

Client Interview

Location: SEL Facilities

Date: 9/14/2018

Minutes Recorder: Emily Chambers

Time: 3:00-5:00

Attendees: Emily, Nikki, Davis, Jaime , Dr. Beyerlein, Sally Mei, Jonathan Richards

Interview prefaced with 1hr tour of facilities

Interview Begins approx. 4:00pm

Running Notes:

Goal: Make something that pulls the board out of the chassis

There are servicing reasons it needs to be pulled out - Battery replacement
Consumer-grade

Reduce force from 40lb to approx. 28lb

Spacer's purpose is to be a grabbing point - doesn't have other functions

Removable tooling?

Beyerlein likes this idea

Jonathan does not

NEEDS to be a part of the assembly

No tooling for the user to lose

If we can justify changes to the chassis we can submit requests to Sally and Johnathan

Ex. Cut 2" hole here

Several chassis stacked on one another

Ejector Latch Deliverables

1. Proof that requirements are understood
2. Research on existing latches
 - a. Look for anything that ejects
 - b. Not restrictive to tray latches
 - c. Find examples that don't necessarily seem exactly pertinent
3. Brainstorming results (decision matrix)
4. Material selection and cost analysis
5. Functional concepts, made using a variety of materials and methods
6. Longevity analysis for chosen production material
 - a. Fatigue testing
7. Working prototype using production material
 - a. "This is what we are going to give the consumer"
8. Design validation testing results
 - a. Insertion force
 - b. Insertion cycles
 - c. Thermal and Vibration
 - d. CHECK the materials will withstand these things
9. Production implementation plan - proposed tooling method and supporting business case

- a. How can they mass produce it
 - b. 3D prototype may be feasible - but not ideal
 - i. If you were using plastic they would like you to come up with a mold and factor in 10wk lead time
10. Final report containing full information listed above with detailed design info, analysis and test results

Materials: whatever we determine to be the best choice

5 seating points

Cost/Unit Goal: As low as possible (mentioned \$2 too high)

They have a solution that is too expensive

They can give us the value after we present our ideas

They are concerned about piggin-holing our ideas

Space between each module

Model (SW) is the best way we can see that

They have solid models to provide us with

Mechanically, what they send us in a model will include a good representative of what we need to consider

We cannot duplicate the circuit board design any more than they give us

Proprietary issue

Don't edit their models to include more

Recommended that we create a testing apparatus to have consistent test force

The trays decrease in force required dramatically with use

Empty chassis suggested (without tray) - build off of that

There is a face plate

Sits flush with sides

Has circuits and various objects that jut into the chassis

This will reduce our workable space

This chassis sits in a hole

We can't go outside the chassis

Tray rail is riveted

The chassis has to be completely flush

No holes

No standoffs

No extrusions

Legitimate surfaces that we can utilize are

"Stuck" adding features to the chassis

Standoffs, rivets, etc. options

Spot welding technically option but J was not excited

Can work on chassis

Do not touch the circuit board

Creepage and Clearance

Arc etc. if certain metals are too close

Not something we should consider too heavily during design phase

Phillips head #2 fastener

Check with client before choosing fasteners

We want to match their standard

We WILL get feedback

Our solution theoretically gets rid of the loose nut and standoff at center of tray

They don't like that currently - so our solution will be good

"No idea is a bad idea"

They will want to see everything - the good, the bad, and the ugly

Most trays are similar

Bottom board is almost always the same

Heavy blocks - no ejector (not something we are changing)

We will not be able to change circuit board

Patents can be a resource for idea generation

Don't infringe on patents (don't copy)

Don't let existing patents scare you away from an idea - they have a patent lawyer

Material of tray and guides can be changed

The guides were created during last year's project

Tooled

Super cheap

The goal is to drive it to inexpensive

Plastic mold is cheapest

They say plastic a lot - not as familiar with these materials so we should do some more research

Don't pidgin-hole with plastics

At midpoint and end of project they will ask us to do a presentation at SEL

Midpoint is most important - Thanksgiving/early December range

Final presentation is great, but not as critical to project development

Timeline Review

Projects planned on prototype schedule

First prototype is the most variable

Second prototype timeline is half of first

Third prototype timeline is half of second

We *cannot* plan for the four weeks ahead of EXPO

4 hours/week expectation

16 hours a week among the four of us

Encouraged to track time

Keep yourselves honest

"An extra two hours now is equal to 20 hours in the spring"

Build things out of wood, 3D printed parts, Styrofoam, etc.

Don't wait!

3D printing should be earlier than we thought!

Design review in November will be to review testing

Our first design review should be before November

These don't need to be with one product

If we come up with an idea today, we could send them an idea

Don't wait until design reviews to show ideas

If you need to buy a off-the-shelf part

Never too much communication

They can always hit delete

If we aren't sending reports they wonder if we are working

They don't need one every day or every week - they just want to see progress

Provide status before you are asked for it

They are flexible

If we say we are excited to present something at a meeting tonight at 7am, one of them will show up at the meeting

Digital scale to measure the forces being applied

Can purchase and pull out the guts

Springs, cams, anything that develops mechanical advantage

If it is reliable and cheap - you win

Product requirements document

Keep timeline review for that

If there is a big piece of equipment that costs a significant amount - tell J and they will work on their end to purchase

If we have any further questions contact them - don't hesitate

They want to clarify as much as possible