

Leanne Suen Fa  
CART360  
Proposal  
Oct 9th 2022

# Project Proposal

Team member: Leanne Suen Fa

Primary documentation URL: <https://lksuenfa.github.io/cart360/>

The artifact I am proposing is a whimsical piece of surveillance technology which requires you to interact with it in a very specific way at a very specific time of the day every day. Worse, if you dare not do what it wants it will voice its disapproval. If you still refuse to comply, it will then proceed to notify your superiors, the one in charge of you, to correct your behavior so that you ultimately do what it wants. This piece of surveillance technology I am proposing is an enchanted pillbox.

## Research questions

Think of a context and an environment where you would like to intervene. Where will you present your project? Who is it made for?

The oldest baby boomers turned 75 in 2021. As they are Canada's biggest demographic, we can expect that in the next few years, we will see a huge increase in demand for home and long care services as baby boomers move into ages associated with higher care needs. With our current capacity, the long term care waitlist accounts for approximately 20% of the total demand. This is a clear indication that Canada already does not have the capacity to meet current demand. Therefore, unless significant systemic development is carried out in the near future, it will be very difficult to accommodate an even bigger clientele needing long care services (*Canada's Elder Care Crisis*). I think that developing home care services would be an alternative solution to the long term care problem. Many older adults would prefer to stay in the comfort of their homes as long as possible if they are healthy enough to do it. Long term care services should be reserved for those who can no longer stay home safely without appropriate care. However, the line between the benefit of home care and long term services is not a fixed one. Designing living environments which are more accommodating to and supportive of elderly

people's needs would help more people stay home safely and would ultimately benefit the whole society.

There are several factors used to determine whether someone needs long term care or not. But first, the person needs to be medically stable, that is medical conditions need to be well-controlled and the person should not be in immediate danger. Therefore, a key element to the success of medical therapy is adhesion to treatment. Currently, if a patient does not seem adherent to their medication we propose the use of blister packs which are prepared at the pharmacy. One of the problems is that since it is a time consuming process, we will prepare it in advance instead of on demand and will even deliver it weekly. It makes for a very convenient service but it can quickly become problematic as we have no way of knowing who is actually taking their medication and who is not. We could argue that patients are free to take their medication or not but at the same time it is also an ableist assumption that everyone would have the cognitive capacity to keep track of their doses. Patients who live alone, who do not have caregivers, those who lack a good support system while living with degenerating medical conditions are the most vulnerable even if they receive home care. The ability to take medication to maintain one's own health is so essential that it could even be one of the main reasons why someone would be referred to long term care.

So far there are many electronic pill boxes which can be used to monitor medication adherence. However, the main problems with those are their high price and the fact that they are not single use items. The current electronic pill boxes cannot be implemented on a large scale right now because there is no system to recuperate them and clean them for reuse. It would be like asking restaurants to only use expensive reusable takeout containers without increasing their staff to deal with all of the extra cleaning this initiative involved.

The artifact I would thus like to produce during the semester is a smart blister package exploring paper-based computing and printed electric circuits.

Think about the kind of relationship you wish to foster among and between your users and the artifact or installation. What will your project afford users and how would the experience make them reflect on themselves, their environment, society and your intentions?

One of the reasons I want to explore paper as a material is its low-cost, modularity and its ability to be reused and recycled at the end of its life as I imagine this artifact being mass-produced and taking a place in the private living environments of a large proportion of the Canadian population.

So far I have presented this artifact as a solution to an upcoming societal disaster, the care of the aging Canadian population. However, I also realize that such a device is an entry point for

technological surveillance. I want users of my artifact to rethink their relationship with technological surveillance systems and the potential of voluntarily introducing such devices in one's own home. For example, what if you were not allowed to live in your own home unless you approve of having this artifact watching you and making sure you are taking your medication ? What if your insurance refused to pay for medical care unless you could prove that you are taking your medication ?

How would they imagine living with a desirable or even mandated surveillance system and what impact do they imagine this type of device could have on the healthcare system ?

## Think about the notion of empowerment. Is your artifact really helping or challenging users?

Despite the concerns about surveillance the main goal of this artifact is to help the user, its target audience. The design of this artifact is mainly functional. The goal is to help people be more adherent to their treatment and help pharmacists like me follow up with them without taking on an insane amount of unpaid work. Therefore, we hopefully make an artifact which makes users feel empowered because they have better control of their adherence and which also makes them feel safer even if they live alone.

## Think about how to successfully communicate your intentions - what Interaction Design Strategies will you employ? What are you trying to tell us?

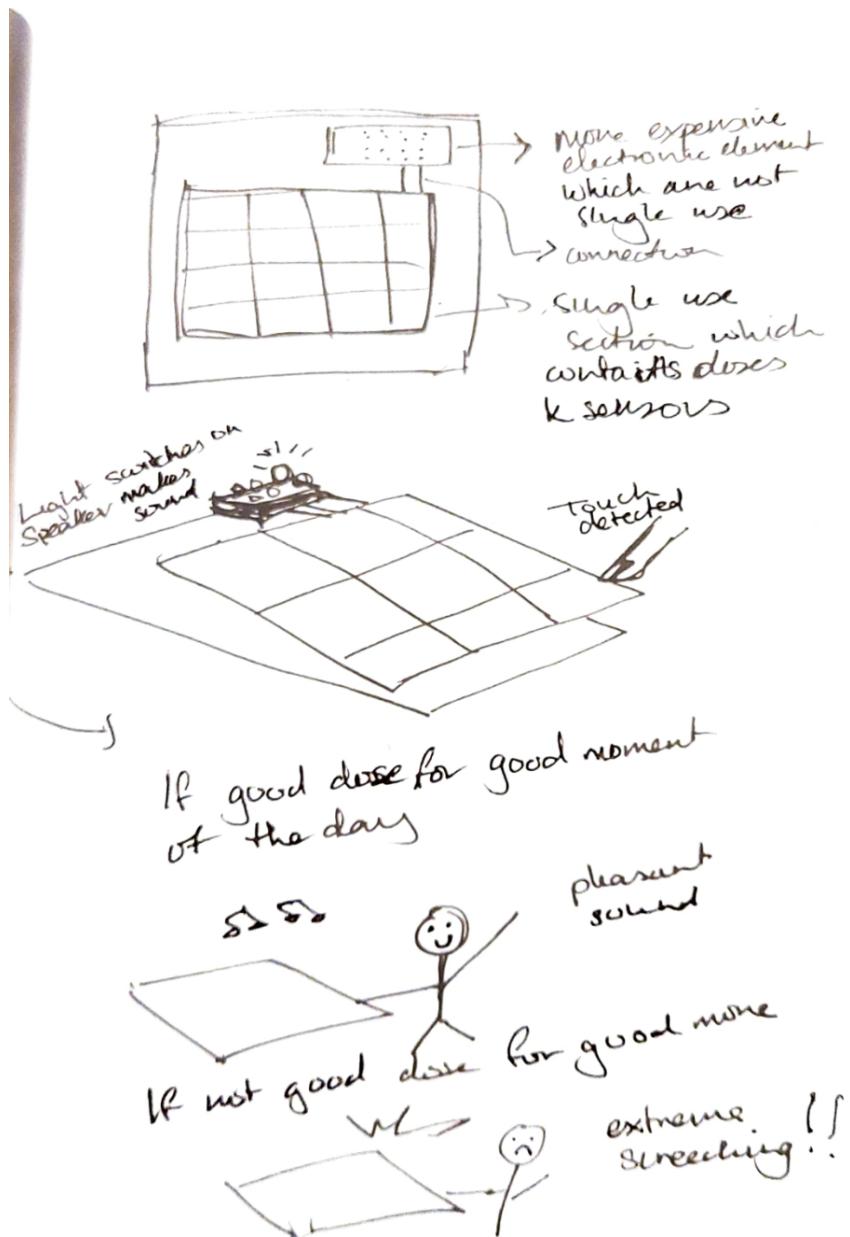
The artifact will employ a managing and entertaining interaction system

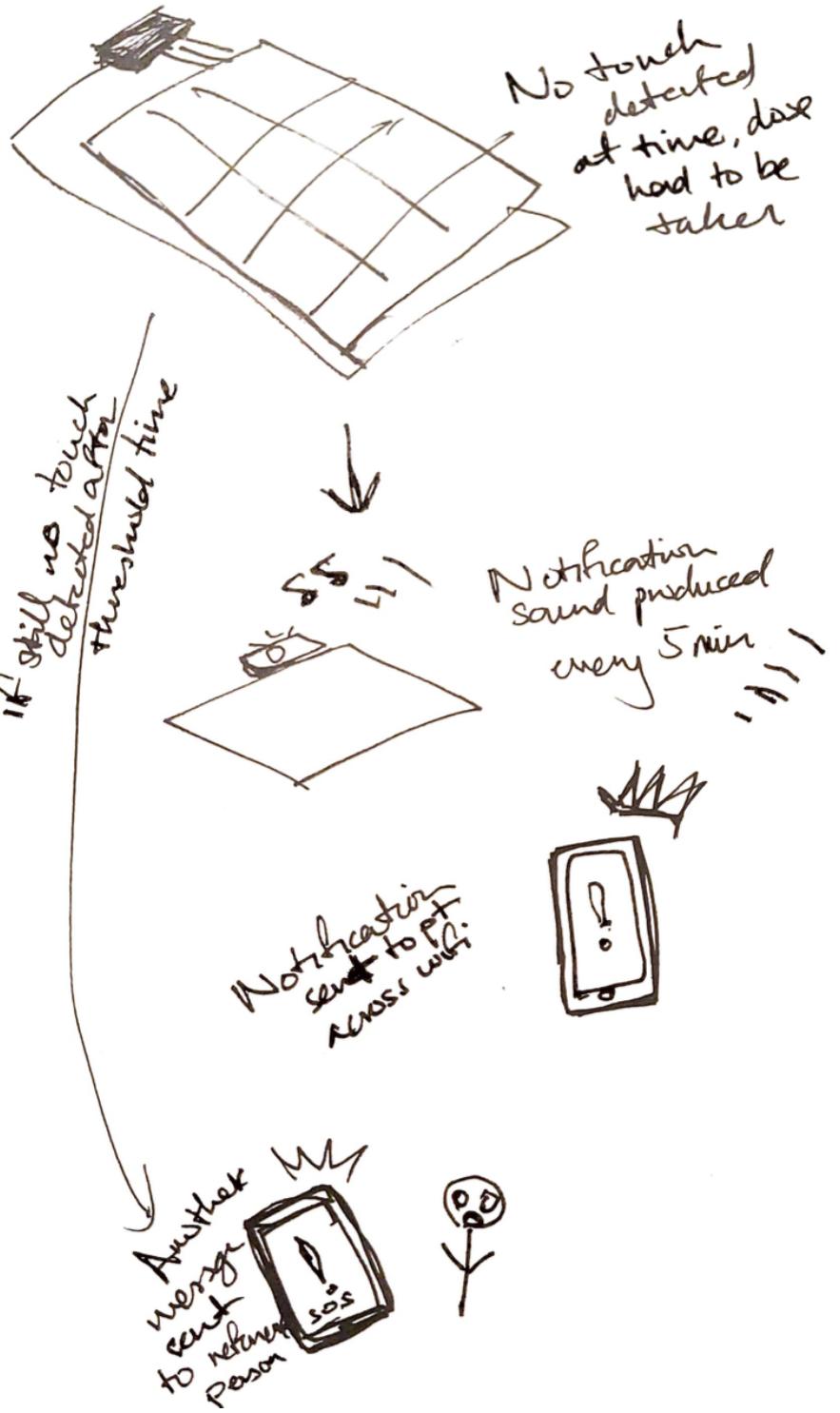
1. First system check state of the system continuously (self-regulating system)
  - a. Checks the time and date and active slots
  - b. Selects slot which needs to be opened according to date and time
  - c. Checks which slots are active and which ones are inactive
2. 2nd system uses output from first system to produces a feedback signal to notify user to take action (learning system)
  - a. If signal ignored, prevents user from taking further action
  - b. If too many signals ignored over a certain period, sends notification to reference user

# Sensors

For this project, I would mainly need pressure sensors to detect whether a specific blister has been touched or if a force is being applied to open it.

## Storyboard





# Similar projects

## Medipense

Medipense is a medication dispensing and remote monitoring device whose niche clientele are polymedicated seniors living in long-term care or managed care facilities. It reminds the patients to take their medication on time and notifies caregivers or health professionals if doses are missed. They are a Quebec-based company and make use of Dispill blisters, one of the most commonly used brands of single-use blister package in Quebec ("Medipense » Automated Pill Dispenser Medication Assistance for Seniors"). I met the founders of this device a few years ago during an internship as a pharmacy student. The Medipense was overall an initiative from the Dispill brand to keep a hold on their current market and attract a growing market : private retirement homes. The downside of their product was its lack of mobility due to its size (it is bigger than a toaster) and its price (estimated at around 400\$ approximately 5 years ago).

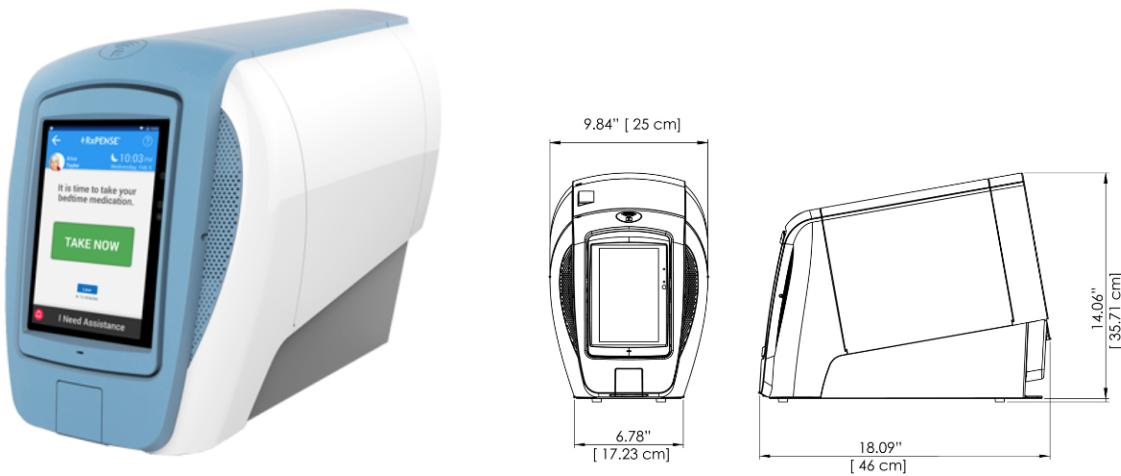


Figure 1: Medipense

## Experiential sound work

Experiential sound work by artist Thomas "Detour" Evans are a series of interactive paintings/installations which allows viewers to play his paintings like a musical instrument. Through colors as an interface, he explores the relationship between tangible objects and colors and our interpretation of the sound they would make to create real-time multisensory experiences (Evans).



Figure 2: Viewer playing sounds through Detour's painting interface

### L-INK lamp poster

L-INK lamp poster by French designer Jean-Sébastien Lagrange is a innovative lamp made using printed circuits and a magnet which allows connection between the start and the end of the circuit. LEDs are implemented along the circuit pattern which is also part of the lamp's aesthetic qualities instead of being hidden like regular lamps (Howarth).



Figure 3 : L-INK lamp poster switched on

Although the projects I have listed above are all very different from each other, they have helped inspire different facets of my proposed artifact. Medipense is the main source of inspiration as my proposed artifact aims to solve the same problems as this device. However, I want to take a different approach to the problem using different materials and technologies. Experiential sound work by Detour and the L-INK lamp poster are both examples of how electronics can be impeded in tangible surfaces like paper and makes use of the material's affordances to encourage viewers to interact with it. In these two examples, conductive paint and ink are essential parts of the objects and allow them to function but are also integral parts of the aesthetic visuals of the finished object. This is something I also want to reproduce in my artifact as I will also be using conductive ink.

## Works Cited

- Canada's Elder Care Crisis: Addressing the Doubling Demand.* Canadian Medical Association, 25 Mar. 2022, p. 21,  
<https://www.cma.ca/sites/default/files/pdf/health-advocacy/activity/CMA-LTC-Deloitte-Report-EN.pdf>.
- Evans, Thomas "Detour." "Experiential Sound Work." *I AM DETOUR*,  
<https://www.iamdetour.com/sound-art>. Accessed 6 Oct. 2022.
- Howarth, Dan. "L-INK Lamp Poster by Jean-Sébastien Lagrange." *Dezeen*, 24 Mar. 2013,  
<https://www.dezeen.com/2013/03/24/l-ink-lamp-poster-by-jean-sebastien-lagrange/>.
- "Medipense » Automated Pill Dispenser Medication Assistance for Seniors." *Medipense*,  
<https://medipense.com/>. Accessed 6 Oct. 2022.