

## Context

Based in Dartmouth, Nova Scotia, Faire Child specialises in children's rainwear and accessories. Faire Child has a focus on incorporating ethical and environmentally oriented practices into the production of its garments. Faire Child utilizes a recycled PET fabric and has numerous global certifications for their products including:

- ✓ Global Recycled Standard third-party certification,
- ✓ bluesign® Sustainable Textile Production Certification, and
- ✓ OEKO Textile Standard 100: Confidence in Textiles certification.

## Problem

The current approach to mending tears in Faire Child garments is for the customer to provide the torn item to the company. It is then repaired and returned to the customer. This takes the garment out of service for a period, and company employees are working on garment repair instead of garment production. This is an expensive and inefficient approach for both the company and the customer. There are also costs associated with delivery.

## Resolution

An approach to resolving this problem is to provide customers with a 'Patch Kit'. This kit will provide a complete, customer friendly solution that:

- ✓ Is consistent with the company values,
- ✓ Optimizes available production elements,
- ✓ Adds value to both the customer experience, and
- ✓ Allows more efficient use of company resources
- ✓ Meets time and budget allocated.

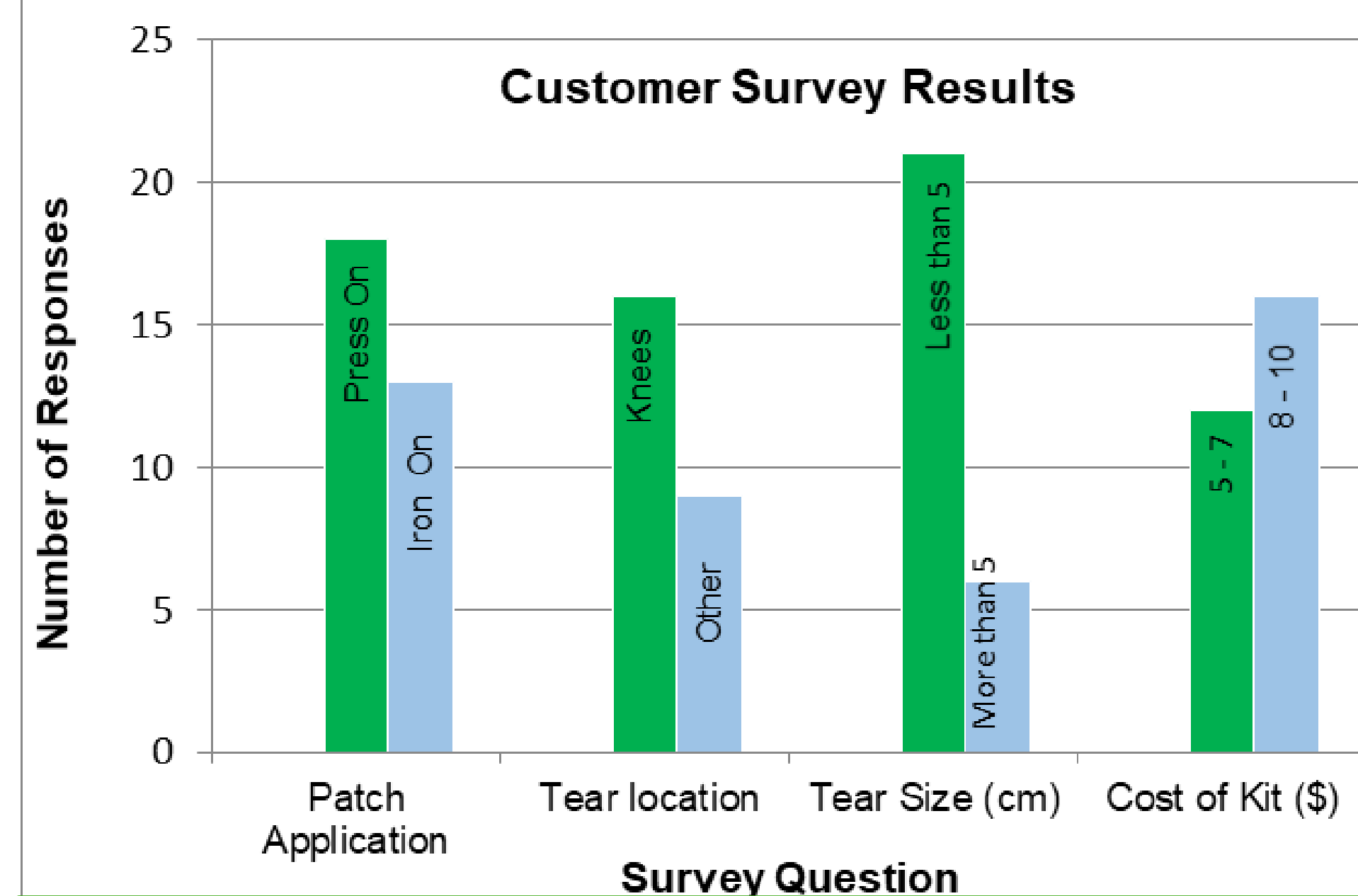


## Requirements Development

Requirements development included:

- Reviewed customer documentation provided
- Performed market research to understand similar products available, their features and functions
- Identified stakeholders: Company leadership and customers and approach to their engagement
- Company leadership were engaged via an interview process, with follow up emails where clarification was required.
- Customers were engaged via an electronic survey

Customer needs and requirements identified were incorporated into the design concepts.



Based on the Requirements, Solution design concepts were developed. To assist in conceptualizing, the project was split into two streams:

1. Development of the patch including patch size and adhesive type
2. Development of patch manufacturing and packaging.

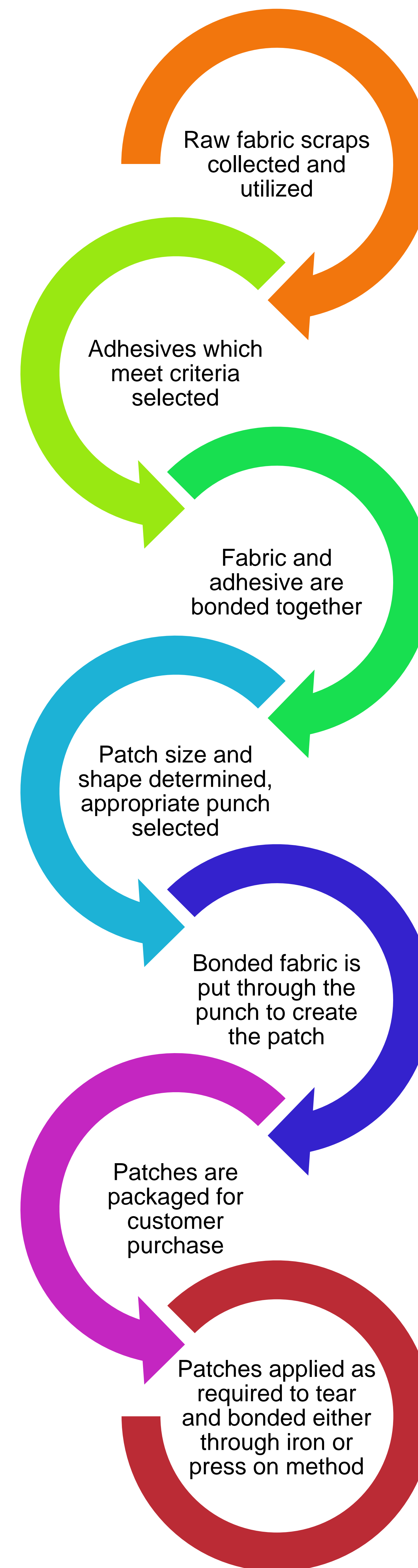
Two concepts per stream were developed. Concepts were then assessed based on viability of the design, and expert input from technicians. A final design was selected from the concepts proposed.

## Patch Development

Patch development included:

- A circular patch with a 5 cm diameter was selected based on ergonomic research and customer feedback.
- A transfer adhesive was selected from a set of four samples. Selection was made based on an assessment matrix. The assessment categories were developed from customer requirements.

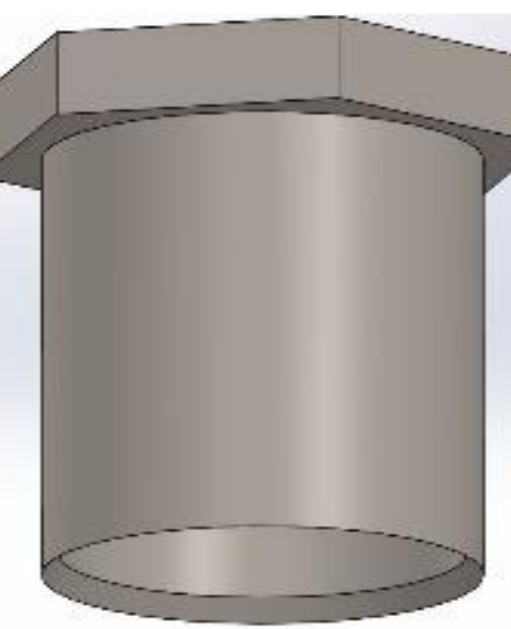
## Patch Kit Production



## Patch Manufacturing

Patch manufacturing included:

- Patch manufacturing was accomplished through the development of a punch to create uniform patch shapes. The punch was designed for compatibility with existing equipment designed by Mechanical Team 23.
- The punch was made from 316L Stainless Steel



The final design was constructed and tested. Minor adjustments were made based on testing results.

## Testing and Verification

Testing and Verification procedures carried out included:

- Preliminary adhesive testing to confirm compatibility with fabric
- Testing for waterproofness of seal including pressure head testing and direct flow testing
- Adhesive resistance to detergent and machine washing
- ICP Mass Spectrometry to confirm that the adhesive conforms to Faire Child standards.
- Testing punch compatibility with existing equipment (see Mechanical Team 23)
- Punch performance in cutting of: single and multiple layers of fabric, fabric bonded with adhesive, and adhesive alone were tested.

## Outcomes and Recommendations

Recommendations include:

- Optimise the efficiency of the punch blade
- Two adhesives were found to be compatible with the requirements of the Patch Kit. The preferred selection will depend on features and functionality
- More extensive adhesive testing

Project Outcomes include:

- ✓ A functional patch with environmentally certified adhesive, that is consistent with company values.
- ✓ Resolution of previous strategy for repairs
- ✓ The Patch Kit provides a more customer-friendly way of managing repairs
- ✓ An operational patch manufacturing mechanism
- ✓ The project was completed on time and under budget.