

PHILIPS SMART CONNECTIONS CLOTHING

Organisation	Philips
Trigger	<ul style="list-style-type: none"> • Desire to put a 'human touch' into technology, visualising how the next steps in the world of high technology will affect what people wear and how they live. • Desire to make continual progression to a more tactile electronic solution – wearable electronics. • Desire to stimulate children's play and keep them safe.
Objectives	<ul style="list-style-type: none"> • To integrate technology and clothing. • To develop a product range that combines garment functionality with modern communication • To create clothes for children so parents can track their children and provide play opportunities.
Tools/techniques	<ul style="list-style-type: none"> • Research into strategic futures, sociocultural/interaction with objects, economic developments and sustainability. • Designs tested on the streets of New York.
Enablers	<ul style="list-style-type: none"> • Bringing together and integrating the skills of a psychologist, fashion designers, textile and electronics experts. • Technological developments – the merging of advanced electronics and new textile materials.
Tensions	<ul style="list-style-type: none"> • Technology can be heavy which limits it to heavy-duty wear. • Many of the garments are still in prototype stage – expense is high. • The clothes may be a target of crime.
Impact	<ul style="list-style-type: none"> • Wearable Electronics prototype garments launched in August 1999. Smart Connections exhibition launched at Milan Furniture fair April 2001. • Some products now in the marketplace. Produced a range of wearable electronic garments in collaboration with Levis Strauss. • Impact on crime unknown.
Lessons	<ul style="list-style-type: none"> • The way that fibres are used is fundamental to the development of new designs with integrated technology. • Have to consider how to protect the clothes from being the object of robbery and how to care for them. • Fashion requires designers to keep moving forward.

Synopsis

This case discusses the potential for integrating communication technology into fabric to help protect children from abduction, abuse by adults or other children. Philips has developed a range of prototype garments where mobile phones and GPS technology are embedded into the clothes, thus enabling parents to pinpoint the location of their child and communicate using the mobile phone. The garments also have a fun element: fabric antennas, radio tagging and miniature remote cameras allow children to play exciting games outdoors. Highly desirable clothes also put children at risk of being the object of robbery, especially on the streets of New York, however. This case illustrates the challenge facing Philips regarding the promotion of safe play, namely how to protect the owners of such clothes.

Background to Philips Smart Connections Clothing

Philips invests heavily in state of the art research designed to chart changes and forecast future developments, thus allowing the company to continually improve. As Nancy Tilbury, designer, points out, "*the force of fashion means that we have to continually keep pushing forward*". Team psychologist, Josephine Green, researches topics such as strategic futures, sociocultural developments, economics and sustainability. Identifying a trend towards functionality, clothes and technology have been integrated to give additional elements and support the wearer. An eyecam on the jacket has a face recognition feature and the integrated collar headphones provide audio-feedback, reminding the wearer of the identity of the person encountered. This device keeps the wearer up to date with who he/she has met and potentially provides snapshots of people and places.

The designs also respond to the needs of young people, potentially transforming their behaviour, as Nancy Tilbury explains:

"We respond to what kids do, which is 'hang out'. But we want to change the beat through our clothes. Perhaps get kids up off the sofa" (Designer).

Whilst many of the garments are still in the prototype stage, a range of heavy outerwear developed in collaboration with garment manufacturer Levi Strauss is already on the market. The results are jackets with voice-recognition mobile phones and MP3 players; the jackets are machine washable, but the electronics click out before you put them in the machine. The highly technological components of the garments carry a high price: Levi's garments are currently retailing between £500- and £600.

This case study is based on an interview conducted at an exhibition in Milan with Nancy Tilbury, Design Consultant for the Intelligent Fibres Division, who has been involved in the research and development of the Wearable Electronics prototype garment collection. Additional information has been sourced on aspects of blue tooth technology, electronic clothing and children's safety devices.

It should be noted that whilst the intention of the garment in the child's case is to increase safety, with the more high fashion garments there is potentially an increased risk. Designer Nancy Tilbury spoke about some market research they had undertaken with a group of black youths in New York. Although the garments were considered 'really cool,' there was fear of being the object of envy and attack. Philips is undertaking further research to address this issue through the use of tracker devices and codes.

Design Process

Concept

Philips conducted research into how people dress themselves, what is fashionable on the streets and how clothes bestow certain qualities on the wearers. Although clothes have a sensual side, they are also seen as everyday objects and increasingly considered in terms of their functionality. The design team wanted to extend and

develop this theme by giving clothes 'additional elements'. The idea was that fashion and technology should work 'hand in hand', providing stimulation, safety and fun. Through the new clothing concept, Philips aimed to provide a totally fresh approach to future lifestyle and fashion. Various ranges have been developed over the last two years by a multi-disciplinary team – including software engineers, electronics and consumer design experts, psychologists and fashion designers.

Designs for Children

The clothes have technology embedded within them including Global Positioning Satellite (GPS), mobile phones and digital cameras. The technology is used to pinpoint the location of the child, thus enabling guardians to confirm that the child is safe and providing an opportunity to support them in their games, as parents can converse with the child using the mobile phone. Nancy Tilbury explains: *"The child is playing a game, but mum and dad have the defining moment at home. They can share the memories of the child."*



Figure 1: Children's outerwear with built in entertainment and communication-safety devices © Philips <http://www.smartconnections/>



Figures 2 and 3: Game pad (left) and eye antennae (right) © Philips <http://www.smartconnections/>

Combining safety with play is a key element in these concepts. Fabric antennas, radio tagging and miniature remote cameras are integrated to allow children to play exciting games outdoors. Physical characters with identity chips can be attached to the respective garment. The child sees the character that represents another child on his screen and as children move around their characters also move on the screens, allowing them to create their own stories or hide and seek situations.

The prototype garments designed for children are developed for the future, as reflected in the bright and metallic style fabrics and the unusual designs which look like ski or space suits.

Tensions

The weight of the technology makes it difficult to design for the summer. The design team addressed this problem by restricting the Levis range to two seasons. In some instances, the technology may be packed into a bag for the summer months. The lifespan of some of the components for designs such as the massage suit is a concern.

The designs were tested on young people in New York. Consultations with black youths showed that whilst the designs were considered 'fantastic', young people were concerned about becoming the object of robbery due to the desirability of the clothes. The youths pointed out that "*you risk your life for a pair of trainers*". This highlights the dilemma faced by Philips, namely how to develop extra elements, some of which have the potential to address fear of crime (e.g. GPS and the mobile phone) and protect the wearer of the brand from being the object of envy, resentment and ultimately robbery. Philips is exploring the use of codes and tracker devices to identify the location of the clothes in the event of theft or loss.

Impact

The children's clothes were just one in a range of prototype garments launched by Philips Design at the Smart Connections exhibition shown recently at the Milan Furniture exhibition in April 2001. It is believed that:

"This latest exhibition from Philips Design, launched in Milan, will go a long way towards showing how the next step in the world of high technology really can make things better for you, your home and your environment." (Press release: Smart connections, 2001).

It would appear that attempts to combine safety with play may be an effective way of making children more safety conscious. The designers are aware of the potential dangers for the wearers of designer products and such issues are being addressed using tracking devices and codes. Any changes can therefore be made at the design stage, rather than being bolted on retrospectively.

Lessons Learned

This case study demonstrated the value of research and partnerships in developing new products, although the potential for crime issues needs to be considered and addressed effectively. It also shows how technology with the potential to protect people can be integrated into fabrics, thus reducing the inconvenience of carrying products such as tracker devices, mobile phones and potentially personal alarms.

“People are already carrying around more and more electronic products – mobile phones, palm top computers, personal hi fis – and more are on the way. It makes perfect sense to actually start integration the products into our clothes.”

Philips predicts that clothes of the future will offer entirely new ways of communicating. Concept ideas include a Phone Jacket, which develops a ‘personal area network’, and garments with built-in stereos, and ski wear with built in electronic ski-passes, temperature sensors and heating materials.

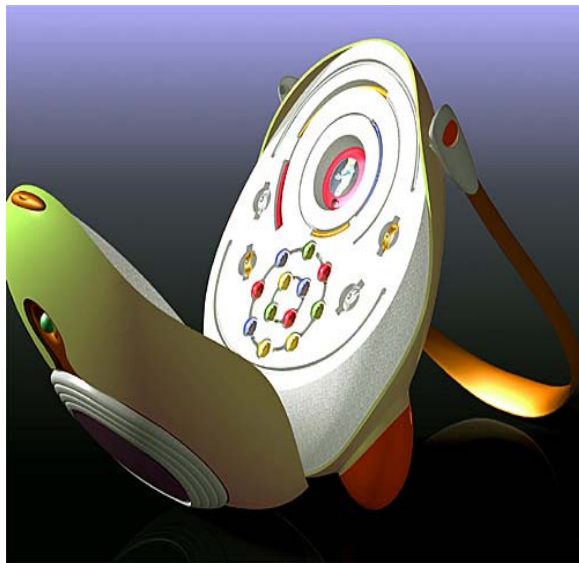


Figures 4 and 5: Ski-pass jacket (left) and phone jacket (right)

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Developments for young clubbers include ‘Pageable knickers’ which light up if someone with shared interest is close by! And electronic tattoos.

One other interesting concept which could be considered to enhance safety, is the Lullu purse designed by Dong Min Lee, one of the winning designs from a competition run by AliasWaveFront software company and IBM computers. Although safety was not the original motive behind this - the aim was to extend classic play to a children’s socialisation.



Figures 6 and 7: Lullu Purse
 © Philips <http://www.smartconnections/>



Figure 8: Children's miceguard safety device currently on sale in the US market
 © Philips <http://www.smartconnections/>

The strategy here is to propose a solution that blends the design of a digital appliance with a piece of jewellery or purse/bag. Valuable and precious information – secret notes, precious moments are captured and stored by sound capture, M3 player, and wireless communication. This perhaps provides an ideal safety solution, as it captures the child's personal details, home number, picture of parents and family, etc, in case of abduction or other incident.

Clearly more research needs to be undertaken to determine how these new developments will change our understanding of clothing, and how this new understanding will impact on social behaviour.

References, Related Case Studies and Further Reading

Peter Saraga, Managing Director of Philips Research Laboratories (source: press release, www.philips.com).

<http://www.research.philips.com/pressmedia/releases/990802.html> - article about the Wearable Electronics collection, launched August 1999. Contains background to the collection and some good images.

<http://www.philips.com/smartconnect/> - article about the Smart Connections exhibition, a series of working prototypes illustrating how new technologies are being created, integrating electronics and textiles for clothing, home entertainment and education. In particular

<http://www.levistrauss.com> provides details of wearable electronics range in the marketplace. A collaboration between clothing manufacturer Levis, electronics company Philips, and designer Maaimo Osti (announced Aug 2000). Garments retail between £500-600.

<http://aw.aliaswavefront.com/design/features/ibm/indexa.html>. Winning designs from the Create What's next design competition sponsored by AliasWaveFront 3D software company and IBM computers feature wearable electronics (GPS MAP jacket).

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Classification Index

Ekblom's crime classification	Misappropriation/misbehaviour
BCS crime classification	Theft/robbery
DAC	Child protection
Primary motivation	Enhance fashion
Type of designer	Fashion designer and technologists
Approach	Improve tracking and communication
Sector	Fashion/electronics
Location	Clothes
Authors	Caroline Davey and Jo Heeley

DAC – Philips Clothing