working with consumers, when and where they are needed?

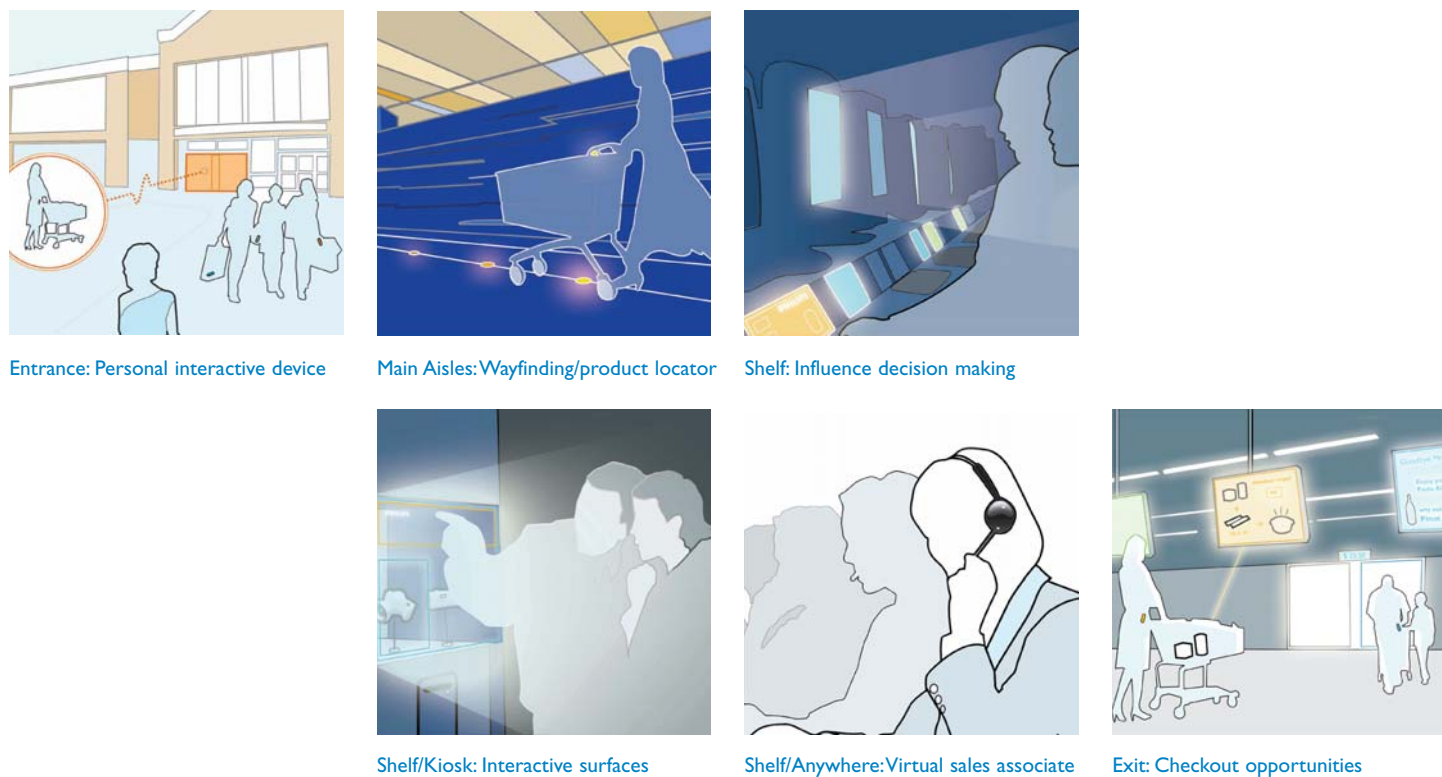
Through the course of the next year, companies like WAL\*MART will roll out RFID tags. The intention is to improve the efficiency of their system by reducing losses and theft. This is undeniably a good application for WAL\*MART as well as the consumer. Tagging products in effect connects them to the digital world and that connection can be used to deliver other experiences and solve real consumer issues as explored in this project. Tags can be applied to products as well as consumers in the form of store cards, credit cards and loyalty cards. When used by consumers in this way, they fundamentally change the paradigm for mass market retailing. To start with, consumer rights and questions of privacy protection arise.

### Enabling personalized experiences

One area that we explored, identification, would trigger a host of changes on the front end of stores. These changes rely on the retail system's abilities to recognize a consumer entering the system or store. Our research theme investigates this area and how it can be used as a trigger point to create exciting, engaging and more satisfying shopping experiences for consumers and how we could become a protagonist in creating that revolutionary change. The area of identification has been riddled with security concerns. However, when consumers have the choice and understand the benefits behind identification, it will become a valued part of retail and other areas of consumers' daily lives just like currency, mobile phones, keyless entry and other technology concerns of the past.

Many of the applications and technologies that we explored can already be built at some level, based on today's technology. They can start changing the landscape of the shopping experience for consumers while being directly related to businesses specific needs.

Figure 6: Six scenarios highlight aspects of shopping in the near future



## 5. Research Methodology

The territory was explored through design research methodologies. We conducted desk research into related areas, especially surrounding in-store and on-line shopping, consumers, businesses, and technology. Several tools were created to facilitate and help validate our two main creative workshop sessions, each of which drew from a variety of disciplines and backgrounds.

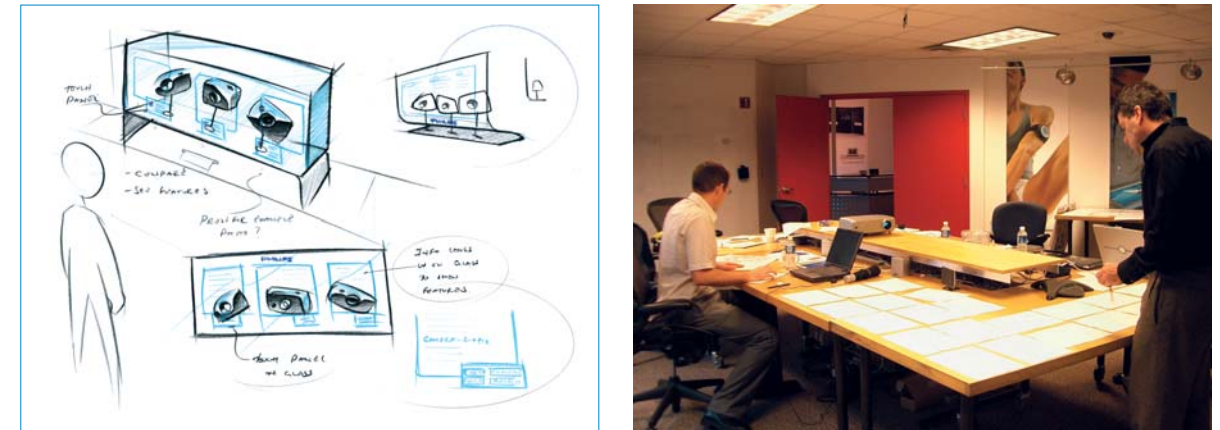


Figure 7: Workshops produced ideas that could be turned into various business assets such as intellectual property, new business models, and concept scenarios for a type of retailer, manufacturer, or vendor

The initial workshop sessions' objectives were to identify the relevant consumer needs or insights from the research material, to identify the retail business needs and to create a technology roadmap for retailing going forward. The consumer and business needs were mapped and grouped to find areas of synergy between the needs of both. These needs formed clusters or themes that were then further developed by looking for technology that could help to create appropriate solutions. Smaller teams further developed and validated the resulting ideas and insights against available resources.

The first set of workshops informed the other, and the clusters of business and consumer needs were used with the technology roadmap along with many other stimuli to inspire brainstorm sessions that identified possible solution and application ideas. These sessions generated over 100 such ideas which were then grouped and prioritized. Finally, some of these applications were developed into scenarios to visualize the ideas in order to stimulate a discussion and debate on future directions that technology could take and allow clients to evaluate the concepts before committing to development and implementation budgets.

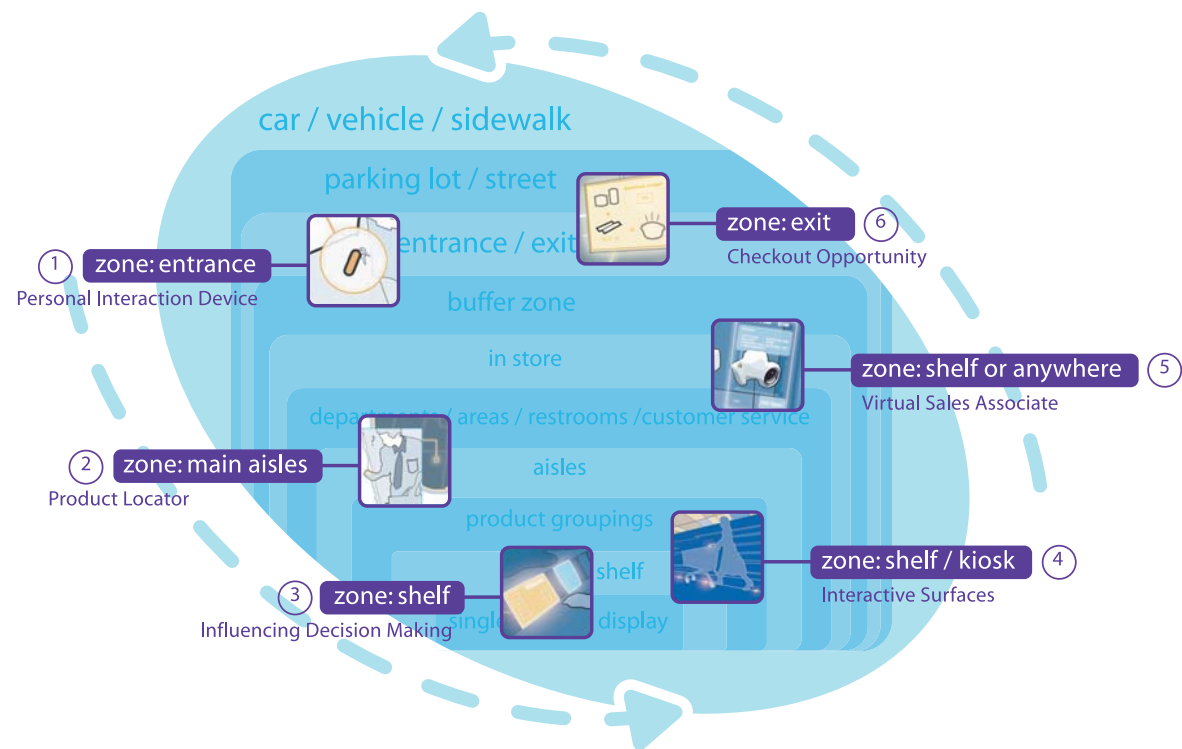


Figure 8: Zones of Interaction

On a parallel track, we have developed a tool called the Zones of Interaction that helps to structure the consumer experience from the parking lot to the shelf. This tool is useful when designing a complete store experience. It helps to define what issues need to be addressed at which point in the process and to determine the different physical limitations that need to be taken into account when designing information systems and experiences for retail.

### Conclusions

The real revolution in shopping will place the power of the retail system in the hands of the consumer. With the consumer at the center of the retail system, any invasion of privacy would become a matter of choice for each individual consumer, depending on whether they felt the value or benefits exceeded the costs. Companies will focus on a broad range of solutions and experiences that will better meet the needs of consumers and go further than just bringing technologies such as RFID into the front end of the store.

These technology opportunities will create a more intuitive, personalized, and empowered retail experience.

Designing applications and systems that put the consumer in control of the retail system will enable stores to solve a number of the top issues that lead to lack of satisfaction for consumers.

It will also create an environment that can foster a whole new brand dialogue with customers. Different manifestations will become a means of differentiation for brands and can be an opportunity for retailers, manufacturers and other stakeholders to rethink their business models and strategies.

Philips Design has equipped itself to explore this future from a design point of view so that Philips can ensure that the consumer is fully involved in creating relevant solutions to meet their needs.

As a result of the research work, Philips Design has identified methods for exploring the Future of Shopping and can tailor these to clients' needs and industries. These methods (i.e. mapping consumer and business needs, creating technology driven roadmaps, workshop facilitation, idea generation and selection, scenario creation, and supporting strategic direction setting) let Philips Design help businesses to address some of the current consumer issues and create more compelling consumer experiences in the short term, as well as creating ideas, propositions and scenarios that help inform branding and strategic decision making in the long term.

## References

1. Rem Koolhaas, The Harvard Design School Guide to Shopping, page I Diagram I, TASCHEN GmbH.
2. Cap Gemini Ernest and Young, Intel, Cisco Systems and Microsoft, Transforming the Shopping Experience through Technology - Executive summary, 2003.
3. US Census Bureau, <http://www.census.gov/mrts/www/current.html>
4. Gartner/G2, Multichannel Shopping Gives Web Key Role in Electronics Retailing, July 2003.

## About the Authors

Clive Roux is a Senior Director at Philips Design. He led the Future of Shopping research theme and oversees Design Research for North America. Clive has led Design activities, including Design Research, for the past 18 years in Europe, Asia, and America, and has been part of Philips Design for 14 years. He has a Bachelor in Technology in Industrial Design and is the holder of two patents.

Brian Regienczuk is a Senior Project Manager and Information Architect at Philips Design. He led daily project operation and exploration for the Future of Shopping research. Leveraging his background in psychology, Brian has focused on championing users in the interactive arena, helping weave business and consumer needs into successful solutions over the past 8 years. Brian's experience crosses industries such as Healthcare and Medical Systems, e-Business, Telecommunications, Banking and Finance, and Consumer Electronics.