

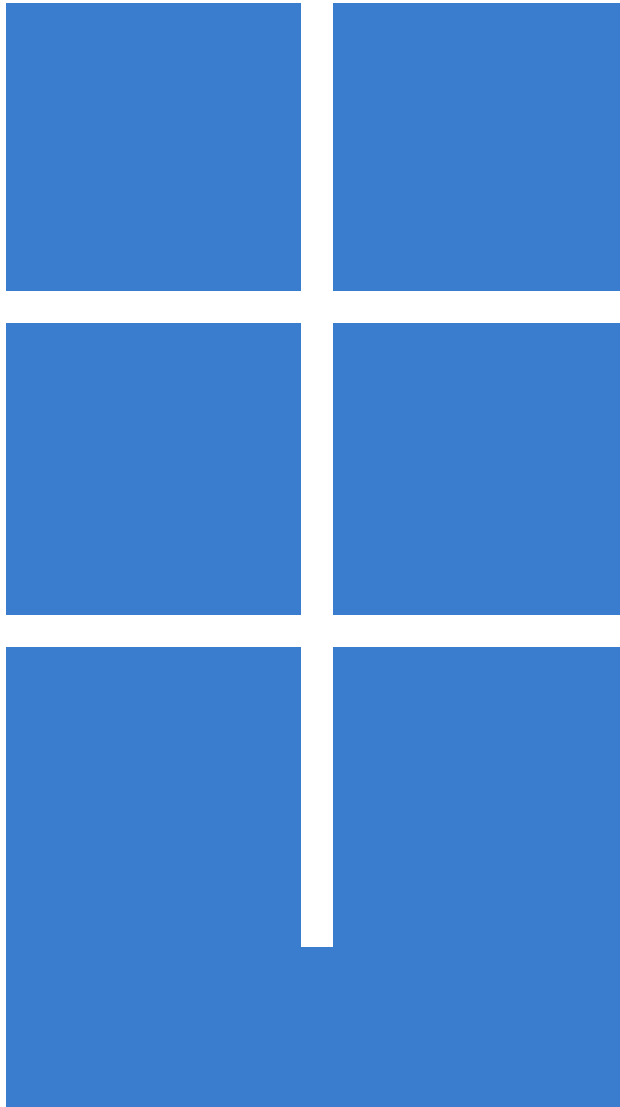
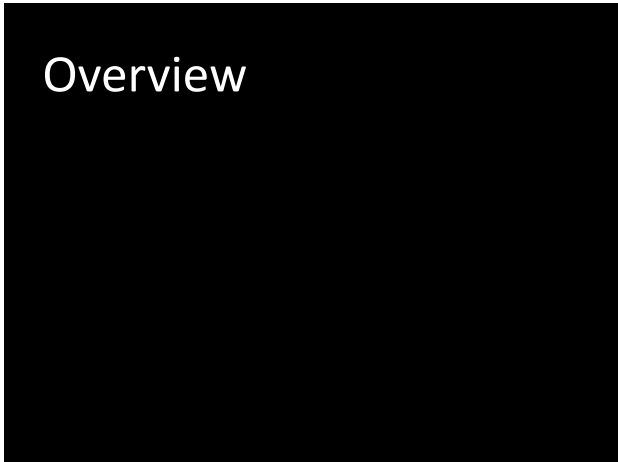
INNOVATION IN MOTION design driven by user insights



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Illustrating the breadth and depth of my professional experience, this document is arranged into two sections.

The first is an in-depth case-study of my product design project at Embrace and the second is a series of project overviews from my earlier professional roles.

Embrace	2010
Deloitte	2006 – 2009
Kimberly-Clark	Summer 2005
Eaton	Summer 2004

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Infant Warmer Product Design

Producing a safe and effective infant warmer for low-resource medical environments.

An in-depth case-study of my product design project at Embrace.

January 2010 – July 2010



Context	Challenge	Approach	Insights	Results
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Controlled studies with newborn infants allowed us to identify safety concerns.



Field visits to urban and semi-urban clinics were critical to understanding the context.

About Embrace

A social enterprise aiming to help vulnerable infants in the developing world, Embrace is heavily focused on safety while designing and preparing to launch a low-cost and simple infant-warming device.

CONTEXT: Sleeping bag design

With a technically functional product, Embrace was ready to take its Infant Warmer from “it works in the lab” to “it works even in rural clinics.” Capitalizing on my observation and design skills, Embrace asked me to evaluate ease-of-use and product safety for the target users.



Semi-urban clinics send patients with complicated deliveries to urban hospitals.



The Infant Warmer needed to operate easily in very low resource neonatal environments.

Product trials

In a major milestone for the company, I oversaw its Infant Warmer's debut in warming newborn babies, introducing the product into a critical-care environment. Infants began using the warmer within an hour of birth.

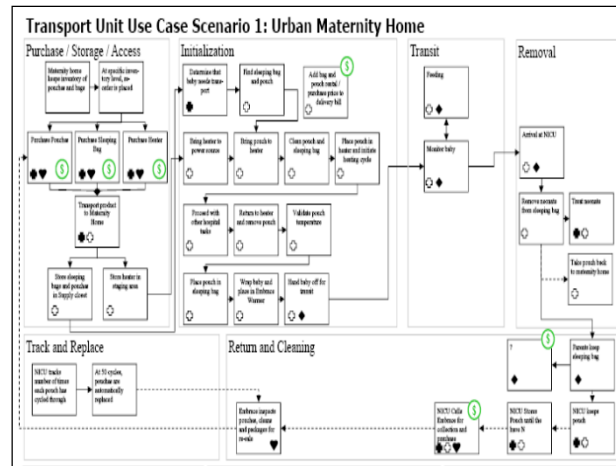
CHALLENGE: Overheating risk

Because hyperthermia is a serious risk to newborns, Embrace asked me to investigate, evaluate and recommend strategies to mitigate the risk of infants being overheated in its Infant Warmer.

Context	Challenge	Approach	Insights	Results
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Ambulances in one state delivered over 6,000 babies en route in just 18 months.



Mapping the product-path through the neonatal ecosystem illuminated critical questions.

Key users interviewed:

- Doctors
- Nurses
- Mothers
- Hospital directors
- Clinic staff
- Ambulance drivers
- Emergency medical technicians

APPROACH: Structuring the problem

I created an investigation plan that included scope definition, guiding principles and user grouping. After interviewing users in each group, I mapped the product-path through each usage scenario and explored areas where the product design may introduce overheating risks.

Context

Challenge

Approach

Insights

Results



Working side-by-side with a tailor to build prototypes allowed for real-time updates.



Bringing the team together incorporated insights from all of Embrace's experience.

Empathy Building

Spending many hours interviewing and observing the targeted end-users enabled me to see the situation through their eyes and to understand their needs and medical procedures. The insights garnered from this experience will focus Embrace's future product development.

INSIGHTS: Ease-of-use

- Users need to eliminate the risk of cross-contamination. A disposable product option may be viable.
- Users need to keep the infant securely and comfortably in place without risking injury. Softer edges and a modified "wrap" shape may better fit infant contours.
- Users need a simple, consistent and intuitive method to gauge the warmer's temperature.



A floating temperature indicator was explored to leverage the largest possible visual cue.



Temperature sensitive inks and LCDs were prototyped and evaluated.

Prototyping

To assist in eliciting insights and creating the right solution, I used a variety of prototypes, from paper drawings to interactive devices. Prototypes allowed me to evaluate different temperature indication mechanisms and gauge user reactions.

INSIGHTS: Heating safety

- Users customarily touch the infant's hands and feet to check temperature.
- Medical personnel make discretionary decisions about the urgency and treatment required when an infant's temperature falls outside the optimal range.
- A correctly heated Infant Warmer frequently is perceived by users to be not warm enough.



Nursing staff adopt techniques that save time and allow them to focus on critical tasks.



Users need to be trained to avoid incorrectly judging the temperature using tactile feedback.

Touch sensitive

Touch is not the ideal method to determine an infant's temperature; however, it may still be the best available option in certain situations. Redesigning the sleeping bag allowed for easy touch-access to the infant's hands and feet while minimizing heat loss.

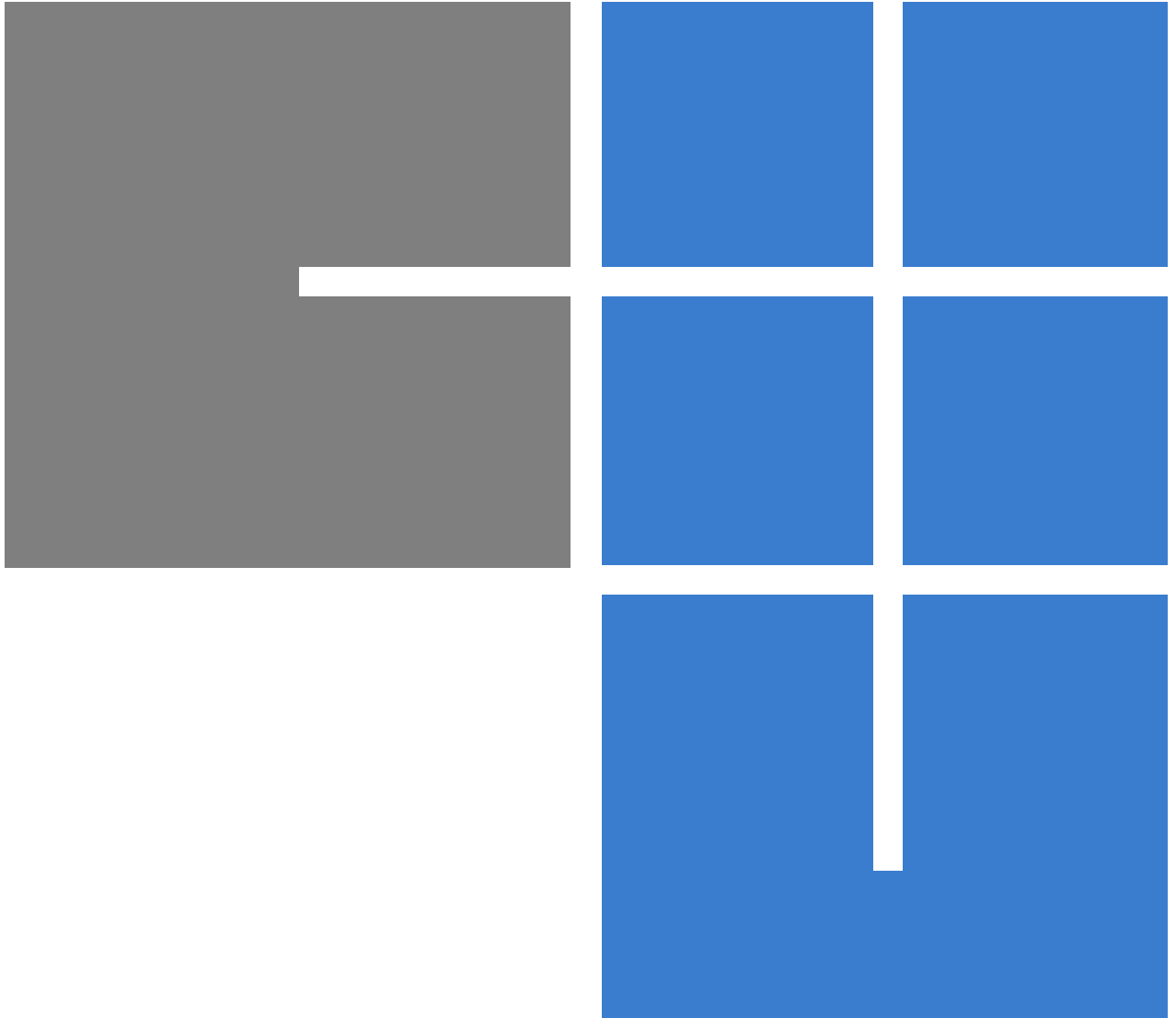
RESULTS: Safer and simpler design

Forming a design direction from these insights, I led my team in creating context-relevant design modifications so that the product could begin large-scale trials. These modifications included a newly designed garment shape, access features, temperature indicator and user training so that all users could simply and correctly warm the infant.

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Project overviews

From my earlier design projects at Kimberly-Clark and Eaton to my three years at Deloitte, my projects centered on delivering well-designed products that met user and stakeholder needs.





Looking to present consistent eMarketing messages, Motorola turned to Deloitte.

CHALLENGE

Each client project involved designing a company-wide set of business processes and building a software application to support those processes for thousands of users.

My project team worked closely with diverse sets of heavily-invested stakeholders at each client (Medtronic, Motorola and Del Monte) to create alignment.



Del Monte needed an analytical trade promotions system to gauge profitability.

APPROACH

I interacted daily with the client's employees to ensure that Deloitte clearly understood and tracked the client's requirements.

This involved aligning processes across business groups, mapping and programming approval hierarchies and determining development priorities.

About Deloitte

By working directly with the client to co-create solutions from requirement gathering to launch, Deloitte ensured the solutions we provided not only met specifications but also were realistically useful.

RESULTS

My three projects resulted in satisfied clients using the management systems we had implemented for e-marketing, trade promotions and complaint-handling processes.

These projects honed my ability to methodically and efficiently tackle complex questions as part of a diverse team.



When applying the diaper, one attachment tab would rip off, making the diaper unusable.

CHALLENGE

Providing a more secure diaper fastener meant changing the way the tab component was attached. This component change resulted in material stacking and handling problems in the manufacturing process.

My role was to design and test solutions to the manufacturing process problems so that the product improvement could be implemented.



Mothers are extremely specific in their diaper choices and demand the best for their infants.

APPROACH

Through many visits to the diaper production plant and close observation of the processes, I identified the root of the problems created by the redesigned fastener material.

About Kimberly-Clark

Kimberly-Clark was focused on solving mothers' number one diaper-performance issue.

Listening to their customers' needs and responding quickly was the only way to prevent customers from opting for another brand of diaper.

RESULTS

Working closely with the engineers and manufacturing plant leaders, I designed and prototyped a material transport cart that would appropriately support the new diaper tab material.

The new cart required minimal process adjustment and fit efficiently into the existing manufacturing plant.



Component design and testing



Eaton's innovative technology was new in heavy-duty truck transmission design.



Testing the component meant simulating the stress from one million miles of driving.

About Eaton

With nearly eighty percent of the heavy-duty truck transmission market in the USA, Eaton needed to innovate to stay ahead, but without risk to its reputation for durability.

CHALLENGE

Designing a transmission centered on a new-to-market gear-shift technology, Eaton needed to confirm that its new technology would survive heavy loading for long periods.

My role was to model and test one of the new transmission components to ensure it met the environmental and mechanical stresses the component would encounter.

APPROACH

After identifying that the component's microscopic surface structure would be the critical factor in its performance, I created a variable three-dimensional digital model of that surface.

Using precision tools I next built several components with varied surface structures, to be tested as part of fully-functional prototype transmissions.

RESULTS

The digital model I constructed allowed Eaton to validate the durability of the final component design. It also allowed Eaton to determine the optimal surface texture for heavily-loaded towing performance.

Contact Information

I am happy to discuss these projects further and encourage you to contact me if you have any questions.

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