

***A Lean Approach to Improve  
Environmental Performance and  
Accelerate Sustainability***



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Melissa

## Outline for Today

- Review Lean Fundamentals
- UNC's Challenge & Why Lean
- Case Study
- Q&A

Melissa

## Key Questions:

**What are you trying to Accomplish?**

Reduce carbon footprint  
Save money  
Contribute to mission

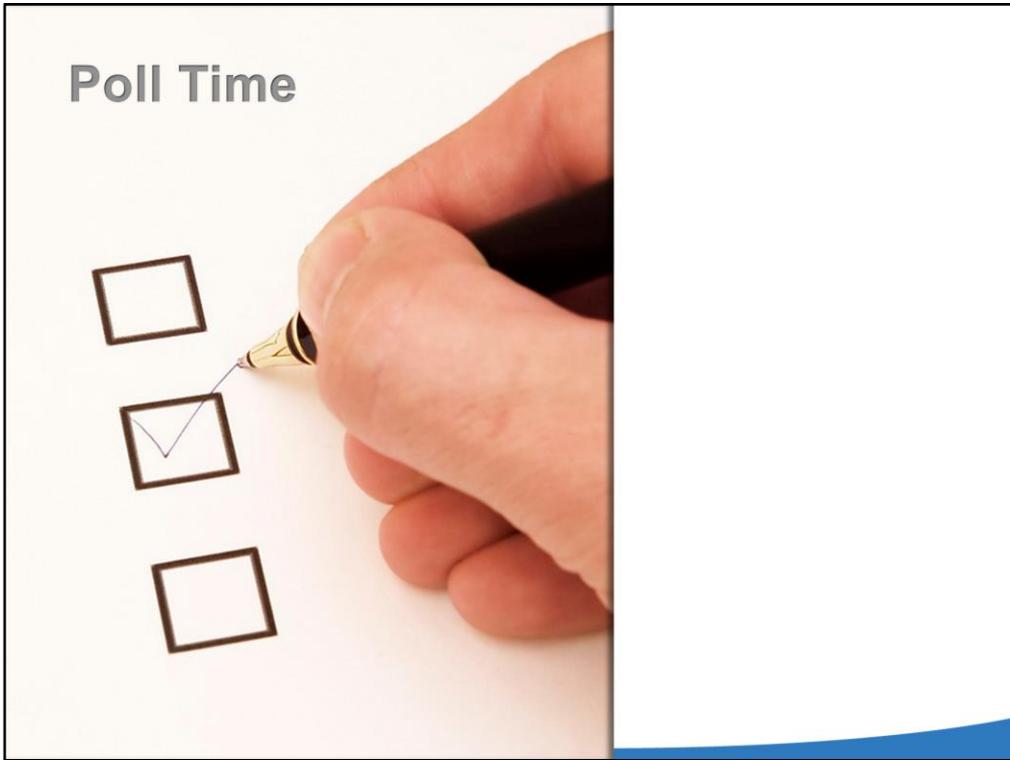


**What is getting in your way?**

Disconnected Stakeholders  
Divergent Objectives  
Funding



Melissa We'll ask you to keep these key questions in Mind as we go – at the beginning we had you complete a poll, let's take a look at what people are trying to get done



Daniel

Lean Review

## Two Themes

Value  
vs.  
Waste



See  
Understand  
Act  
*Together*

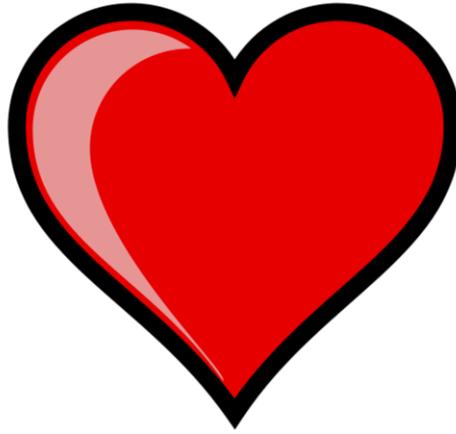


Melissa Our message is simple:

Lean is about understanding Value, and removing the waste that obstructs that value.

And its about applying the BEST way we know to gain that understanding and remove waste = that is WITH others

# Long-term Philosophy



Melissa - There are 14 lean principles, but we are going to focus on what we view as the “main 4” today – these are the 4 Ps of Toyota

The first principle is to **fosters a Long Term Philosophy** – the parallel to sustainability and the connection the environment and our communities is pretty obvious - its about the “long view”.



The second principle is to focus on process – look at all of our work as a process (series of processes) and seek to improve the way that process delivers value. (education is a process, building buildings is a process, getting food is a process, - processes come in all shapes, sizes, and complexity).

The statement to remember is the right process will produce the right results.

SO – if we were to apply the process principle to some of the challenges you identified, we might ask:

What it is about the process that is NOT delivering the results we are seeking? Are our departments set up in a way that enables them to help deliver on your sustainability goals? Do their performance metrics align with the sustainability values we've identified?

The focus on Process is important b/c it's non-blaming. Its about the process itself, not whose fault it is.

# People



3<sup>rd</sup> Principle - focus on investing in and developing people and partners in order to deliver more value to customers and stakeholders.

Your people will carry out that long term philosophy,

Your people will create and implement the best processes

Your people are already trying to do the right things.



Finally lean asks us to proactively uncover problems, and to treat problems as gold, because problems are what get in the way of delivering value to customers on campus.

The FIRST step to any improvement – is to first see and deeply understand what problems exist in the **system**, and then seek to eliminate their root causes.

If we make problems visible –people then become dissatisfied w/the current process and will be motivated to help change it.

Those are the 4 ps.



At the beginning we said, Lean is about understanding Value, and removing the waste that obstructs that value.

What is Value –

Defined by customer (often don't realize what they need)

Created by changing form, fit or function

Not Static

What is Waste – ANYTHING that gets in the way of delivering value.

Some Wastes live in **ALL** processes – NOBODY intentionally creates waste, and you can't eliminate it all (there are some necessary wastes).

## 7 Deadly Resource Wastes



**T**ransportation  
**I**nventory  
**M**otion  
**W**aiting  
**O**verproduction  
**O**verprocessing  
**D**efects

You'll hear about this later today.



Lean is about the principles, not the tools. The tools are simply here to help you apply the principles.

Understand Value

Expose Waste

See & Perceive Together

Find better ways to create & deliver value

## Tools for any situation

### Customer

- VOC, Escalation, Policy Deployment, Pull System, Walk the Flow

### Value Stream

- Value Stream – **Value Stream Mapping**, Morning Market, **Impact/Difficulty**, **Kaizen**, 3P, Runcharts, PDCA, DMAIC, Kaikaku, **A3**, Catchball, **5 Why?**, **Gemba**

### Flow

- Flow – 5s, Standard Work, **Gemba**, Jidoka, Visual Controls, Line Design, TPM, Water Spider, 1-piece flow, Chaku-chaku

### Pull

- Pull – Heijunka, Kanban, Takt, Workload balancing, Control Charts

### Perfection

- Perfection - 7 Quality Tools, Fishbone, Standard work; Quality Assurance System, Poke Yoke (error proofing) , Escalation, Six Sigma, FMEA

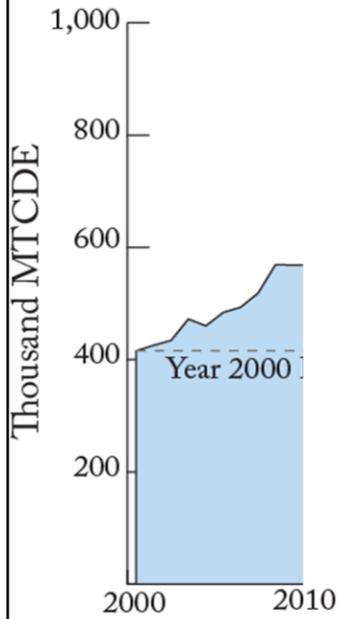
Lots and lots of tools, but their really just hear to help apply the principles. Our job as lean facilitators is to select and adapt the right tool for the right situation.

We'll introduce and discuss several tools along the way – in the context of the UNC case study.

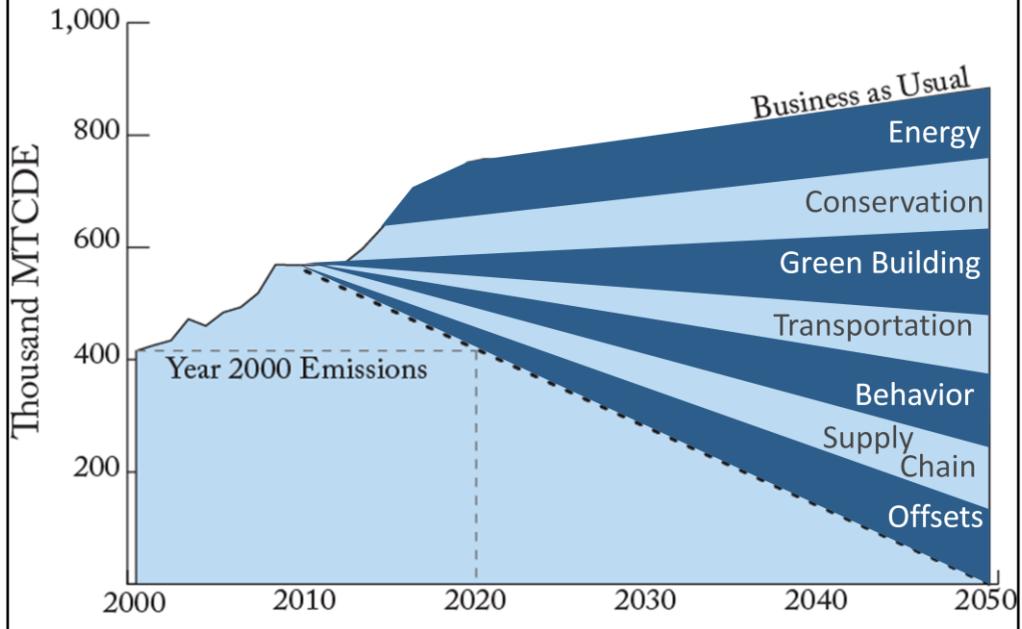


Daniel – lets set up the challenge

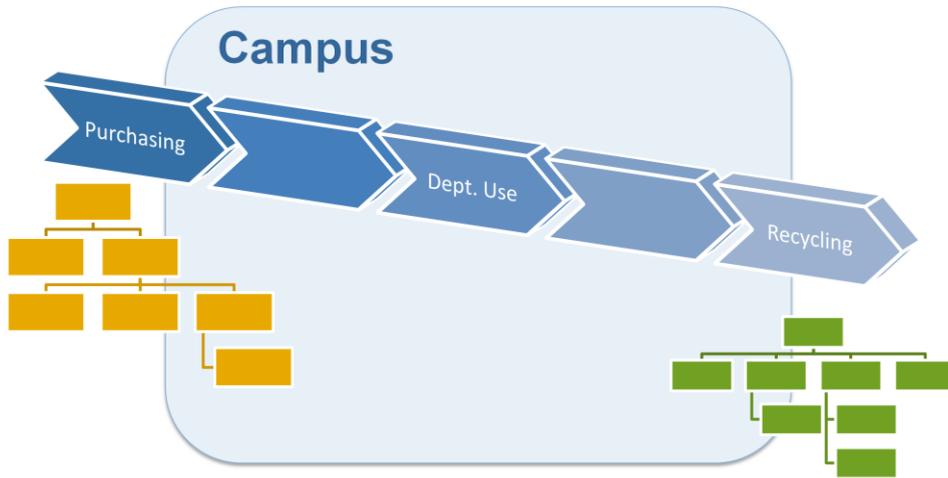
# Emissions Timeline



# Approach



# Supply Chain



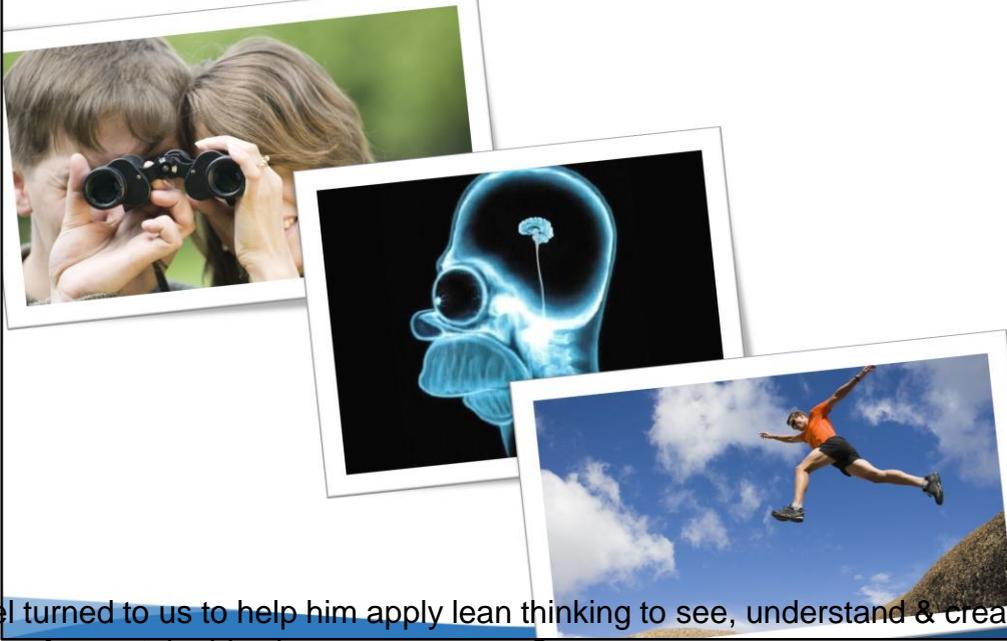
## Obstacles in the Way





Daniel

# See, understand, and act together



Do, Daniel turned to us to help him apply lean thinking to see, understand & create, and act together for sustainable change on campus?

Tool

**Kaizen**

**Kai** - Take Apart and Make New

**Zen** - Make good; Think about  
so as to help others

*A kaizen is a FOCUSED  
IMPROVEMENT EVENT driven to two  
imperatives:*

- Solving Problems
- Eliminating waste



**Kaizen**

**Respect  
for People**



If they become dissatisfied – they are more likely to support improvements

## ***Kaizen event: 2.5 days***

### **Planning & Current Situation**

**Consider what you're trying to achieve:**  
Problem overview & training

**Examine the Current State**  
Go to where work gets done (gemba)  
Map the process together

**Understand and Summarize Problems**  
Use process data and team knowledge

### **Create/Design a Future State**

**Develop concept & map "future state"**  
Seek improved value for key stakeholders and customers

**Current to future state Gap analysis**

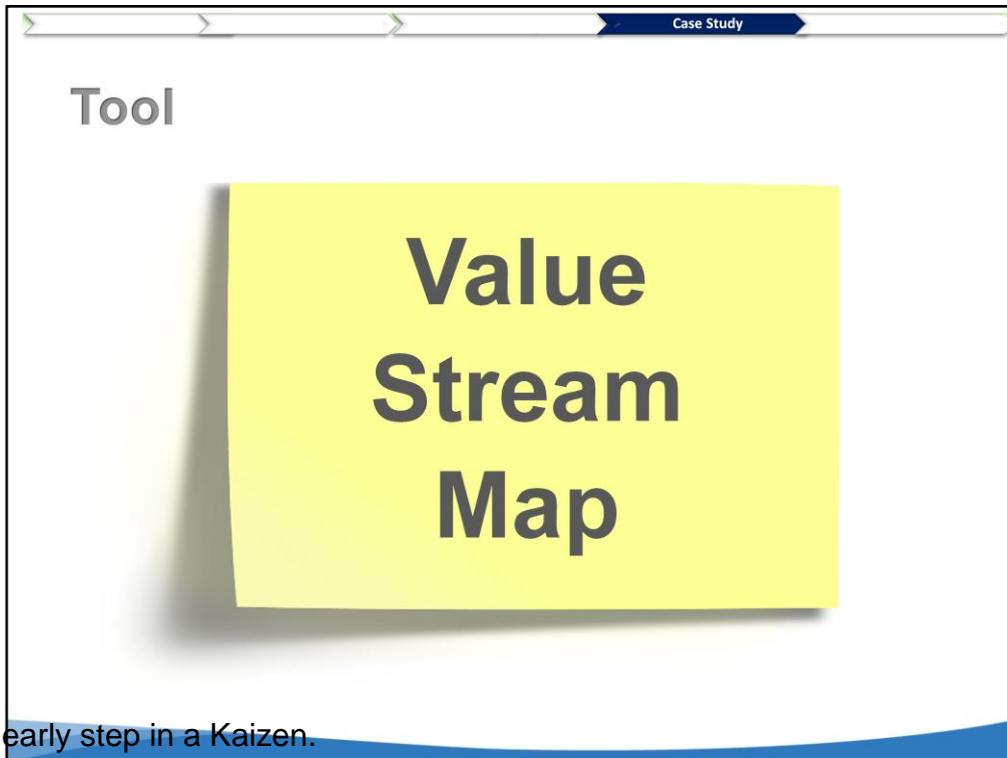
**Identify and prioritize solutions for closing gaps**  
Use Impact/Difficulty to decide priorities

### **Plan, Implement, Measure & Celebrate**

**Try or simulate new process**  
Change/adjust to improve success  
Design metrics

**Implement or develop implementation plan**  
Document new process & plan

**Closing celebration with team, sponsor, customers and key stakeholders**



Often an early step in a Kaizen.

A Value Stream Map is a visual representation of a value stream, which is a **Sequential Flow of activities needed to create and deliver value.**

It is a product's or service's path from its supplier to its customer. It includes every component: the flow of **material, information**, people, inputs, outputs, and waste. Different than a process flow = WASTE. Why do we draw a picture with waste in it?

Because until we understand what's actually going on in a process, we may be frustrated by waste we don't see in the system. And THAT makes it harder to communicate our value to the system.

**Understand value?**

**Identify what activities add customer value vs. waste?**

- helps people see all processes; other contributors in system
- objective, non-blaming way to identify problems together
- breaks down mental barriers

**See sources/causes of waste?**

helps identify and prioritize – biggest problems  
stimulates improvement ideas

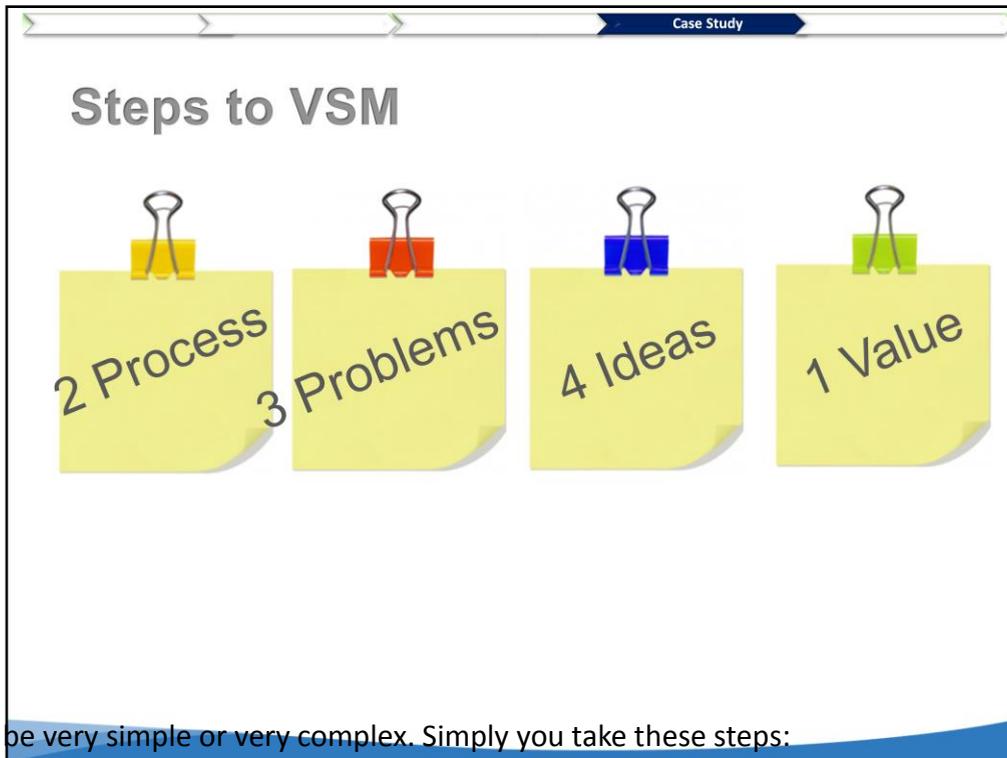
**A value stream map is a lean tool for systems thinking.**

A VSM is a great tool for breaking down mental barriers and busting up myths.

One of the nice things about a VSM, that by working together people learn what actually happens and myths about people doing stupid or irrelevant things disappear!!

They find out that it's the system that causes problem (Daniel, I thought you could connect some of your lessons learned to the myths that were debunked during the Kaizen!)

VSMs are a GREAT way of removing the blame from the person – and putting it where it belongs – ON THE PROCESS – very disarming and powerful



First, identify the value that customers/stakeholders of your process want. Identify value.

Second, identify the steps that make up that process, from beginning to end, to deliver that value. We've already started that for you.

Third, identify problems and waste that get in the way of delivering that value to your customers.

identify and eliminate waste in existing processes....any kind of waste

People

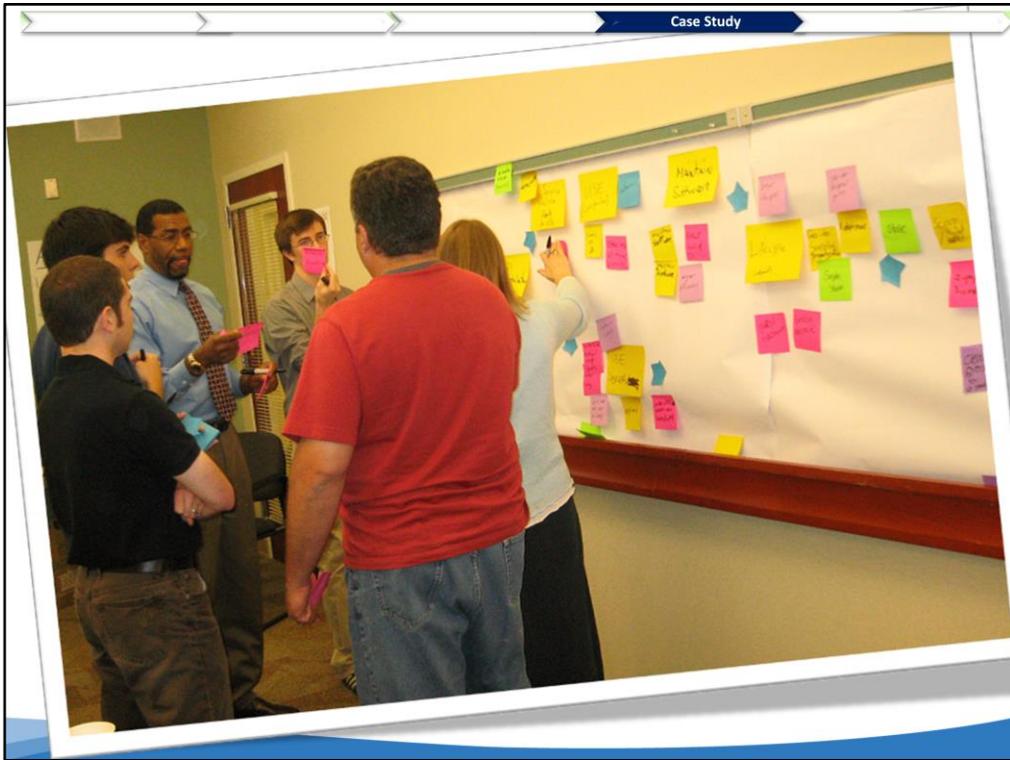
Material

Time

Money

Environmental Impacts: Energy, Water, Food, Paper, Plastic, Chemicals.....

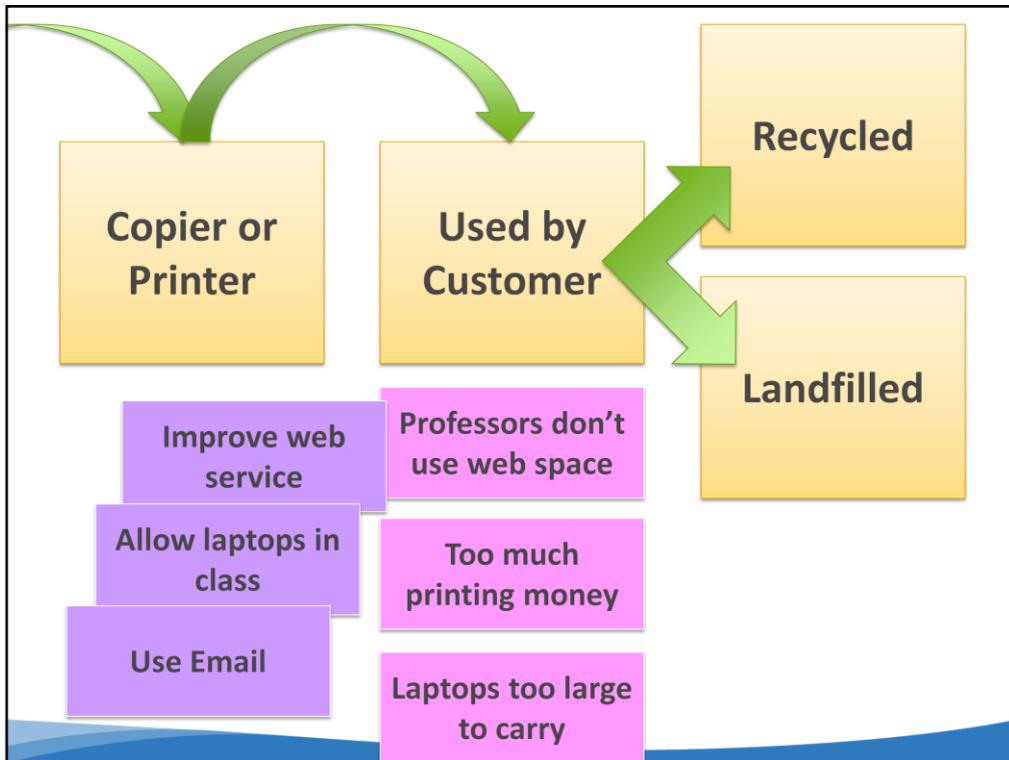
Finally, we generate ideas for solving the problems and reducing waste.



Daniel

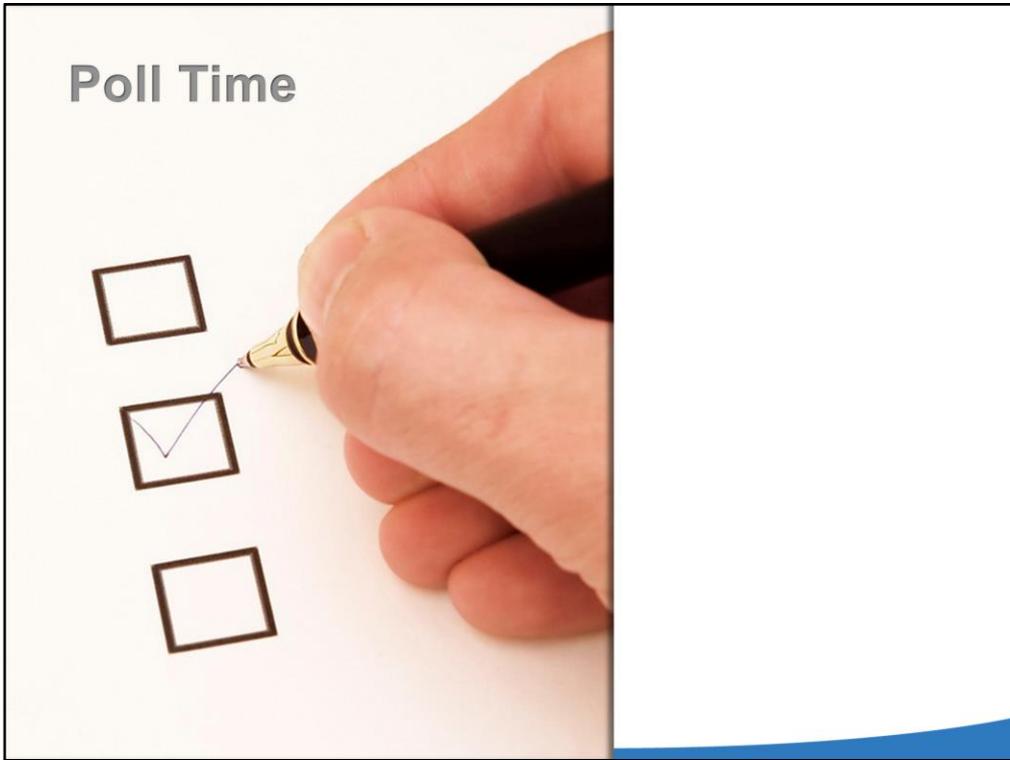
## Paper Value Stream



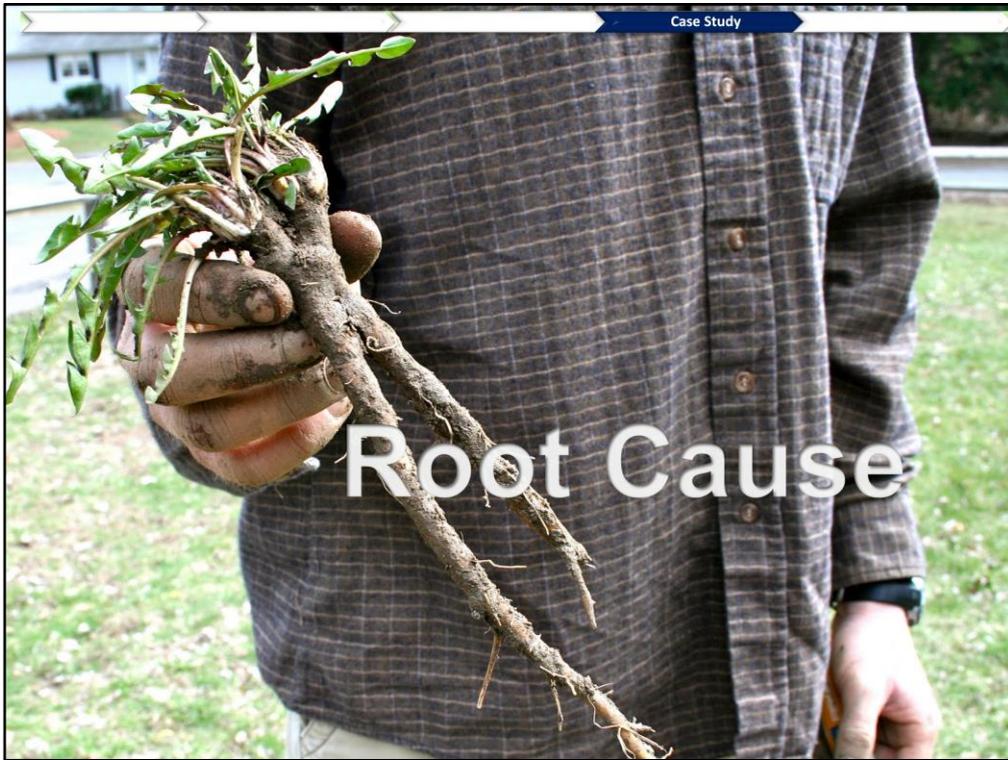








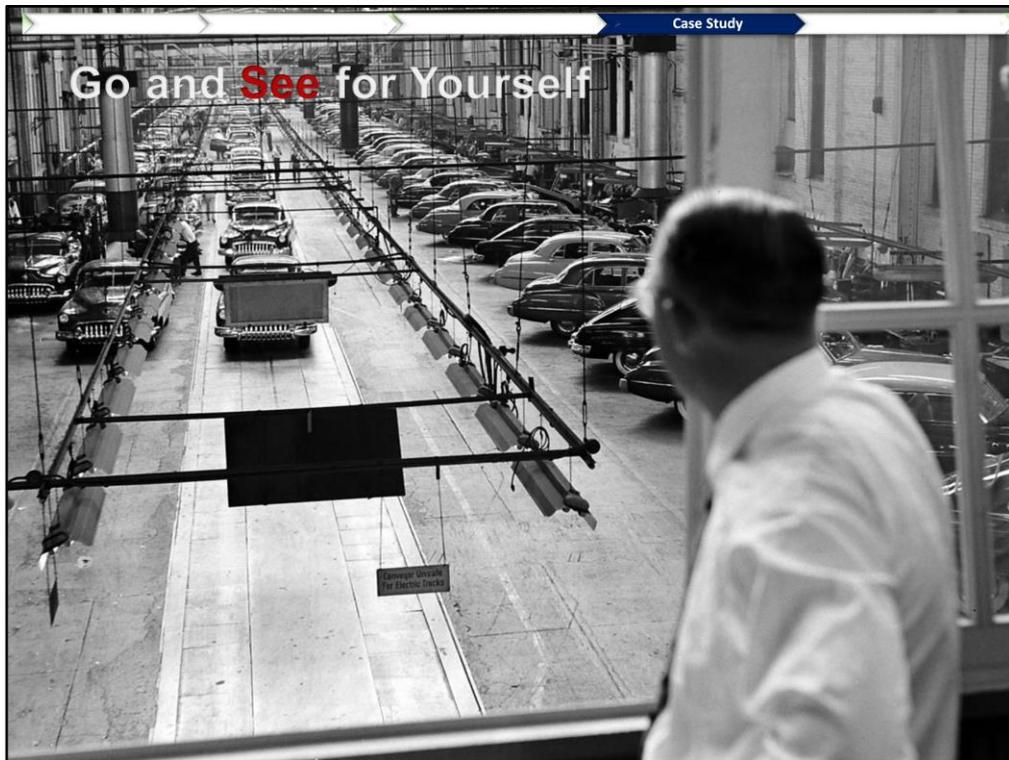
Daniel



Found all these problems, but BEFORE WE JUMP TO SOLUTIONS.....

## Tools

**Gemba  
&  
5 Whys**



Share what we saw and learned – WENT TO SEE What actually HAPPENS? Melissa tell Cape Cod Story

Why?

Why?

Why?

Why?

Why?

USE 5 WHYS - DANIEL

# Now What?



Now we have all of these values, waste, and ideas for reducing waste and delivering more value, what do we do?

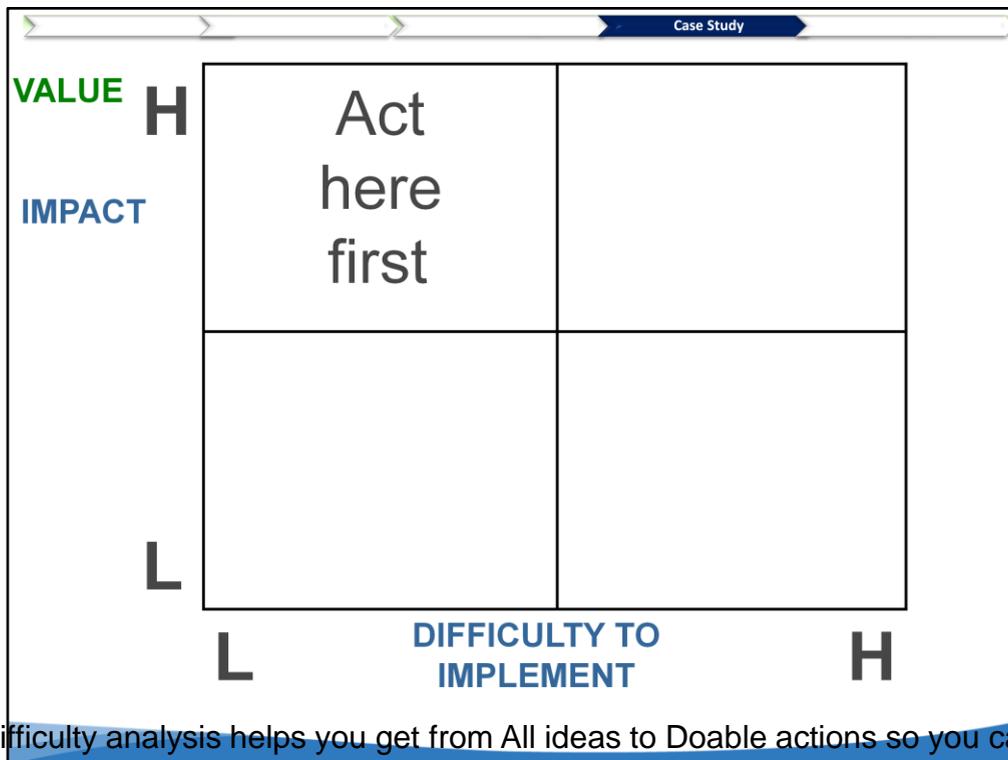
## Tool

**Impact/Difficulty:**

**Focus our team's  
actions**



We have all these ideas on this value stream map, but we can't do all of them. We have to prioritize. At last night's reception David talked about focusing, knowing your targets, and measuring results. There's a great lean tool for that called Impact/Difficulty analysis.



Impact/Difficulty analysis helps you get from All ideas to Doable actions so you can ACT.

Here's what it looks like:

On the vertical, the impact of your idea is either going to be high or low, depending on the idea's ability to deliver value to the business.

On the horizontal along the bottom, the difficulty of implementing your idea depends on the time to implement, culture, constraints, and cost.

The 3 groups who reported out, come up to the impact/difficulty matrix right now. You're going to be in what we refer to as a fishbowl.

Your job for the next 10 minutes is to (DEMONSTRATE) take the waste and the idea to address it and decide whether it's going to have a high or low impact on value, and then if the difficulty is going to be high or low to implement. if it's going to be High impact, and Low Difficulty you'd place it here...

And by the way, you act on the high impact/low difficulty ideas first – that's the low hanging fruit.

It's ok that you all come from different organizations – in real life, your job as diverse stakeholders of your company is to resolve these things together and there are often disagreements. But you you'll be able to work through this. First decide impact (high or low) then decide difficulty. Do that for each waste/idea. That's your job for 10 minutes. Remember: respect each other, and listen to each other.

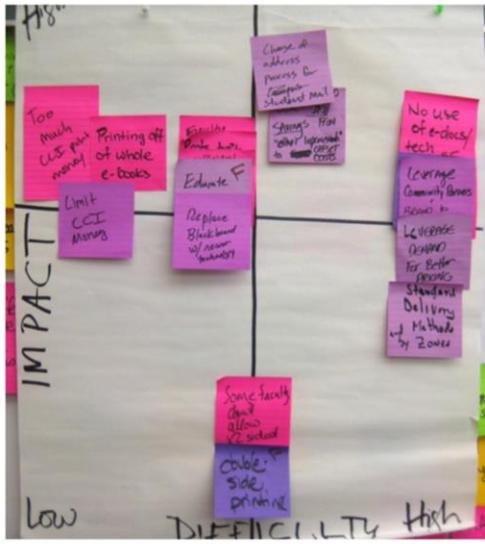
The rest of you are going to pretend you're on the price is right and YOUR job is to help them decide by shouting out "higher" or "lower" based on your perspective.

Be sure to include this in the wrap up of this exercise: Try the High impact/Low Difficulty solutions first. Higher difficulty solutions should still be considered.

Give them a 5 minute warning. Then a 2 minute warning. Then applause and acknowledge that they just took a bunch of ideas and prioritized them to action, and if this was your company, you could do this for your own improvement initiatives.

So with that, I'm going to ask you to turn your attention back to Mac so we can review what we learned and how lean is being applied today in hundreds of companies.

# Prioritizing 95 Ideas





- How We got Started

- Really brief explanation – met @ AASHE, did webinar, etc. , Story includes meeting, phone calls, webinars, one bd visit, Oppy with energy services – no budget yet

Oppy with CAP

## What DID WE LEARN?

UNC shreds harddrives

Students learned a lot about  
"behind the scenes"

Mail assumed <sup>before</sup> they did most paper  
disposal, but office paper actually goes

Cross-functional arena - shocking how  
many new ideas arise

Tools/learning helpful as take-away  
for facilitation in attendee's depts

Each process could be drilled down  
into a lot more, plus for addit. streams  
# steps, how involved, # people  $\Rightarrow$  complex

Wish to use lean process to attain cost  
savings across campus | gov't

**Looks and Sounds easy right . . .**

## Obstacles to Applying Lean

- Assume simple = easy
- Assume you understand the whole piece (system)
- Assume others see (Value & Waste)



Reality check - There are still many obstacles to applying what you've learned.

First, it seems obvious – of course you want to provide value in the least waste way. But doing so, gaining that deep understanding of value and creating a culture that fosters the airing of problems is very difficult.

Second, it's easy to believe that you know what's happening, to make assumptions. But lean asks us to involve others AND to go and see.

Finally, once you have eyes for value and waste, its easy to assume others think this way. They don't or they would have acted long ago. You have to make changes seem worth it to do AND make them believe they CAN do it.





**HALEY &  
ALDRICH**

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