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# Lightweight Journey Mapping: The Integration of Marketing and User Experience through Customer Driven Narratives

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**Abstract**

Marketing researchers often utilize customer surveys and interviews to gauge customer satisfaction, but user experience professionals know that these methods may not reveal discrepancies between self-reported and actual customer behavior. Integrating market research and observational research approaches in a fashion that is agreeable to a cross-functional team can be very challenging, but using hybrid techniques can help a team collaborate to provide a high-quality user experience.

This case study describes the development of a customer-driven **lightweight journey mapping approach** that led to new insights about how our customers were using our product. These insights led to a new understanding of our customers' challenges using our product, and more generally, they helped the team appreciate the variety of user experience challenges our customers faced.

**Author Keywords**

Journey mapping; customer journey; critical incident technique; pain rating scale; user research

**ACM Classification Keywords**

Human-centered computing~Field studies; Software and its engineering~Collaboration in software development

**Introduction**

A common challenge for user experience professionals is to engage market researchers in the ownership of user-centered design study findings [1]. User experience professionals may be required to navigate philosophical differences in data gathering techniques with marketing as we balance the cross-functional team's desire to rapidly gather data.

A traditional customer journey map is a good method for aligning cross-functional teams that include marketing researchers, user experience professionals, and developers, but such a journey map often lacks direct customer input that can address specific team questions and provide behavioral insights.

A traditional customer journey map is a diagram that is used to visualize a customer's interactions, or touch points, with a brand. It is based on a variety of customer research; however, traditional journey maps are usually created by a company's internal stakeholders (e.g., [2] [3] and [4]). This traditional journey map spans across time, devices, and workflows; and characterizes a complete set of customer interactions with a company. For instance, a traditional journey map may trace a customer researching a product, purchasing and using the product, and later requesting technical support for the product. Customer journey maps can also be used to support high-level visioning exercises.

In our situation, we wanted to engage a newly hired marketing researcher, but also wanted to limit the expense and increase the relevance of the customer journey map for requirements gathering and interaction design. We adapted the customer journey map method into a **lightweight journey map** that taps into a customer's most memorable interactions with our company as they worked toward a specific goal. In our case, the customer's goal was to successfully connect a low-cost hardware device, such as an Arduino board, to a desktop computer using MathWorks software and then run an algorithm on the device. This task is often referred to as a "Hello World!" exercise in the software development community.

Using our lightweight method, we were able to identify common use errors that explained why users were frequently failing to achieve the "Hello World!" goal.

The core aspects of our lightweight journey map are:

- The customer drives the conversation and creates his or her own lightweight journey map based on a number of salient moments along their workflow
- The number of salient moments is purposely limited to emphasize the user's most significant milestones to simplify the exercise for the customer and reduce data analysis burden
- The customer can explicitly illustrate the emotions associated with each milestone of their journey using a predefined rating scale
- The resulting artifact tells the users' story in his/her own words

- The simplified timeline-based structure is easy for customers to communicate, and cross-functional team members to understand

### Lightweight Journey Mapping

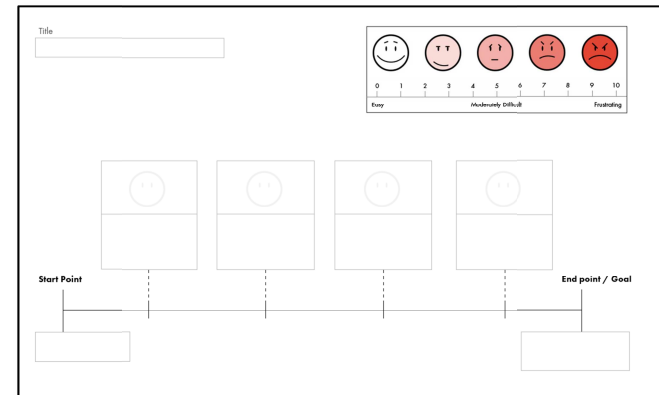
Lightweight journey mapping is a data-driven, lightweight approach for capturing workflow desires, delights and pain points. It combines tools from critical incident technique [5], customer journey mapping, and medical diagnosis practices [6] to efficiently and effectively understand a customer's experience when interacting with a product to achieve a specified goal.

The lightweight journey map method involves a customer entering 3 to 4 salient milestones on a timeline that is framed by a predefined starting point (the trigger that initiates the workflow) and goal. The customer then assigns a rating (based on perceived ease-of-use) to each of these milestones. The customer then has the opportunity to step back, drive the discussion and elaborate on each of the milestones.

There can be two resulting artifacts: the journey map itself, and a short video of the customer walking through the journey map. See Figure 1 for a blank PowerPoint lightweight journey mapping template. If the customer session is recorded, the video clip of the customer referring to their lightweight journey map as they tell their story is usually 2-3 minutes long and can be compelling to those team members who did not directly observe the exercise.

We recommend using this lightweight method in combination with other traditional methods such as an interview or a usability study. We started our sessions

with a traditional interview and ran this lightweight journey mapping activity near the end of our session.



**Figure 1:** A Lightweight Journey Map template. This template contains a title, the journey's start point and end point, four milestones, and a ratings scale to measure the customer's mood at each milestone. Copyright The MathWorks©

### Process

Lightweight journey mapping is anchored around a "journey" that has well-defined start and end points. A journey may be a workflow or a process that involves interaction with a specific product or set of products. Whereas traditional customer journey maps are often broad in scope, our lightweight journey map was focused on a specific set of interactions.

To apply the lightweight journey mapping method, define the scope of the journey using explicit start and end points. Write the title describing the journey and the start and end points into the journey map. Then, decide on the number of discrete milestones, ideally between 3 and 5. We used 4 milestones to encourage

the customer to focus on the most important milestones in their workflow.

Next, schedule a session to speak with the customer. During this session, show the journey map to your customer and explain how to complete it. Prompt the customer to think of the four most salient/memorable interactions or moments they had as they worked toward your predefined goal. Have the customer write each milestone down in corresponding empty boxes along the timeline. Ask the customer to assign an emotion rating to each milestone using the face that best represents how they felt (from easy to frustrating) as they completed that milestone. In our PowerPoint template (Figure 1), this is a drag-and-drop operation. We did not prompt users to explain their choices as they were completing their journey map; rather, we held these questions until they had completed the journey map.

When the customer is finished, ask them to talk through their journey and summarize their experience for you. Ask them to discuss each milestone and the associated rating. This conversation is where we gathered great insights during our sessions.

The resulting lightweight journey map is a succinct record of the customer's experience in a particular workflow. The lightweight journey map may be used as is to illustrate a specific customer's story, in the customer's own words; or it may be combined with other lightweight journey maps to explore common customer delights or hurdles. The maps may also be used as inspiration for future designs.

## Case Study: MathWorks Hardware Support Package Installation

### *Background*

MathWorks develops a number of scientific computing and engineering software products. Among these products is Simulink, a graphical-based modeling and simulation tool that engineers and scientists can use to create, explore and analyze new algorithms. A simple example of an engineering algorithm is a home thermostat that takes an ambient temperature reading, compares this to a set point, and then determines whether or not to do adjust the temperature.

As low-cost hardware (e.g., Arduino and Raspberry Pi) has become more prevalent, MathWorks has developed capabilities to help customers connect to and deploy their algorithms onto these low-cost hardware platforms.

In order for customers to use this capability, they must first download a hardware support package specific to the hardware of interest. The hardware support package contains MathWorks software and occasionally third-party software. This hardware support package enables a customer's computer to connect to and deploy their algorithms onto their chosen hardware platform.

While our team was working on improving the hardware setup workflow, a newly hired market researcher discovered a significant drop-off between the number of support package downloads and the number of successful support package installations. According to the marketing data, for one particular hardware support package, in one month over 600

customers downloaded the support package, but only 20 customers (3%) successfully installed the support package.

Because the data available was quantitative data only, the team, which involved development, marketing, and user experience, had differing opinions for how to proceed on a plan to reduce the drop-off rate. Marketing came up with a solution and was hoping the user experience group would 'bless' their plan. They wanted to add additional web screens into the workflow to sell customers our newer products before users could download the desired support packages. Their assumption for the cause of the drop-out rate was that it was a marketing problem – not enough users had the required products to install the hardware support packages.

Meanwhile, the user experience group had seen usability issues in previous internal testing. We knew users with the appropriate required products also failed to install due to usability issues. We mentioned this during our initial meetings with marketing, but they were not swayed from their desired solution.

Next, we suggested we find some customers who had problems installing support packages, and talk with them, to learn more and get specifics. Marketing got behind this idea. Now the team agreed to gather qualitative data, and we were ready to pivot our attention to this install drop-off issue. Marketing's quantitative data told us 'what' the problem was, and we were now preparing to understand more about 'why' it was happening.

At the same time, due to the rapid nature of the project and other competing priorities, the team required a quick turnaround for data gathering and analysis. We had time for some interviews, but we felt that these would be insufficient alone to convince marketing, who seemed to be more motivated by numbers and emotions. We looked for a method to supplement the interviews that would tap emotion and involve a quantitative component.

#### *Development of Lightweight Journey Mapping*

Our initial version of the lightweight journey map used the Wong-Baker FACES pain rating scale [6] to guide customers' emotional ratings for each milestone. The Wong-Baker FACES pain rating scale is currently used in many hospital emergency room departments to help evaluate patient discomfort. The scale displays six emoticon-like faces representing a range of pain from 'no hurt' to 'hurts worst'. The general idea of using emoticon-like drawings to represent points on a scale worked well. However, a pilot participant noted that the nature of the Wong-Baker FACES which included a tearful expression labeled "hurts worst" did not represent how she was feeling for a particularly frustrating milestone in her workflow. She described her emotions as "mad, not sad". Consequently, we refined the scale to better represent user experiences with software, ultimately resulting in a scale that ranged from "easy" to "moderately difficult" to "frustrating." We also experimented with different styles of emoticon-like facial expressions until we settled on the version displayed in Figure 1.

#### *Method*

We recruited four participants—a mechanical engineering professor, a student, an electronics

hobbyist, and a STEM program high school teacher—among customers who downloaded a hardware support package, but who had at least one difficulty or failure in installing the support package. All participants were remote. We started the session by asking participants to give us a little biography on themselves and to talk about their experience level with various software tools and the hardware platform. Then we ran a typical contextual interview where we occasionally turned screen control over to them as they navigated through various web pages and desktop tools to show us how they accomplished their goals. We presented the lightweight journey map activity at the end of the interview, and then debriefed with a closing interview.

### *Results*

Because we knew previously that our participants struggled to successfully install a hardware support package, it was not surprise to observe multiple failures in getting the system up and running during our sessions. All of our participants also told us they needed to seek help from our technical support area and/or a more experienced person before they were able to eventually be successful at achieving a “Hello World!”. What was interesting was they all tried different paths to seek assistance, but ended up using the same solution to solve their problem. Every participant avoided using our web site to download and install the hardware support package. Instead, they chose to initiate the download and installation process from within MATLAB. After facing some initial difficulty, they trusted the “internal” path to installation and lost trust in the Web-based install process.

Common failure modes using the web links included missed or skipped steps as well as extraneous (and

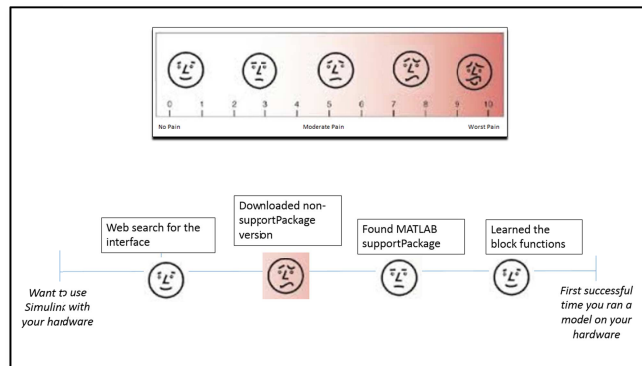
unnecessary) steps taken. The reason for these errors is likely due to a mismatch between our participants’ mental model for the typical website download/install process and our current solution which works differently. Our participants assumed they were downloading the support package file when they clicked on a web link, but they were actually only downloading a “pointer” file that had to be executed to download the actual support package file. This pointer file type is unrecognizable to most users, and depending on the version of MATLAB, unrecognizable by the operating system. Figures 3, 4 and 5 show the results of our participants who were able to overcome initial install failures with some tech support assistance.

The student called his initial install failure the ‘non-support package’ because he was not sure why it did not work with his hardware. Then he remembered a hallway conversation with a professor who mentioned the hardware support package installer could be initiated via the MATLAB user interface. (Figure 3)

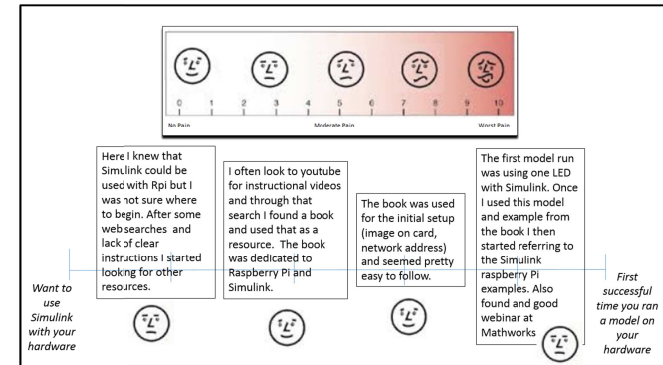
The STEM teacher ended up buying a book to help him understand how to install the hardware support package. Note his comment in his first milestone about ‘lack of clear instructions.’ (Figure 4) As can be seen by the emotion he choose to assign to the milestones in his journey, he reported less frustration than the other participants and ironically he probably worked the hardest to overcome his hurdles.

The mechanical engineering professor encountered a lot of pain initially and called our technical support team multiple times to get assistance as she tried to set up a lab for her students. (Figure 5) During our interview and lightweight journey map session, we learned a lot

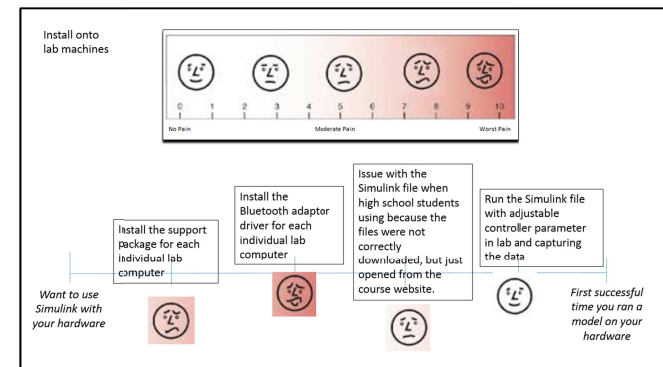
about computer lab requirements. We were also able to explore a hurdle she described as her 3rd milestone. We discovered that we had misunderstood her description of this issue during her initial interview, but within the context of the lightweight journey map, we were able to catch our own assumptions and probe deeper. It turns out she was using our hardware support package with another software tool that also allows users to deploy programs to the same piece of hardware. This use case was not imagined by our team until we heard her story.



**Figure 3:** The student's Lightweight Journey Map artifact. (pain scale adopted from [7])



**Figure 4:** The STEM teacher's Lightweight Journey Map artifact.



**Figure 5:** The mechanical engineering professor's Lightweight Journey Map artifact.

Our cross-functional team members, including our newly hired marketing researcher, observed each of the sessions. The new marketing colleague was so impressed with what we were able to uncover in the lightweight journey mapping exercise that she said,

"This is great data! Why don't we just do this lightweight journey map at the start of the session!" We were happy that she saw value in this exercise. In some cases, it might be fine to start with the lightweight journey map activity and then progress to the interview, but in our situation, participants had to recall their experiences from weeks to months prior to the session, and we decided it would help users recall their story if we started with an interview.

We analyzed the results manually, looking across the results for common themes. For example, all four participants avoided entering the installer via web links. In many cases, they had experienced technical difficulties with the web links and were not confident they would be able to achieve their goals using the web links, and therefore abandoned that approach. They preferred initiating the download and installation process from within MATLAB. We discovered the web links to our support package installer was more difficult for our customers compared to our in-product path.

#### *Impact and Resulting Action*

What was the response from our marketing researchers? They were very enthusiastic. They called a meeting with our upper level management and presented our study findings in this meeting. They were influenced so much by the customer stories that they proposed removing the Web entry into the support package installer altogether, which was a big shift away from their original proposal.

The team had mixed feelings about this idea to remove the Web entry to the hardware support package installer. In the end, upper level management decided they wanted to understand more about the issues

before making any big changes, so they initiated a root cause analysis to better understand what was happening. This allowed all of us to understand the breadth of the issues which contributed to the drop-out rate. The user experience group and marketing group are currently working together to build a better customer experience based on these efforts.

#### **Discussion and Conclusion**

Once we completed these lightweight journey map sessions, we looked through the recordings to understand what lightweight journey mapping provided beyond traditional customer journey maps and interviews. We noticed the following benefits:

- The method was easy for our user experience specialists to deploy alongside existing methods.
- The method was lightweight, but powerful—in some instances, we gathered new insights beyond the interview.
- The method provided a way to talk about a broad space in a manageable way. When we used it, our study ended up spanning across a number of 'touch points', 'products' and 'features.'
- It was empowering for the participant to drive the discussion and set the milestones on the journey map.
- The level of abstraction that a participant selects as milestones suggested the amount of difficulty that a participant encountered in the journey map. A participant that choose detailed, low-level steps as milestones often struggled to achieve those milestones compared to those who chose abstract milestones.
- The method provided a measurable outcome in the form of ratings. Faces as ratings were a

convenient way to tap into emotions ranging from delighted to frustrated.

- The format of the template resulted in a self-documenting process that can be captured in one slide. Optionally, the user experience professional can record the customer presenting the journey map.
- The method allowed the cross-functional team to quickly understand and focus on what was most important to our customers.

Existing customer journey maps are usually very broad in scope. Focusing the customer journey on only a few key milestones, and allowing the customer to create their own journey map, provides a simple yet powerful way to capture core pains and delights for a given goal or workflow.

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