



CLOTHING DURABILITY DOZEN

STRATEGIES TO IMPROVE DESIGN AND TESTING FOR CLOTHING LONGEVITY

Clothing Durability Dozen toolkit

WELCOME!

This toolkit has been designed to enable clothing companies to recognise, map out and celebrate what they are already doing to make quality clothes that last for longer. It will help you to build on past success, identify any gaps in skills and knowledge, and develop innovative approaches to clothing durability that are tailored to your company's requirements and strengthen its reputation while minimising clothing waste.

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Introduction to clothing durability

WHY ADDRESS CLOTHING DURABILITY?

- The amount of clothing in household residual waste (waste that goes to landfill and energy from waste) in 2015 was reported by WRAP to be 300,000 tonnes, significantly less than in 2012 but still far too much.¹
- Extending average clothing lifetimes by one third could reduce its environmental footprint by more than 20% and is the single most effective strategy in reducing the overall impact of the clothing industry, according to WRAP.²
- Consumer behaviour too often favours low price, lower quality, fast turnaround clothing and many items are unworn because they no longer fit or have become dated.
- Consumers find it frustrating when garments fail to meet expected lifetimes³, while designing for products for longer lifetimes has become a UK Government policy objective.⁴
- The Sustainable Clothing Action Plan aims to reduce the volume of clothing ending up in landfill by extending garment lifetimes through design and repair/alteration services, and by encouraging consumers to reduce their environmental impact.⁵
- Designing clothes that are more durable and longer lasting has the potential to increase customer brand loyalty.¹

The content in this toolkit is based on a project which explored how product development processes could extend clothing lifetimes, and exposed the technical, behavioural and strategic obstacles to doing so. Researchers from Nottingham Trent University worked with industry partners to identify the knowledge, skills, processes and infrastructure necessary to adopt design for longevity.

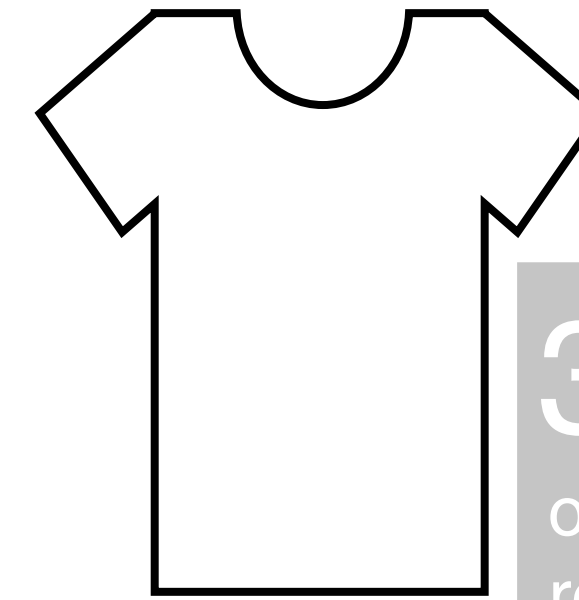
The project, 'Strategies to Improve Design and Testing for Clothing Longevity' was supported by Defra (Department for Environment, Food and Rural Affairs) (ref. EV0553) and WRAP (Waste and Resources Action Programme).

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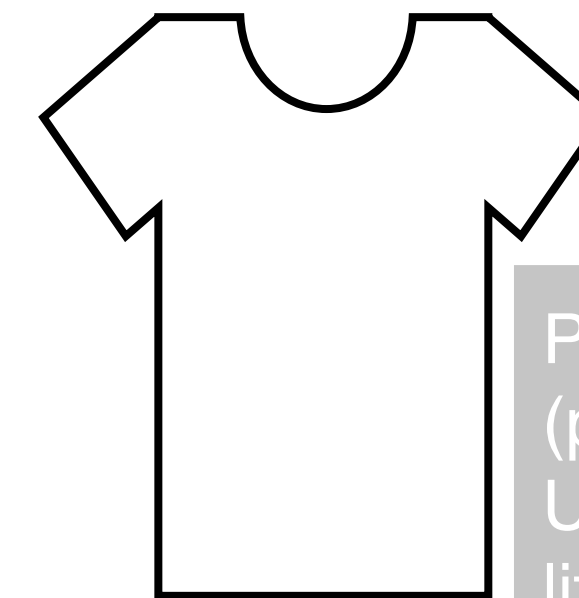
Design: Daniel Shin.

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300,000 tonnes
of clothing in household
residual waste¹ was recorded
in 2015.



Potential % reduction in footprint
(per tonne of clothing), if 50% of
UK clothing has an extended active
life of 9 months¹:

- ▼ **4% waste**
- ▼ **8% carbon**
- ▼ **10% water**

How to run a toolkit workshop

In many organisations, the knowledge, skills, infrastructure and processes that enable the design and production of longer lasting clothes already exists. However, findings suggest that a more joined up, cross-functional and strategic approach is required to enable recurring commercial and technical barriers to be overcome.

This toolkit has been designed to encourage collaborative work across departments to generate discussion and ideas that satisfy both commercial and technical objectives. So, to get the best results, bring together knowledge and interests from:

- Product Development, including designers, buyers, fabric and garment technologists and test houses.
- Production, including production managers, quality assurance, quality control and suppliers.
- Consumer Communications, such as marketing departments or agencies, and those in retail outlets and customer service.
- Strategic Management, including managers, consultants, directors and those responsible for corporate social responsibility

An expert team at Nottingham Trent University is available to run workshops. For enquiries please email CDD@ntu.ac.uk

STEPS TO CLOTHING DURABILITY SUCCESS:

1. **Arrange a durability workshop with representatives from across the company (as above).**
2. **Recommended background reading [see Useful Links & References on p. 58]:**
Sustainable Clothing Guide⁶; Clothing Design for Longevity: Category Guides⁷; Valuing Our Clothes: the cost of UK Fashion.¹
3. **Work together through each of the 12 durability approaches of the tool kit, to recognise and map out what is already being done and to generate ideas on what new approaches and initiatives could be developed and introduced.**
4. **Review and select the approaches that are appropriate for your company that can be developed or improved in the future – consider what represents good, better and best approaches for your company.**
5. **Set down your short, medium and long term goals on the strategy cards and action your plans.**
6. **Review regularly and revisit annually.**



How to use the toolkit

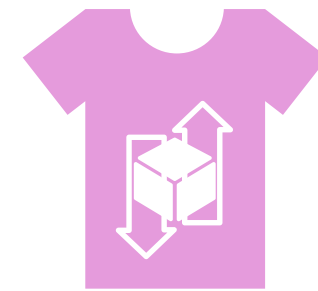
The toolkit explores approaches to develop and improve both the physical and emotional durability of garments, with the aim of improving sustainability across the entire garment lifecycle.

Start by working through the group Icebreaker Task on page 6 to get your team thinking about emotional and physical durability. Then work through the steps of each of the 12 approaches of the toolkit. Clicking on the titles below, will take you to the start of each approach.

12 APPROACHES MENU:



2. Understanding Consumers



5. Product Labelling



6. Lifetime Guarantees



7. Cleanliness, Laundry & Care



8. Ease of Maintenance & Adaptability



9. Enabling Repair



10. Creating Emotional Value



11. Alternative Business Models



12. Communicating & Promoting

WHAT WE KNOW & WHY IT MATTERS...

What We Know... - lists key research findings, explaining the complexities and challenges that need creative and innovative team approaches to overcome them.

Why it Matters... - presents the rationale for the suggested approaches.

CASE STUDIES & TOOLS...

Each approach is supported by some further information.

Case Studies - from either an existing company or one of our pilot projects, to show how the approach could work in practice.

Tools - will get you thinking about the issues and explain how you might take action in your company.

CELEBRATE & PLAN...

Celebrating the Good - map out what you already do to make clothes that last for longer.

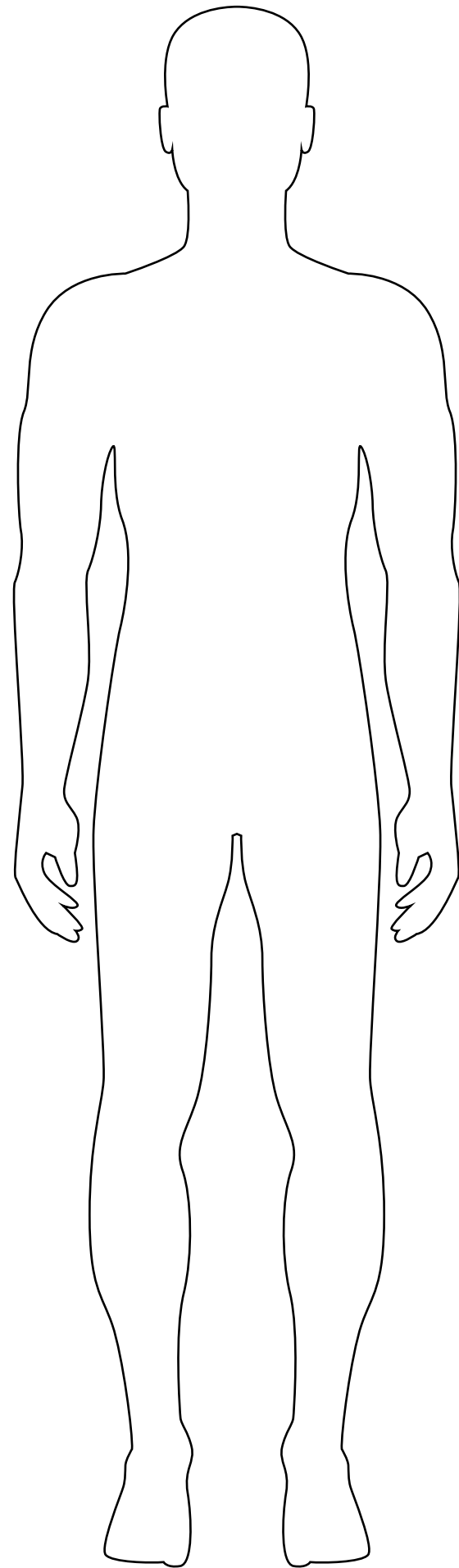
Could We..? - use the questions to trigger ideas for building clothing longevity strategies.

Planning the Future - generate and record ideas for new or improved approaches and practices.

Strategy cards - use the cards (pp. 56-57) to develop and record short term improvements and longer term plans, to help your company work towards designing, making and selling more durable clothing.

Icebreaker Task: Thinking about physical & emotional durability

Sketch and/or describe a favourite item of clothing that has lasted for a long time – anything in your wardrobe, from nightwear to outdoor gear, comfortable trousers or flattering formal wear (not footwear or accessories).



What is it made of?

Is it patterned, plain, colourful?

Where did you get it?

How long have you owned it?

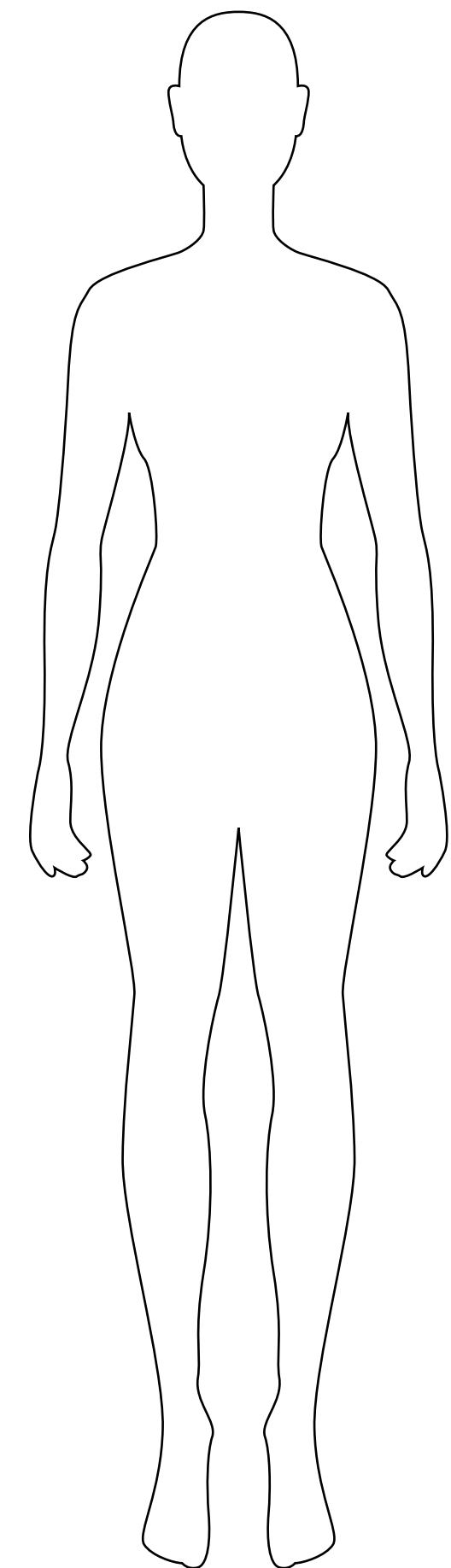
When do you wear it?

How do you feel in it?

What has made it last so long?

Why do you like to keep it?

Take a few moments for each team member to feed back to the whole group, considering what has made the item of clothing both physically durable and emotionally durable.





CLOTHING DURABILITY DOZEN

STRATEGIES TO IMPROVE DESIGN AND TESTING FOR
CLOTHING LONGEVITY



Approach 1:
**DESIGNING
FOR
PHYSICAL DURABILITY**

WHAT WE KNOW...

Sustainability is important to most organisations but is not always reflected in terms of clothing durability or longevity.

Price pressure can inhibit durability. However, there is evidence that many consumers would like to buy clothes that last longer and would pay more for durability.²

In some markets, brand quality and reputation or lifetime guarantees give consumers confidence. However, any sustainability benefits from these durable garments may be outweighed by the effects of those designed and made for short-life and fast style turnover.

Use of inappropriate fibres, yarns, materials, print finishes and knit structures is widespread, with cost and aesthetics often prioritised over longevity.

Fast fashion consumers are most likely to have experienced disappointing garment lifetimes, but many find this frustrating, as they want clothes to last.

WHY IT MATTERS...

Extending the lifetime of garments by increasing their physical durability and measures to avoid premature physical failure will lead to a reduction in garment disposal.

The dissatisfaction, disappointment, futility and frustration associated with short-life clothing, along with the rise of campaigns such as Fashion Revolution Day⁹ and increasing awareness of the impact of ethical issues and waste in the clothing industry, suggests that demand for better quality, sustainable clothing is set to increase.

Tool:

The Clothing Longevity Protocol

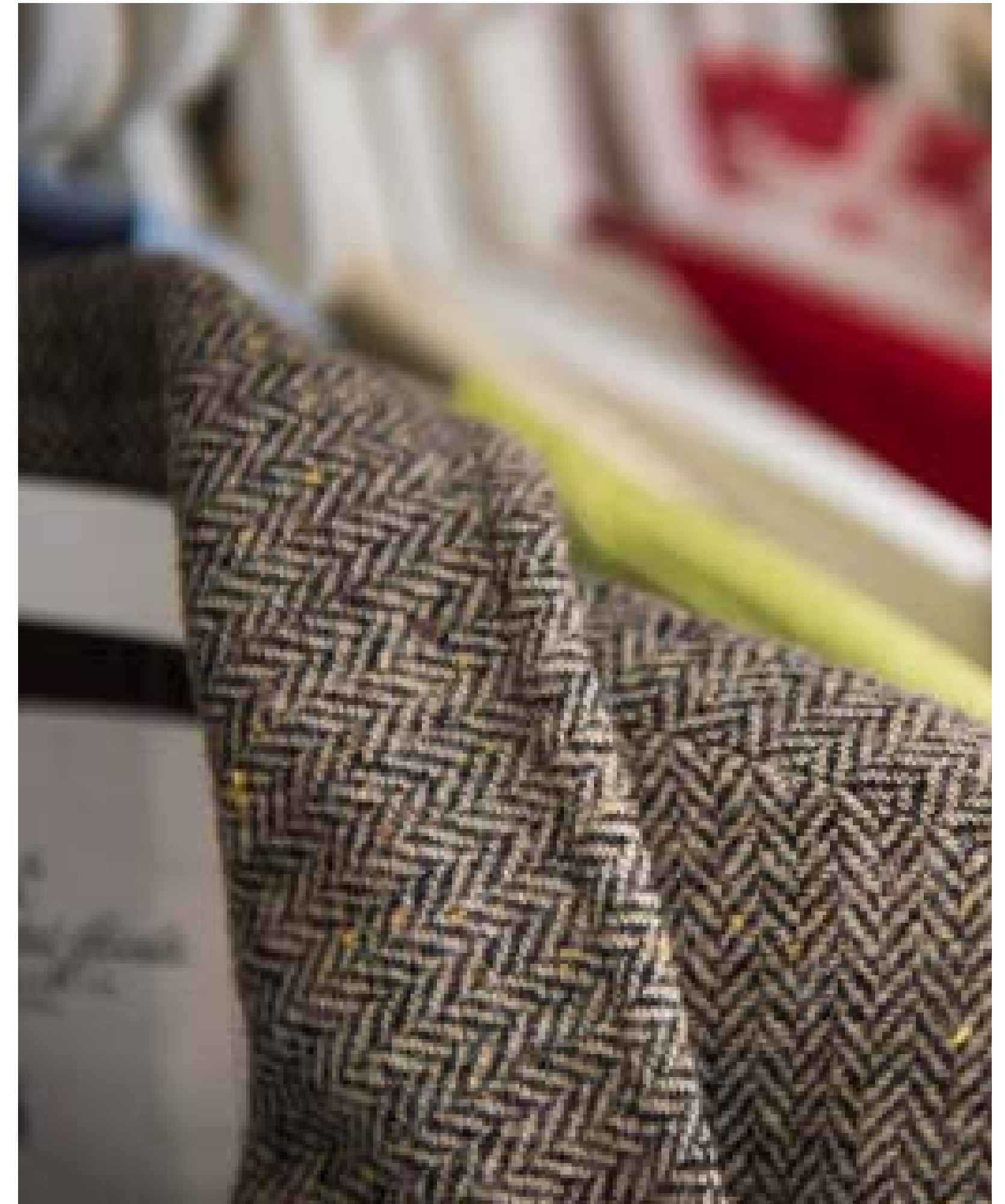
The Clothing Longevity Protocol offers guidelines for good practice to help design and create physically durable garments that will last longer and protect brand reputation, screen out garments which fail prematurely and reduce the environmental affect of the clothing sector.

Developed by Nottingham Trent University researchers for WRAP, the Protocol is intended to support companies wishing to develop and supply garments designed and manufactured for a longer life than current practice. Pages 1-5 explore the product development processes which can impact the physical durability of clothing.

Following the Product Development Process Checklist in Appendix 1 could ensure that minimum standards of good practice are embedded across the product range, complementing specific design innovations such as anti-fading and anti-pilling technologies and reinforcing brand value, leading to garments with enhanced physical durability.⁸

View the Clothing Longevity Protocol here:

http://www.wrap.org.uk/sites/files/wrap/Clothing%20Longevity%20Protocol_0.pdf



CELEBRATING THE GOOD

What are we doing already and why is it successful?

COULD WE...?

Develop a strategy to reduce the environmental impact of clothing and to manage physical durability more effectively?

Investigate and test the business case for developing more physically durable clothing, with longer lifetimes?¹⁰

Find out more about customers' expectations of clothing lifetimes, in order to establish opportunities to influence behaviour change and inform future longevity initiatives?

Adopt a product development strategy that aims to prolong clothing lifetimes through meeting consumers' needs and influencing their behaviour?

Build increased physical durability considerations into the design process and garment specifications?⁸

Set physical product performance criteria for increased clothing lifetimes and conduct testing based on these criteria?⁸

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



CLOTHING DURABILITY DOZEN

STRATEGIES TO IMPROVE DESIGN AND TESTING FOR CLOTHING LONGEVITY



Approach 2:
**CONSUMER
RESEARCH**

WHAT WE KNOW...

Retailers and brands need to understand consumers' behaviour relating to clothing longevity, both now and in the future.

Educating consumers could be pivotal for behaviour change.

Communication with consumers is important – from labelling to nationwide campaigns about clothing longevity, such as *Love Your Clothes*.¹¹

Most studies into clothing care focus on the environmental and financial benefits of reduced energy, water and chemical usage, and relatively little is known about consumers' actual care and maintenance behaviours.

WHY IT MATTERS...

Understanding consumer behaviour and perspectives could lead to innovations in longevity tailored to particular market segments, such as older value seekers and younger consumers frustrated by short-life garments.

The actions of retailers, brands and manufacturers can encourage consumers to change their behaviour to help increase the lifespan of clothing.

Case Study:

Exploring customer views on clothing longevity

Background and Rationale

A clothing brand wanted to learn more about customers' views on the durability/longevity of clothing in order to establish opportunities to influence behaviour change and inform potential business initiatives that could reduce the amount of their clothing sent to landfill.

The research

- A series of short online polls and discussions were piloted using an outsourced consumer research panel. These included:
 - i. An online discussion forum for which participants were self-selecting from the panel audience, which enabled the brand to identify which of Defra's sustainable consumer categories are represented among its consumers.
 - ii. An online poll of simple questions about how consumers wash their clothes and how this affects how long they last.
 - iii. A 'live chat' with small groups of sustainably-engaged consumers from different segments and a 'pinboard' for consumers to upload images.

The results

- Consumers felt they did little to make clothing last longer and were resistant to low temperature or less frequent laundering on grounds of hygiene.
- Consumers had limited knowledge of care labels; only half followed care instructions. Use of tumble dryers was surprisingly low, especially in summer.
- The brand learned how their consumers reuse and recycle discarded items in different ways and for various reasons, but that they lacked skills or time for repairs.

Implications

- Consumers lack knowledge of ways to care, repair and recycle clothing and could be given better and clearer information and / or new ideas to support behaviour change.
- Many consumers wash items more often than needed, so clothing needs to be designed to endure this treatment or to need less care, while consumers need better guidance.
- Consumers associated the brand's clothing with good quality and being made to last. They expect good brands to make items that last and are easy to care for, and this has competitive implications.

Tool: Exploring your customers' perspectives on clothing longevity

There are a number of ways to gain better understanding of customer views and behaviours. These could include online surveys (as on p. 13), focus groups, observations or clothing diaries as illustrated in Approach 7.

The guidance grid (see right) could help you identify what is appropriate and how to proceed.



<i>Consumer research tool</i>	<i>Benefits</i>	<i>Limitations</i>	<i>Suggested approaches</i>
<i>Online Forum</i>	<p>Easy access to representative consumers.</p> <p>Reasonable coverage produces representative findings.</p>	<p>Some consumers may not access / trust online tools.</p> <p>Questions must be simplified and responses can lack depth.</p>	<p>Simple multiple choice/ rank importance/ free text.</p> <p>How long would you expect to keep a T-shirt/ shirt/ dress...? 1 season/ 1 year/ 2 - 3 years/ longer...</p> <p>What normally leads you to stop wearing a T-shirt/ shirt/ dress...? Poor fit/ out of style/ worn out/ forgotten about...</p> <p>How many times each week do you typically launder clothes? 1/2/3/4 - 5/wait for full load....</p> <p>When doing laundry which of the following would you typically do? Separate darks & lights/ add softener/ use tumble dryer...</p> <p>Who normally does laundry in your household? Why?</p>
<i>Focus Group</i>	<p>Can identify participants from specific (actual or potential) consumer groups.</p> <p>Detailed discussion is possible.</p> <p>The group dynamic generates talk of issues and solutions.</p>	<p>Need to identify relevant groups and encourage participation.</p> <p>Small groups may not represent wider consumer population.</p> <p>Time-consuming to organise.</p>	<p>Open questions for discussion.</p> <p>Could you each give an example of a clothing item that has/has not lasted a long time and tell us why this is?</p> <p>What do you look for when buying clothes? What are your main priorities and why?</p> <p>When clothes are no longer needed, how do you dispose of them?</p> <p>Do you ever repair items? Why/ why not?</p> <p>Would any of the products/services encourage you to keep clothes for longer? Why/ why not? Illustrate with a selection of apps, labels, tools, laundry aids ...</p>
<i>Observation / Clothing Diaries</i>	<p>Detailed feedback and images.</p> <p>Opportunity to engage internal teams (non-technical) or consumers and generate interest in clothing care and longevity.</p>	<p>Not representative of wider consumer population.</p> <p>Time-consuming and requires good data capture processes.</p>	<p>Mixed open and closed questions. Tick boxes / Grids/ Calendars.</p> <p>How many times has the item been worn since the last wash? What made you decide to wash the item?</p> <p>Which detergent / softener/ wash programme did you use? Why?</p> <p>How often do you follow care labels? Why/ Why not?</p> <p>Was there anything about your wear or care behaviour that surprised you in the process of doing this exercise?</p>

CELEBRATING THE GOOD

What are we doing already and why is it successful?

COULD WE...?

Carry out consumer research to understand our customers' perspectives on clothing lifetimes and how to support them in caring for, maintaining and prolonging the life of clothes?

Discuss ways to inform consumers (and train staff) about how to increase the useful lifespan of clothing and achieve better value for money?

Review communications with consumers to encourage clothing longevity?

Collaborate with schools, colleges or universities to explore the impact of clothing purchases and to teach (or learn) the skills needed to prolong the life of clothing?

Conduct better wearer trials, doing more to test products in real-life situations, to ensure data is reflective of real wash and wear?

Use returns information more effectively, to assess common garment faults, especially in fast fashion where wearer trials are not always possible?

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



Approach 3:

NEW PERSPECTIVES ON TESTING

WHAT WE KNOW...

Testing practices vary considerably, depending on the end-use of the garment, the rate at which new materials are introduced, and the degree of confidence and trust placed in garment and yarn suppliers.

Time and commercial pressures can result in poor test results being overlooked and problems that could be rectified going unresolved.

There is no single industry standard for testing a garment's propensity to pilling: Martindale method, Pill box, ASTM method, D3512 Random Tumble Pilling are all currently used. A lack of objective evaluation of pilling results leads to irregularities across the industry.

WHY IT MATTERS...

Preventing garment failure and ensuring minimum or expected standards of durability are achieved extends physical clothing life and increases consumer satisfaction.

Extended wash and wearer trials could ensure that garments fit well, are comfortable to wear and can withstand a minimum expected period of wash / wear without showing signs of excessive deterioration.

Extended wash trials and objectively measured fabric or yarn tests could provide a cost-effective, realistic way to show the effects of prolonged wash and wear when wearer trials may not be possible, such as for seasonal items or short lead time products.

A more consistent testing routine could provide a basis for durability labelling.

Case Study:

Testing for colour durability based on laundering behaviour

Objectives

A retail NPD team trialled a testing regime to evaluate colour durability using a range of domestic detergents and softeners, representing the laundry practices indicated by their consumers.

The test

- For this brand, a standard 40°C wash cycle was used, with a cool tumble dry in each cycle.
- The cycle was repeated 20 times, with colour assessment and grading after the 1st, 5th, 10th, 15th and 20th wash cycles. Swatches were retained for direct comparison.

The results

- The brand found that colour fastness after 20 wash cycles varied considerably. Some items were deemed to have under-performed and needed to be improved.
- Detergent had no consistent effect on colour fastness - it depended on the product - but adding softener generally helped to retain colour.
- The test confirmed the brand's need to issue clearer and revised laundry instructions to consumers.



Tool:

Developing a test for colour durability based on your consumers' laundering behaviour

Why do this test?

Colour fading and loss of colour are recurrent reasons why clothes are discarded.⁸ You could:

- explore known failure, reasons for customer returns or actual product lifetimes for colour-sensitive items and work towards improvements
- compare colour fastness of products from different sources/ materials/ dye processes and make better decisions
- review and revise care guidance issued to consumers.

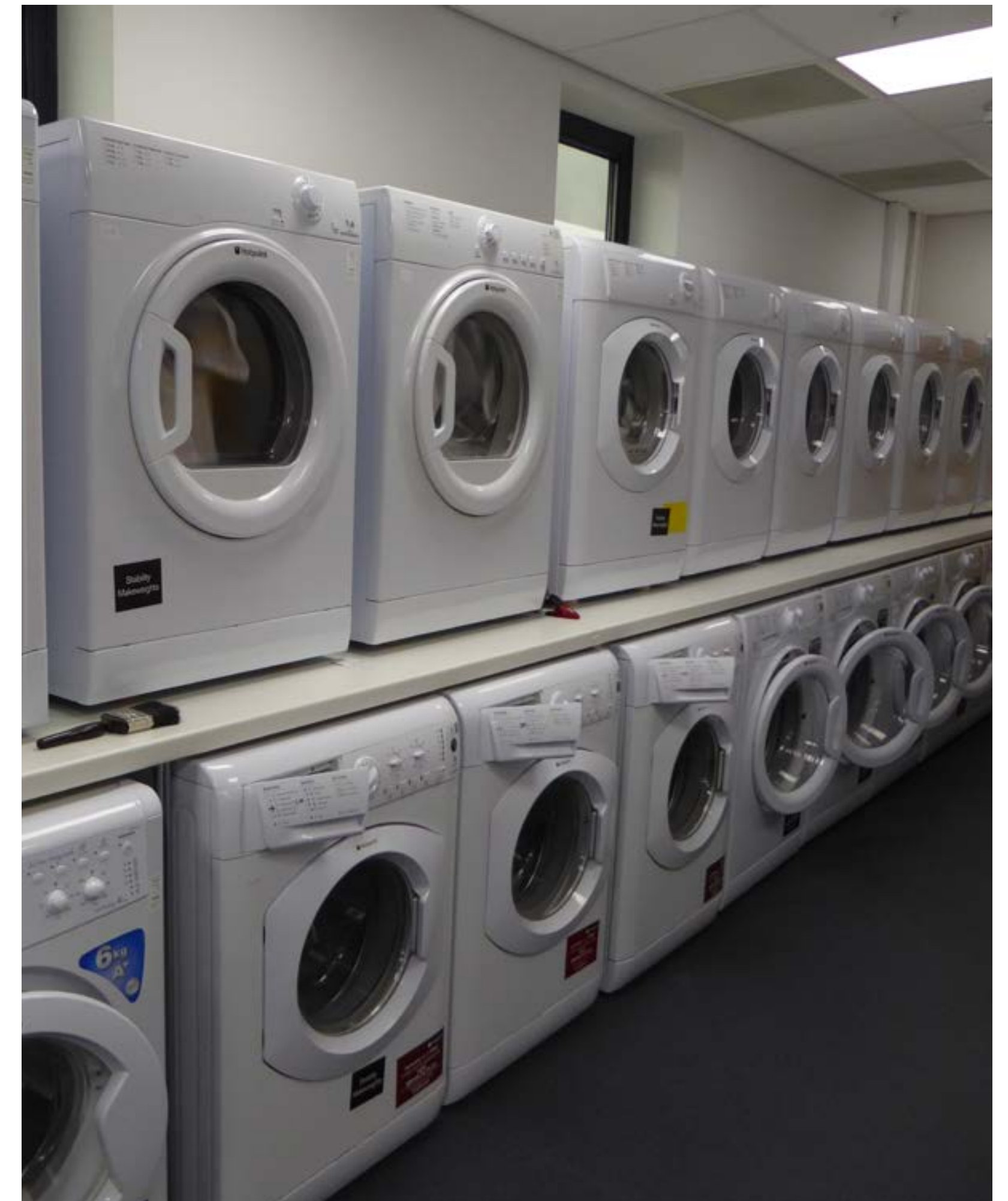
Steps to take

1. Choose the items to be tested and identify number of wash cycles appropriate. Examples: for shirts, one wash equates to two days' wear; for knitwear one wash represents five days' wear).
2. See pages 6-8 of the Clothing Longevity Protocol⁶ for guidance, Appendix 2: Test & Performance Guidelines.
View the Protocol here: http://www.wrap.org.uk/sites/files/wrap/Clothing%20Longevity%20Protocol_0.pdf
3. Identify the laundry process to follow, ideally based on consumer research. Specify wash programme; mix of items; detergent with/without softener; tumble or air dry.
4. Decide how often to assess performance and what level of colour loss is acceptable.
5. Analyse the results and decide what improvements are necessary.
Note that this test is resource intensive, so be specific and focused about which items to test, which laundry process(es) to follow and how often to stop and assess. This may also depend on use of internal or commercial facilities.

Your results

Summarise your findings and make appropriate recommendations:

- How did items perform over time? What could be improved?
- Which items performed better/ worse? Why? What choices could you recommend?
- Did items perform as expected in consumer laundry conditions? What guidance could you offer or changes could you make?



CELEBRATING THE GOOD

What are we doing already and why is it successful?

COULD WE...?

Instigate a reliable wearer trial system that represents realistic consumer behaviour in wash and wear as standard practice for all products, especially those that use new materials / components?

Develop our own longevity test to evaluate garment lifetimes, that include a repeated care label wash test using our consumers' preferred commercial detergents and fabric conditioners?

Assess the pilling performance of key products and ensure fabrics that fail are rejected at initial design stage and that steps are taken to resolve issues?

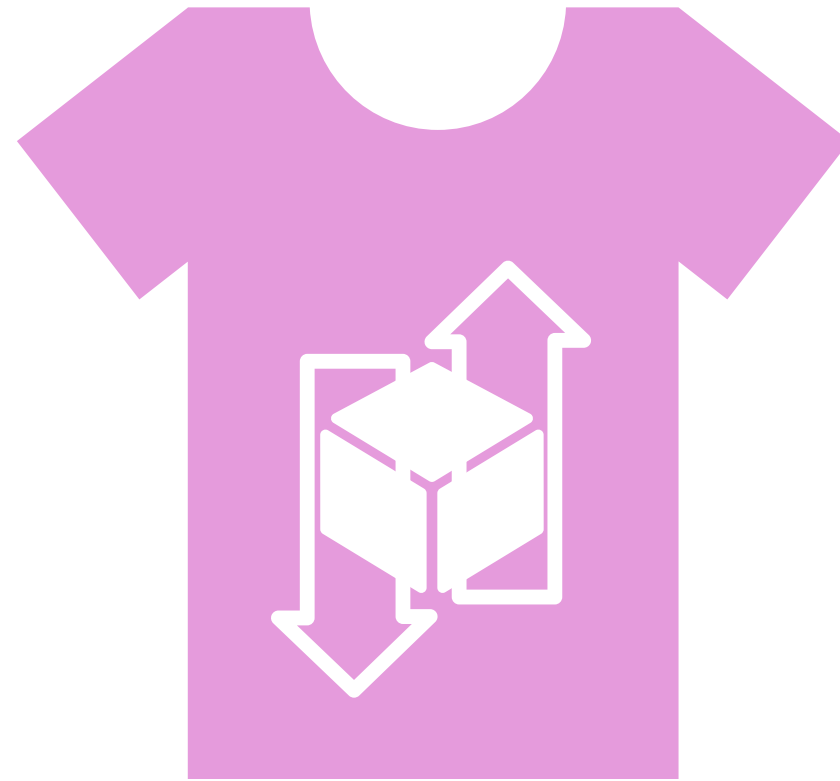
Introduce or improve systems for predicting and evaluating colourfastness, such as using dye recipe evaluation tests, to avoid premature failure due to colour loss?

Collaborate with industry partners to develop new standard tests such as for pilling and colour loss, based on real-life consumer behaviour and improved objective evaluation of test results?

Work with industry partners to develop standardised durability / longevity tests, such as in colour fastness, that require garments to achieve an approved grade after a specified number of washes?

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



Approach 4:
**TRACEABLE
SUPPLY
CHAINS**

WHAT WE KNOW...

Fashion supply chains are global and fragmented. It is difficult for brands and retailers to have full traceability of every product from fibre to finished garment, and yet small variations in very specific processes can affect the durability of the end product.

Some smaller niche brands with less complex supply chains are able to influence the durability of the final product by being directly involved in and responsible for the sourcing, specification and manufacture of the raw materials, yarns and fabrics. They also have the technical know-how within the business to support this.

Larger retailers can specify aspects of the product (fabric, yarn, fibre, manufacturing operations) but some may not have the capacity, knowledge or systems in place to evaluate whether their specifications are followed to ensure quality and consistency in the final product.

WHY IT MATTERS...

Traceability within the supply chain requires knowledge sharing between retailer and supplier to ensure the quality and consistency of the product. However, technical expertise is essential for making decisions about raw material sourcing, manufacturing and testing of products.

In the event of product failure a traceable supply chain provides a reliable system for tracing and identifying faults.

By providing a traceable manufacturing route and shared responsibility for quality, a traceable supply chain also has the potential added benefit of fostering trust between the retailer and supplier.

Case Study:

An investigation to decrease pilling in knitwear

Objectives

A UK and Far East based brand of luxury knitwear found that customers were reporting increased levels of dissatisfaction with knitwear prematurely pilling. This was potentially damaging to the brand's reputation, so an experiment was carried out to determine whether any changes in the processing of the yarn could be a contributing factor and to pinpoint any issues in manufacturing transparency and control.

The test

Samples of fibre were tested for average fibre length, length distribution and average fibre diameter at various stages in the fibre processing and yarn production process to identify whether damage could be taking place to degrade the fibre in the dyeing, carding and spinning processes. The fibre tested was as follows:

- Raw white fibre was tested at the pre-dyeing stage (post sorting, scouring and de-hairing) as is normal procedure.
- Dyed fibre in two shades was also tested after dyeing and before carding – an added process.
- Dyed yarn in two shades was tested after carding and spinning – a further added process.

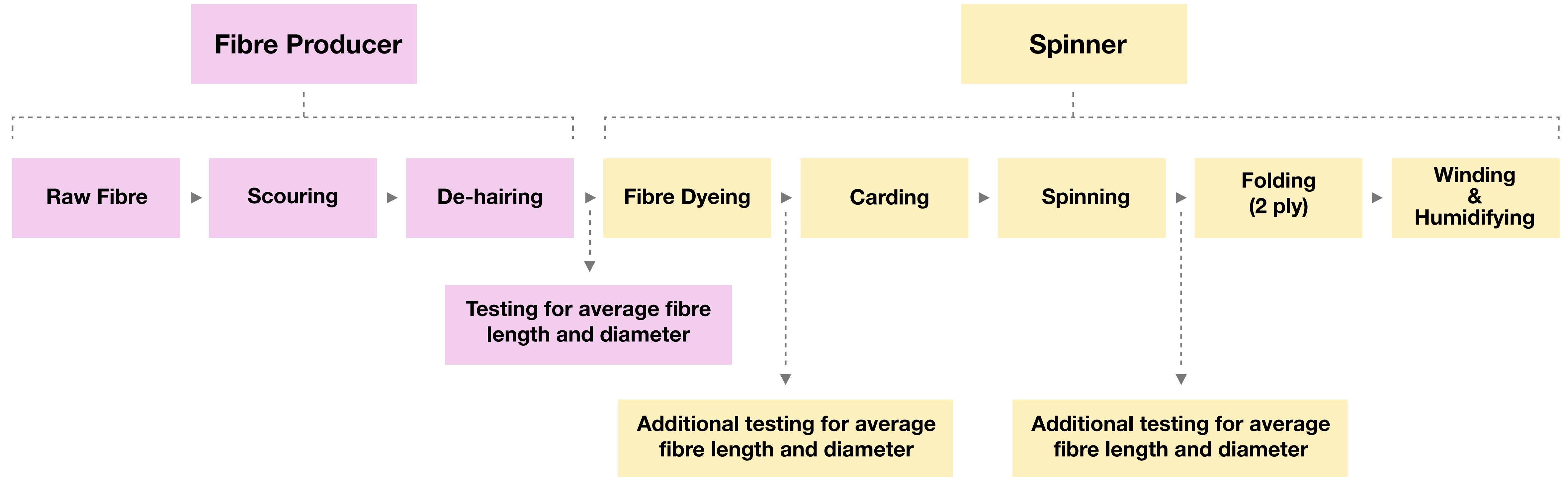
The results

The test results showed that the percentage of short fibres increased substantially after dyeing during the carding and/or yarn spinning stages (test c, above), showing that damage has occurred. The increase in short fibre length significantly increases the propensity of the finished garment to pill or shed fibre during wear. This could be due to over-drying of the fibre after dyeing, causing brittleness, and/or insufficient lubrication of the fibres before carding.

As a result of the test, the brand are liaising with suppliers to improve the process. They will request additional testing during dyeing and spinning, plus spot checks on yarn received from merchants. They are working towards enhancing traceability by developing questions for technologists to ask suppliers, when mapping the manufacturing and sourcing process of products. To enable the brand to identify where testing/quality assurance occurs.



Tool: Luxury Yarn Production Process



The diagram shows a simplified flow chart of the yarn production process. Additional fibre testing stages were added in order to identify where fibre damage was occurring so that preventative action could be taken. (See Case Study on p. 21 for more details).

CELEBRATING THE GOOD

What are we doing already and why is it successful?

COULD WE...?

Map out and assess our upstream supplier base to gain full traceability, from raw material to end product?

Evaluate the manufacturing process and work with suppliers to improve garment quality?

Review how testing and quality assurance or control of raw materials, yarns, fabrics and components are managed upstream in the supply chain?

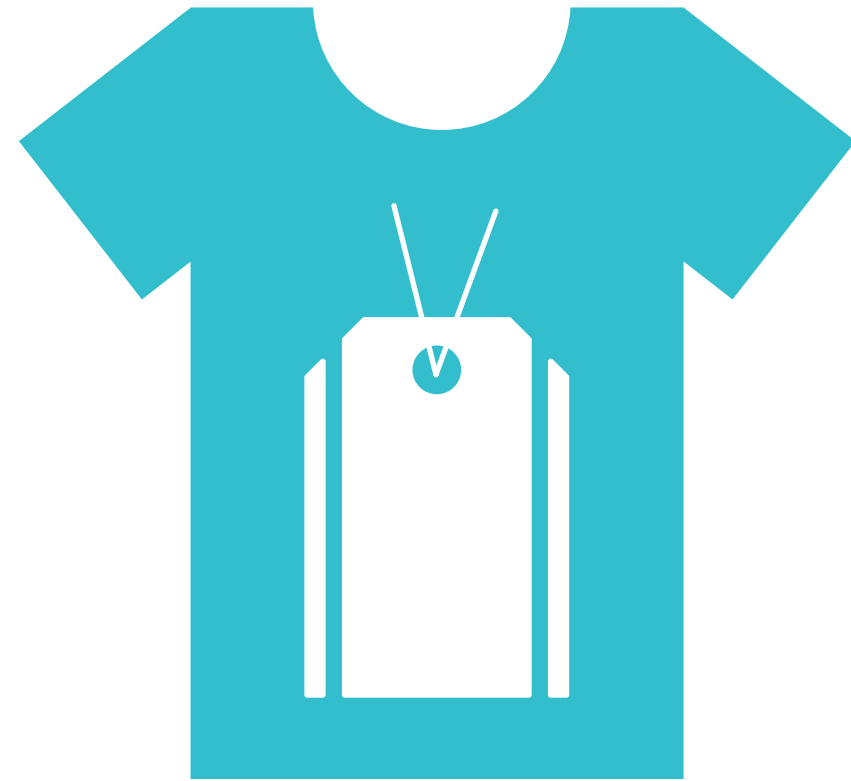
Develop a systematic approach to manage product durability?

Identify where faults occur in the supply chain, develop solutions and effectively resolve quality or manufacturing issues?

Investigate software and systems that can support more effective supply chain management, traceability and control?

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



Approach 5:
**PRODUCT
LABELLING**

WHAT WE KNOW...

Care labels are often confusing, misunderstood or ignored, not followed after the first wash, and cut out if bulky or uncomfortable.

Many customers lack knowledge and understanding of different fibre and fabric types, and appropriate detergent and fabric conditioner.

Some consumers lack confidence when assessing the durability of garments at point of purchase, especially whether it will pill. This is exacerbated when shopping online.

The idea of a “Durability Index” or rating system to help consumers assess the expected lifetime of garments has been positively received by both consumers and industry, whilst acknowledging that metrics are a challenge.

WHY IT MATTERS...

Advising consumers more effectively on the appropriate way of washing and caring for their clothing could optimise garment lifetimes.

Informing consumers of how garments have performed when tested for durability could provide greater confidence and communicate product lifetime expectations.

Improved communication to consumers enables them to make easier product comparisons and inform purchase decisions through stores and online.

Case Study: **RAPANUI**

Rapanui is marketed as an award-winning eco-friendly clothing brand from the UK, whose business is built on sustainability. They have trialled a sustainability labelling system, based on the energy rating labelling system used for consumer electronic products, that has been adapted to reflect their sustainable approach to fashion. Although not specifically about durability, this case provides an example of how to communicate sustainability information to customers in a clear and easily understandable way. This is how Rapanui's Ecolabel translates:

- A... Organic ethical sustainable
- B... Ethical with some work to sustainable
- C... Ethical
- D... Not bad, not good either
- E... Needs improving
- F... Some organic, ethical or sustainable
- G... Not organic, ethical or sustainable

For more information about Rapanui see: <https://rapanui clothing.com> and <http://fashiongear.fibre2fashion.com/brand-story/rapanui/ecolabelling.asp>



CELEBRATING THE GOOD

What are we doing already and why is it successful?

COULD WE...?

Help consumers to understand the impact of incorrect washing or washing too frequently on the lifetime of their garments?

Contribute to the development of a revised system of care instructions, to achieve clearer, more consistent and user-friendly guidance for consumers?

Enable consumers to identify appropriate detergents and wash cycles for different colours, garments and fibre types, as well as when to use aids such as protective laundry bags and how best to dry specific garments?

Collaborate with other brands and retailers to develop a less complicated approach to care label design and presentation that can be applied consistently across the market?

Provide information relating to lifetime tests of key components (such as fabric, zips, and buttons) on a garment label or on supporting online or instore communications?

Develop a 'durability' label to communicate expected garment lifetime, perhaps based on a durability index or traffic light system, for example?

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



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STRATEGIES TO IMPROVE DESIGN AND TESTING FOR
CLOTHING LONGEVITY



Approach 6:
**LONGER LIFE
GUARANTEES**

WHAT WE KNOW...

Guarantees for a specified clothing lifetime have potential, but it could be problematic to assess timescales due to variations in how garments are tested, used and cared for.

Some consumers would be interested in products with longer life span guarantees in key areas, such as sportswear, denim, coats and jackets, as long as this does not add to the cost.

Product guarantees must be supported by lifetime durability testing and this should take realistic consumer wash and wear patterns into consideration.

WHY IT MATTERS...

If more consumers choose clothes that are guaranteed to last for a longer life span, a greater number of products should remain in active use for longer and less waste will be generated.

Offering longer lasting products with guaranteed lifetimes in key product areas, such as childrenswear, sportswear, denim, hoodies and jackets, could give consumers more confidence and increase brand value where durability is a key criteria.

Case Study: Darn Tough

The hosiery brand Darn Tough is based in Vermont, USA and all their products are manufactured there. They market their *Premium All Weather Performance Socks* as being perfect for outdoor activities (including skiing, snowboarding, hiking, biking and running) undertaken in a challenging environment with varied weather and climate conditions. The company states that under such conditions in Vermont, they design, test, and manufacture the most comfortable, durable, and best fitting socks on the market. The company mantra is that their products should be “as tough as their users”.

Darn Tough claims to produce exceptionally durable products by using Merino Wool, with high density stitching, a ribbed knit and True Seamless construction. They offer an “unconditional lifetime guarantee”, whereby a consumer is invited to return their socks and receive a replacement pair if they “are not the most comfortable, durable and best fitting socks” the consumer has ever owned.¹⁴ “Durable enough for a lifetime guarantee – No strings. No conditions. For life.”¹⁴

For more information about Darn Tough see: <https://darntough.com/>



CELEBRATING THE GOOD

What are we doing already and why is it successful?

COULD WE...?

Develop testing to ensure that garments can last for a specified time period or number of wash cycles, taking into account consumer behaviour?

Offer genuine, meaningful longer life span guarantees based on clear criteria (such as the number of wash cycles)?

Offer a returns policy, enabling clothing to be returned if it fails within this period?

Carry out research to test the potential demand for longer life guarantees among existing or potential consumers?

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



CLOTHING DURABILITY DOZEN

STRATEGIES TO IMPROVE DESIGN AND TESTING FOR
CLOTHING LONGEVITY



Approach 7:

CLEANLINESS, LAUNDRY & CARE

WHAT WE KNOW...

Short clothing life span is often attributed to poor garment care, but the reality of everyday life means laundry routines are driven by routine, convenience, cost, and valid concerns about energy and water consumption that may conflict with appropriate garment care.

Families may have high volumes of washing and lack time to separate loads, while individuals living alone have low volumes of washing but may not want to run the many small loads required to separate fibres and colours properly.

Consumers lack knowledge and skills in how to best care for clothes, for example being unaware of different care requirements or appropriate detergent use for different fabric types.

UK consumers are more likely to wash clothes after only one wear than those in any other European country.¹²

WHY IT MATTERS...

Washing clothes too frequently can contribute further to their deterioration and lead to increased energy costs for the consumer.

Clothes are often washed to 'refresh' them, rather than because they are dirty. They may last for longer if they do not retain odours, crumple or lose shape and feel fresh and comfortable to wear.

Using incorrect wash cycles, detergents and other care processes contributes to clothes deteriorating faster, for example through colour loss, shrinkage and pilling.

Reducing the frequency of laundering garments could reduce energy and chemical consumption and contribute to longer product lifetimes.

More suitable care information on labels and online could encourage sustainable behaviour change.

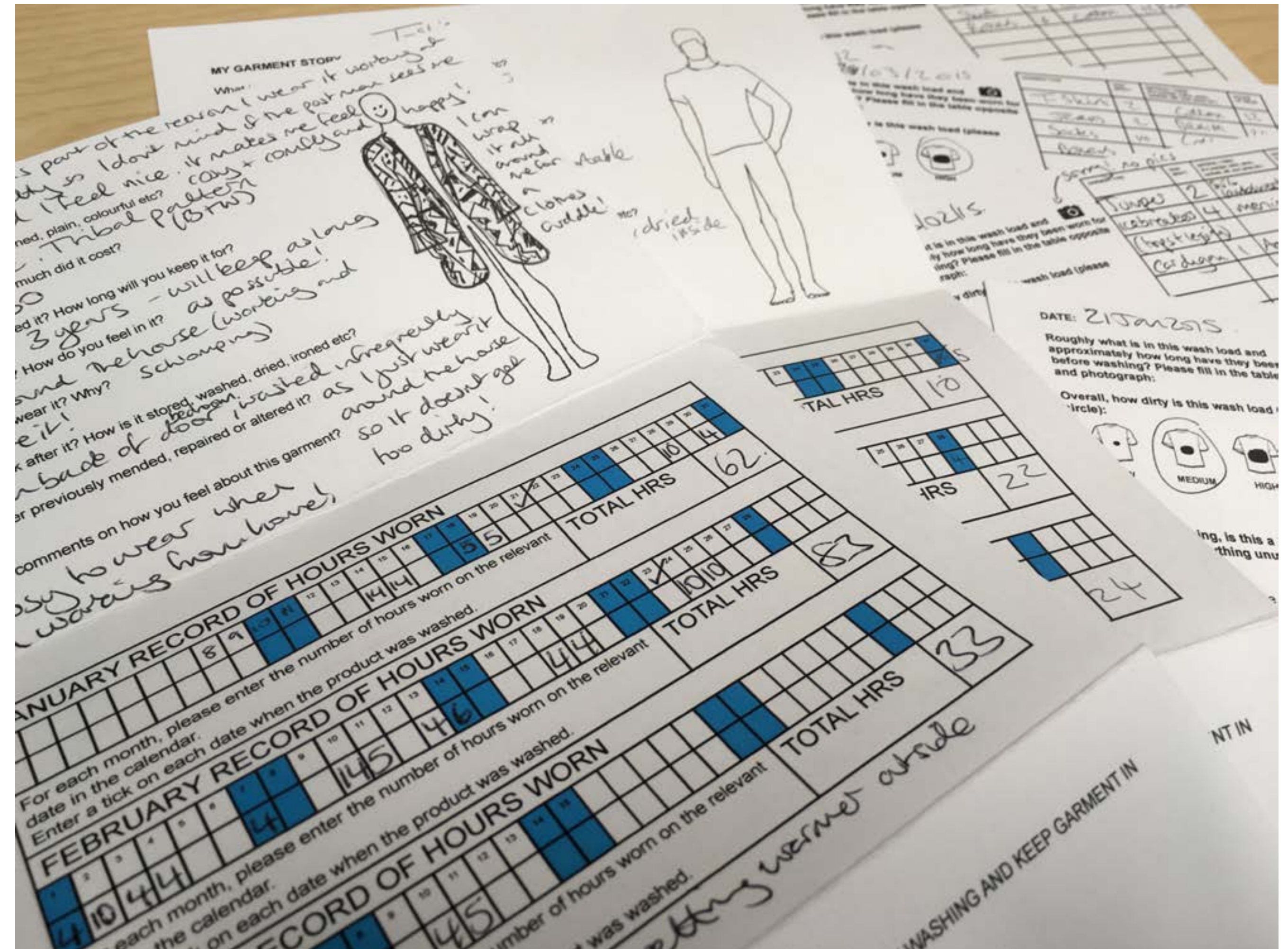
Tool: Wash-care diaries

This exercise could be first be undertaken with team members to initiate discussion, although the main purpose is to understand your consumers' behaviours.

Each consumer participates by:

- Maintaining a clothing wash-care diary for up to 8 weeks, recording wash, wear and care patterns of one everyday garment that they selected.
- Taking photographs of aspects of their laundering experience, such as their choice of detergents, the controls on their washing machine, the contents of their wash load or their arrangements for drying their laundry. These could be shared via social media, such as Pinterest.
- Taking part in a post-diary interview in order to learn more about their attitudes towards clothing longevity and social factors behind their behaviours.

Findings are analysed by looking for patterns of behaviour and information about good practices or areas where extra help is needed.



Case Study: Love Your Clothes

Love your Clothes is a campaign run by WRAP which seeks to reduce the environmental impact of clothing in the UK and help to influence and change how consumers purchase, use and dispose of clothing. It aims to inspire people to think about clothing differently, such as encouraging people to buy clothing that is more durable or easy to look after; extending the life of clothing through learning repair skills, upcycling or sharing clothes; and ways of keeping clothes out of landfill.

The website has step-by-step instructions, blogs, tips and more than 50 short films on how to buy smart; re-fashioning and upcycling; care and repair; and what to do with unwanted clothing. The 'Know Your Care Labels' campaign demonstrates how to keep clothing looking better for longer and explains what the symbols on the care labels in clothes actually mean.

This can be viewed here: <http://loveyourclothes.org.uk/blogs/know-your-care-labels-insideout>

The website also provides inspiration and ideas on how to re-use unwanted clothing. For example their 'Lost Socks' campaign encourages people to find alternative uses for socks rather than throwing them in the bin. It features a music video 'Sort Your Sock Stuff Out!' and the guide '101 uses for socks', which can be viewed here: <http://loveyourclothes.org.uk/blogs/lost-socks>

For more information about Love Your Clothes visit: <http://loveyourclothes.org.uk/>

Follow them on Twitter: @loveyourclothes

Facebook: www.facebook.com/LoveYourClothesUK/

Instagram: loveyourclothes_uk



CELEBRATING THE FUTURE

What are we doing already and why is it successful?

COULD WE...?

Design garments to be washed less frequently, by using low wash, anti-bacterial materials (for example merino, wool), stain resistant finishes, breathable panels and materials, or design with looser silhouettes for breathability?

Influence consumers' perception of cleanliness and hygiene by encouraging them to wear clothes more times between washes, air clothes to freshen them and spot clean where possible?

Direct consumers to resources on good practice in garment washing and care, such as Love Your Clothes website⁹ and encourage contribution to them?

Develop optimum care information to make clothes last for longer, taking into account frequency of washing and other common laundry practices?

Design using forgiving colours and patterns in areas likely to stain (such as under arms and front panels)?

Maximise the range of garments able to withstand optimum washing guidelines, and minimise those that need special care?

Collaborate with product designers and engineers to develop better clothes storage and airing systems that could help to lengthen product lifetimes?

Help to make spot stain removers and other care products widely available, including as add-on sales from clothing retailers and websites?

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



Approach 8:

EASE OF MAINTENANCE & ADAPTABILITY

WHAT WE KNOW...

Consumers find it hard to assess how quickly a fabric or garment will deteriorate and solutions to keep clothes looking good for longer. It is found to be particularly difficult for consumers to assess whether pilling will occur and many are unsure of causes, prevention or pill removal techniques.

Many clothes are discarded due to problems that could be easily addressed through maintenance practices such as preventing moth damage and storing clothes carefully.

New clothes can provide a 'feel-good factor' and lift spirits. Services to freshen clothing, add or change features or to upcycle items can recreate this feeling in some niche markets, such as vintage trends.

Many clothes are discarded due to body shape changing over time and garments no longer fitting, through changes in taste, style or functional requirements or that the owner becomes bored with them.

WHY IT MATTERS...

Enabling consumers to better maintain their clothes will help them to look good, fit well, suit their personal style and remain in active use for longer.

Overcoming the frustration and dissatisfaction that comes with ageing clothes could help to satisfy our desire for 'newness' by keeping clothes in good condition for longer.

Design and retail of garments that can be adjusted in size and shape may reduce the need for replacement purchases of clothing that no longer fit the wearer well.

Clothing that is versatile and can be adjusted or adapted to be worn in different ways may increase both their wear potential and their emotional and practical value to the consumer, ultimately decreasing the need to consume excessively.

Case Study: **ALLENOMIS**

Allenomis is an award-winning Scottish clothing brand, which states the aims of combining stylish design with technical knowledge of materials to create items that can be worn in multiple different ways, for a variety of situations and can adapt to climate and weather conditions. The garments are designed to be timeless and not subject to seasonal fashion vagaries and are described as being responsive and responsible and constructed to last.

For more information about Allenomis see: <http://www.allenomis.com>



Photo Credit: Stefania Calderara

CELEBRATING THE GOOD

What are we doing already and why is it successful?

COULD WE...?

Support consumers to address problems such as pilling and stains; including providing online and in-store information, videos or classes and supplying or selling tools such as pilling combs, fabric shavers and stain removers?

Help consumers care for garments that are prone to pilling and ensure they understand how laundering garments, as well as wear, can cause pilling?

Communicate ways to reduce deterioration of delicate clothing in storage, such as preventing moth damage to woolen garments?

Support consumers to alter, customise, dye or re-fashion garments that no longer fit, or are stained, worn or damaged, by providing services, information and classes online or in-store and by selling kits, haberdashery or guides? *This could result in alternative revenue streams and customer goodwill.*

Design clothes that are trans-seasonal in terms of colour and weight?

Incorporate features such as wider seam allowances, expandable waistbands and deeper hem allowances to allow for growth?

Design clothing ranges for adaptability to create a sense of newness; such as garments that can work together or individually to serve different purposes or clothing that can be worn layered or has exchangeable parts to offer a range of configurations?

Develop clothing that is modular, transformable, designed for customisation and reusability or for easy disassembly and repair, which could result in consumers being able to extend the active life of their clothing?

Launch our own upcycled vintage collection or service?

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



CLOTHING DURABILITY DOZEN

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CLOTHING LONGEVITY



Approach 9:
ENABLE REPAIR

WHAT WE KNOW...

Clothes are often discarded due to minor damage such as small holes, seams or hems unravelling, or buttons falling off, even though they could be repaired by consumers.

Many consumers claim not to have the skills, knowledge, equipment or time to undertake minor repairs to their clothing by themselves.

Professional repair services are considered prohibitively expensive and not easily accessible by many consumers.

There is a surge of interest within some consumer segments (such as cost-conscious younger consumers) for more information and knowledge about clothing repairs. This is consistent with the emergence of Repair Cafés and resurgence in craft skills.

WHY IT MATTERS...

Offering clothes that are easy to repair or designed to be durable could reduce the frequency of items being discarded due to damage that could otherwise be easily fixed.

Enabling and encouraging consumers to carry out simple repairs on their clothes will help them to maintain their clothing in good condition and active use for longer.

Keeping garments in active use for longer potentially overcomes the frustration and dissatisfaction that comes with having to discard favourite items prematurely.

Case Study:

PATAGONIA's Worn Wear repair programme and IFIXIT

Patagonia and iFixit have collaborated to provide a range of specialist online repair guides and tutorials specifically for Patagonia's product range. Step-by-step instructions are given and are supported by a difficulty ranking, an estimated time to complete and a list of tools and materials that will be needed. The guides show repairs ranging from short term fixes to more substantial mends, with some providing an element of upcycling through the use of contrasting patches and stitching. Consumers are also given reassurance that, if all else fails, the garment can be returned to Patagonia for repair under the brand's "Ironclad Guarantee."¹⁵



For more information about this collaboration see: <https://www.ifixit.com/patagonia>

Example tutorial video: <https://www.ifixit.com/Guide/How+to+Darn+a+Hole+in+a+Knitted+Garment/27415>

The screenshot shows the iFixit website interface. At the top, there's a search bar and navigation links for 'Repair Guides', 'Answers Forum', 'Parts & Tools Store', 'Teardowns', and 'Translate'. The main content area is titled 'How to Darn a Hole in a Knitted Garment' and is attributed to Brittany McCrigler. It shows a difficulty level of 'Easy', 27 steps, and a time requirement of 20-25 minutes. Below this, there's an introduction paragraph and a 'Tools' section listing a needle and thread, both with 'Buy' buttons and a note 'Available for sale on Amazon'. A 'Parts' section indicates 'No parts required.'.

CELEBRATING THE GOOD

What are we doing already and why is it successful?

COULD WE...?

Support consumers to repair damaged clothes through offering mending services, videos or classes, or providing information leaflets online and in-store?

Explore providing or selling appropriate mending kits?

Design and manufacture to prevent the problem occurring, such as by ensuring that zips and seams are more durable, or using fused hems and buttons?

Design for easy repair, which might include providing spare parts such as buttons, threads or beads, or by developing modular clothing for simple replacement of worn parts?

Develop new revenue streams from repair and upcycling by selling haberdashery, add-on accessories and 'how-to' guides, or by linking into media campaigns or sponsorship of YouTube videos?

Explore how repairing or upcycling garments could add value and be seen as 'cool'?

Link to WRAP's Love Your Clothes website and contribute suggestions to help it grow?

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



CLOTHING DURABILITY DOZEN

STRATEGIES TO IMPROVE DESIGN AND TESTING FOR
CLOTHING LONGEVITY



Approach 10:
**CREATING
EMOTIONAL
VALUE**

WHAT WE KNOW...

Consumers appear more likely to maintain and repair their most valued items. Value is understood beyond purchase price: emotional, exchange, social, aesthetic and sensory value are also important.

These types of value develop over time through a satisfying relationship with a garment or outfit. They could include such items that are particularly comfortable or flattering, have aged well and feel fresh to wear.

Exchange value is present in items that have aged well or have remained looking good for longer. Such garments therefore have the potential for re-sale or passing on after use.

Emotional attachment can offer a 'feel-good factor' equivalent to buying something brand new.

WHY IT MATTERS...

Clothes that fit well and use colours and designs that are stylish while 'trend-proof', may provide greater potential for emotional attachment and perception of value by the user. This could lead to better care and longer lifetimes and therefore reduce clothing waste.

Products made from higher quality materials that retain their appearance or improve with age can lead to greater care and value on the part of the consumer.

Garments that age well are more likely to be upcycled and have greater potential for second hand use.

Clothing offering physical durability without emotional value could be discarded prematurely and create unnecessary waste.

Case Study: **Ice Breaker**

Ice Breaker is a New Zealand based company who believe that it is better to use natural fibres over synthetic fibres. They market a range of active and casual clothing made from ultra fine merino wool, which is stated as having numerous benefits including being naturally odour resistant, lightweight, anti-static, durable, breathable and easy-care.

They aim to ensure customers feel comfortable and enjoy wearing their garments by focusing on functional garment design while also incorporating features to enhance performance. These features range from better temperature regulation to carefully considered comfort and fit. One example given is designing garments in such a way to ensure that seams do not sit uncomfortably on top of each other when garments are layered up.

In order to build further emotional value they include features to connect consumers with the brand and its' strong sustainability values. These include a 'baa' code on garment labels that can track the fibres in the garments back through the supply chain to farms in New Zealand, giving customers the potential to connect with the source of their clothing and see the processes involved during manufacture. The company also employs humorous marketing materials and story-telling techniques to encourage consumers to value the fibres their garments are made from.

The logo for Ice Breaker Merino is displayed on an orange rectangular background. It features a stylized white 'B' inside a white circle on the left, followed by the word 'icebreaker' in a lowercase, sans-serif font with a registered trademark symbol (®) to its upper right. To the right of 'icebreaker' is the word 'MERINO' in a larger, uppercase, sans-serif font.

For more information about Ice Breaker see: <http://www.icebreaker.com>

Logo used under permission of Ice Breaker Merino. All rights reserved.

CELEBRATING THE GOOD

What are we doing already and why is it successful?

COULD WE...?

Evaluate garment fit to ensure that basic blocks used across product categories fit well across the range of average body sizes within the customer demographic so that they are more comfortable and flattering to wear?

Do more from a design perspective to make clothes emotionally more durable. For example, could 'slow' design approaches be used to develop classic and enduring styles, and garments that transcend trends?

Use high quality natural materials that age well, maintain appearance during wear and tear and do not lose value, such as high quality wool, denim or leather?

Enhance sensory value by making use of the naturally anti-bacterial qualities of wool fibres so that clothes smell fresher for longer?

Communicate the design stories around garments and ranges that can create an emotional attachment with the consumer, such as the story of the material, a craft technique, an individual maker, local production or a co-design experience with the consumer?

Use social media channels to gather celebrity and consumer stories about their own attachment to favourite garments, to encourage others to keep items for longer?

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



CLOTHING DURABILITY DOZEN

STRATEGIES TO IMPROVE DESIGN AND TESTING FOR
CLOTHING LONGEVITY



Approach 11:

ALTERNATIVE BUSINESS MODELS

WHAT WE KNOW...

Clothing retailers and brands largely concentrate their sustainability initiatives around prevailing business models that are generally based on high volume sales. There has been a limited appetite in mainstream markets to adopt business models that promote longevity.

New business models are appearing in niche markets that are changing the product-service mix, providing opportunities to maintain revenue while selling fewer, but longer lasting, items. They may incorporate enhanced repair services, including selling repair materials and care products, and swapping, leasing and recycling schemes.

Business model innovation could also include addressing upstream supply in order to create added value. For example, combining robust components, high quality fabrics and modular design can be reflected in higher sales prices while extending their useful lifetime.

WHY IT MATTERS...

In the industry overall there needs to be fewer garments sold in order to reduce environmental impacts. Alternative business models offer opportunities to maintain revenue through focusing on value rather than volume.

Brands associated with good quality, stylish and durable garments can command higher prices and generate customer satisfaction and loyalty.

Gaining revenue from after sales services and second hand sales in the UK will reduce the environmental burden of manufacturing new clothes and prevent the adverse effects of second hand clothes being exported to developing countries.

Giving retailers and/or manufacturers responsibility for taking back unwanted garments could encourage the production of longer lasting clothes and the development of better recycling systems, thereby reducing the amount of clothing sent to landfill.

Case Study: Innovative business models

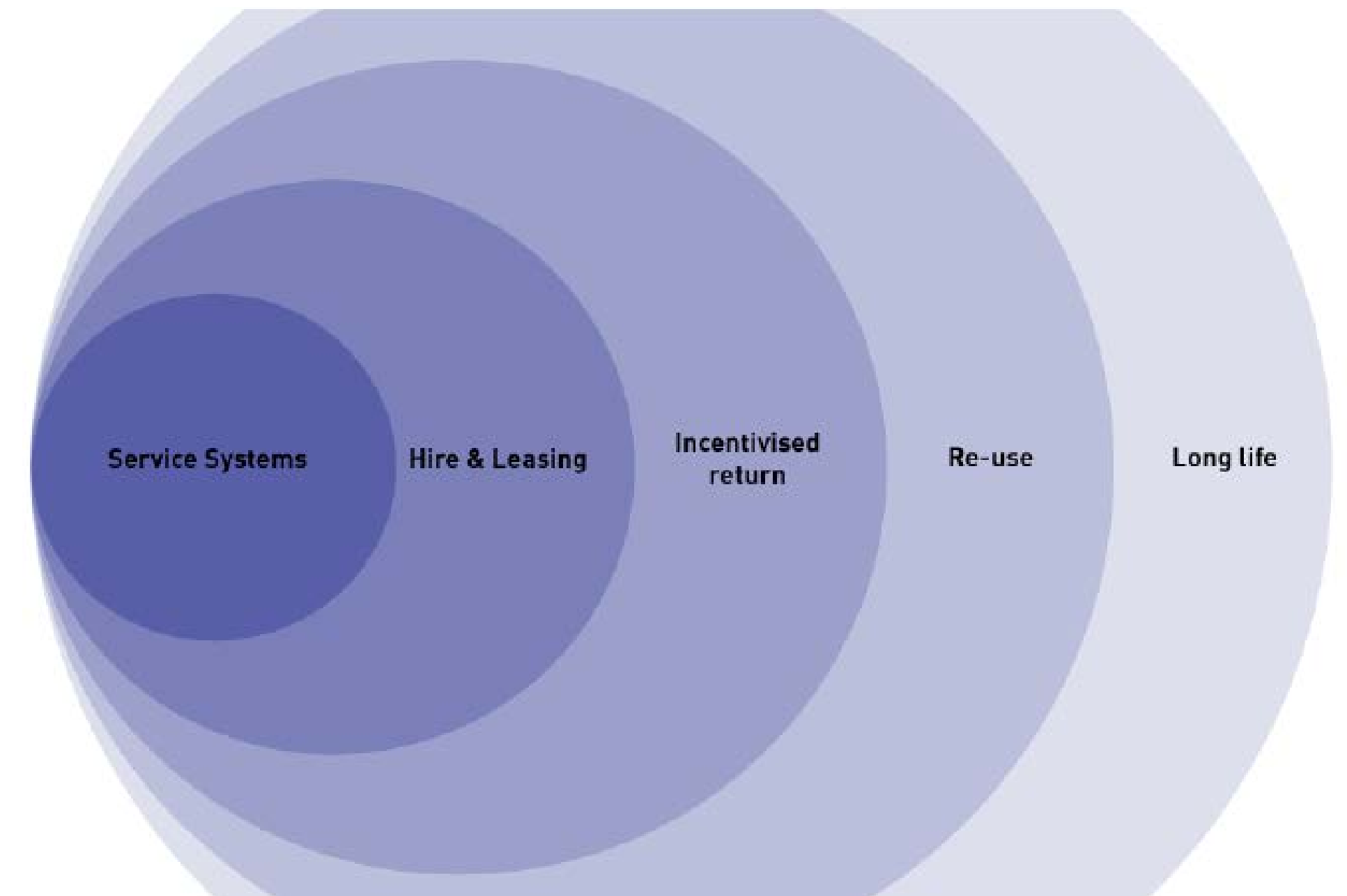
The REBus Project¹³ enables and supports both SME and larger businesses in 4 key markets, including clothing and textiles, to work with their individual supply chains to develop and implement resource efficient business models. It aims to provide innovative business support and assess the commercial feasibility of the new business models developed.

Resource efficient business models can increase business resilience and maximise the value obtained from products and materials, while reducing resource consumption. This may mean using them more, extending their lifetime or enabling them to be re-used. REBus is also currently working with organisations to implement circular procurement and develop circular economy business models.

In clothing, REBus has supported some innovative business models such as:

- Rentez-Vous – a UK based peer-to-peer rental market place for special occasion and designer clothes.
- Mud Jeans – a Dutch jeans company offering long term lease of recycled and organic denim jeans, that can be returned, swapped or kept by the consumer. Returned jeans are re-used, through upcycling with worn-look finishes or recycled into new denim items.
- Dutch aWEARness – a company who design work clothes made from polyester (Returnity®) with the potential to be 100% recyclable. In this business model customers pay a fee for the use and performance of the clothing products over a period of time and the product is designed to be recoverable. Through close collaboration with suppliers and a track and trace system the company aims to achieve an effective closed loop system for recovering all materials.

The REBus project is led by WRAP in collaboration with the Dutch Ministry of Infrastructure and the Environment and other partners, and is funded by the European LIFE+ fund.



To view the interactive version of the WRAP innovative business models map see:
<http://www.wrap.org.uk/content/innovative-business-model-map>

For further information about the REBus Project visit:
<http://www.wrap.org.uk/REBus>
<http://www.rebus.eu.com/>

CELEBRATING THE GOOD

What are we doing already and why is it successful?

COULD WE...?

Review the standard business model of aiming to improve sales by volume each year and consider the use of other metrics instead?

Evaluate the cost-benefit ratio of a move towards selling fewer longer lasting products and the effects on revenue, brand value and customer loyalty, while reducing environmental damage?

Create a leasing business that allows the brand to benefit from more physically and emotionally durable clothing?

Reconfigure the product service mix to explore opportunities to generate income through the sale of services or add-on items?

Collaborate with retailers, manufacturers or organisations in other industry sectors to facilitate textile longevity, such as by donating used clothing to a selected charity or providing information about local recycling schemes?

Encourage consumers to share, pass on, swap and donate used clothes, by hosting clothes swapping events or by creating a 'new and used' section on our website to support and promote the resale of higher value items for example? *Such approaches can potentially enhance brand loyalty.*

Explore retaining the value embedded in our used garments by encouraging consumers to return them for re-use or recycling? *For example, some UK retailers already promote in-store collection schemes.*

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



CLOTHING DURABILITY DOZEN

STRATEGIES TO IMPROVE DESIGN AND TESTING FOR CLOTHING LONGEVITY



Approach 12:
**CAMPAIGNS
&
COMMUNICATIONS**

WHAT WE KNOW...

Consumers are largely unaware of clothing longevity as a sustainable fashion strategy and the difference they could make by choosing fewer, longer lasting garments, caring for their clothes to make them last for longer, and disposing of them responsibly.

Although sustainability may not appear to be a high priority when consumers are buying clothes, many would prefer durable and longer lasting options which will benefit the environment

Consumers often find it hard to assess the durability of clothes, and many do not know how to effectively care for, maintain and repair garments. Younger consumers, in particular, would welcome such information online.

WHY IT MATTERS...

Raising awareness of the environmental and economical costs of short lived garments could motivate consumers to purchase higher value items and associated repair services.

Changing the fast fashion culture away from unduly short-lived garments could create a more mindful approach by consumers and greater long term satisfaction with their purchases.

Greater knowledge of how to repair, upcycle or recycle clothes more effectively could extend garment lifetimes and reduce the environmental impact of clothing in landfill.

Case Study: Campaigns & Communications

Various organisations run active campaigns that aim to encourage consumers to purchase, use and dispose of clothes more responsibly through a range of different approaches. Examples include:

Love Your Clothes is a consumer campaign run by WRAP. The campaign aims to inspire people to value and think about their clothing in a variety of different ways. With the aim of helping to reduce the amount of clothing going to landfill. Consumers are encouraged to buy clothing that is more durable or easy to look after and are offered ideas on re-use and how to extend the life of clothing through learning repair skills, upcycling or clothes sharing, as well as information on recycling.

There are opportunities for clothing retailers, brands, charities and recyclers to collaborate and support the campaign:

<http://loveyourclothes.org.uk>



Fashion Revolution is a global movement in over 90 countries which shines the spotlight on the environmental and social impacts of the fashion industry, whilst aiming to convey the possibility of sustainable change.

There are opportunities for consumers, producers, factories, brands, schools and universities to get involved through their useful tools and resources available at:

<http://fashionrevolution.org/>



Repair Café is a network of meeting places for people to repair things with the help and support of their local community. They are social spaces equipped with the tools, knowledge and skills needed to repair everyday items, including clothing, with the aim of giving a new lease of life to those items that still have a useful purpose.

There are opportunities to set up or collaborate with local **Repair Café** to promote repair activities:

<http://repaircafe.org/en/>



CELEBRATING THE GOOD

What are we doing already and why is it successful?

COULD WE...?

Contribute to or initiate our own public information campaign to advise consumers on action they can take to buy longer lasting clothes or give products an extended or second life?

Promote messages about environmental sustainability that are authentic and fit with our brand values and approach to garment design and manufacture?

Train retail staff, through technical skills or verbal messages, to disseminate clearer messages around the benefits of longer-lasting clothing?

Engage appropriate celebrities to promote campaigns for high quality but affordable clothing and careful purchasing?

Collaborate with fashion magazines and websites to share responsibility for communicating positive messages about clothing care and maintenance?

Work in partnership with independent consumer organisations to verify claims about product durability and care and laundry guidance, and the benefits of services that extend product lifetimes?

PLANNING THE FUTURE

What new approaches or initiatives could we develop and introduce?



CLOTHING DURABILITY DOZEN

STRATEGIES TO IMPROVE DESIGN AND TESTING FOR
CLOTHING LONGEVITY

STRATEGY CARD

What are our goals?

How will we achieve them?

What is needed for success?

Who is involved (leader & team)?

SHORT TERM (within 6 months)

.....
.....
.....

MEDIUM TERM (6 months to 2 years)

.....
.....
.....

LONG TERM (2 to 5 years)

.....
.....
.....
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USEFUL LINKS & REFERENCES

USEFUL LINKS:

Sustainable Clothing Guide, 2017 (2nd ed.) - <http://www.wrap.org.uk/sites/files/wrap/Sustainable%20Clothing%20Guide%202017.pdf>

Valuing Our Clothes: the cost of UK Fashion, 2017 (2nd ed.) - http://www.wrap.org.uk/sites/files/wrap/valuing-our-clothes-the-cost-of-uk-fashion_WRAP.pdf

Clothing Longevity Protocol, 2014 - http://www.wrap.org.uk/sites/files/wrap/Clothing%20Longevity%20Protocol_0.pdf

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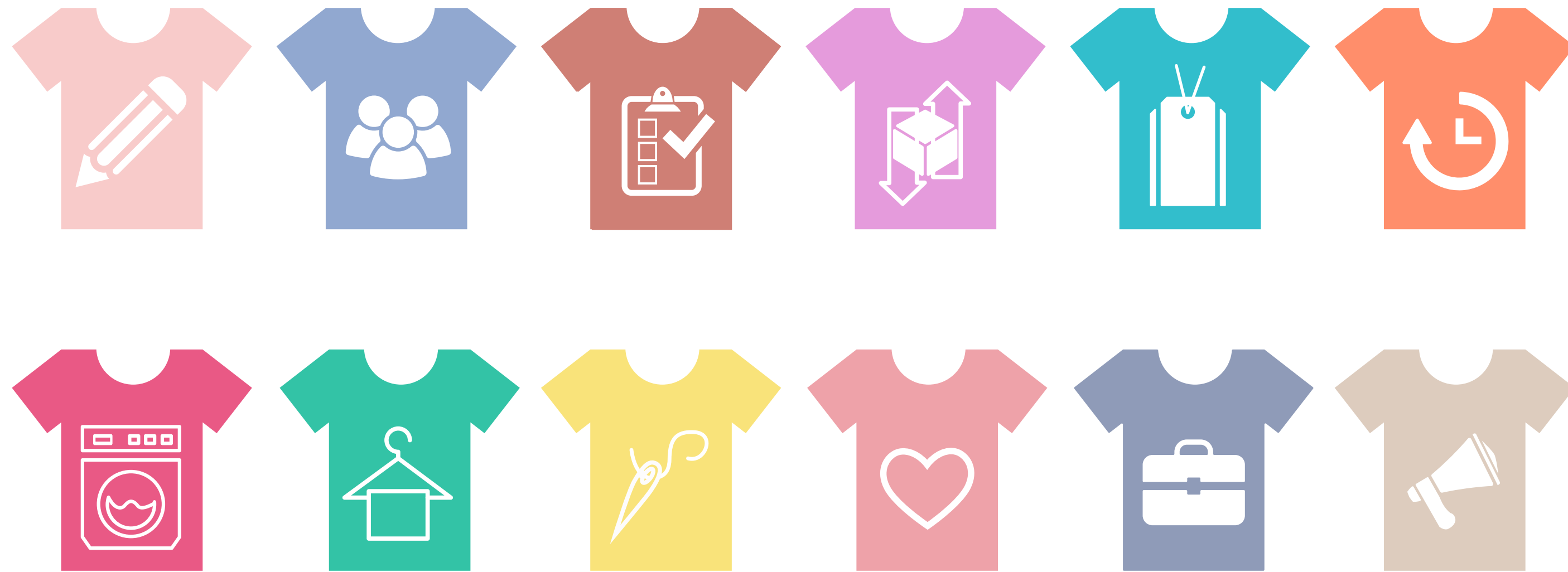
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CLOTHING DURABILITY DOZEN

STRATEGIES TO IMPROVE DESIGN AND TESTING FOR CLOTHING LONGEVITY