INTRODUCTION

This document represents a detailed account of the process our team experienced throughout this semester as we worked on the Lubrizol project.

To ensure that all team members were fully aware of project details, deadlines, and communication, a Wiki site was created (http://mids420.wikispaces.com/) where each member had access to view and edit as well as post files and make comments.

This Process Book highlights the process and all communication by month.

JANUARY

January 15, 2014: Meeting Notes

Contact: Domenic DeCaria
Martin Menschin class)
Liz Schiferl

Establish mutual understanding of:

- What they need
- What we can do
- Provide background on design
- Provide class timetable
- Provide skill set overview

Primary focus is the problem of finding problems.

Identify jobs for each meeting
On January 15, 2014 we received the following issue statement via email from Richard. It was from an email between Domenic to Richard. The email states:

**Issue Statement (from Domenic):**

“I am grateful for your note and I am sorry it’s taken so long for me to respond. I’ve been on the road almost constantly for several weeks, and am just now able to catch up. Of course I remember our discussion, and it was great to have that opportunity to share my concerns with you. We are working with a formal and structured method of problem-finding right now, which still depends heavily on the perspective and even the relationships held by our own team. What interests me is the possibility of having a university perspective, with university relationships, to bring some fresh problems to our world.”

We would use this as the issue statement. From the words “problem-finding” and “fresh problems to our world” the Lubrizol team set out to find ways that Lubrizol can find problems. Several questions, ideas and confusion were raised such as if the scope of the project is limited to just Domenic’s department or Lubrizol as a whole. Additionally there were discussions whether this would be limited to internal or if we should cover external problems too.

**January 16, 2014: Interview**

On January 16, 2014 Renee Martinez interviewed Liz Schiferl

*Notes from interview with Liz Schiferl (works at Lubrizol since 1987)*

**Interviewer: Renee**

1987: TQM 2-3 years / feels that they didn’t understand what it looked like – hard to teach without many examples at the time

1990: Stephen Covey – Seven Habits for Highly Effective People – all had Franklin Planners – some things were embedded – many people still do the things taught
The problem is with employees who new employees (15 years or less) having any consistent training.

Product integrity team: Jim Schwind, Paul Lewis (LZA people)

Domenic is on LZAM side (Advanced Materials) which is a company that was purchased about 8 years ago called Noveon - culture is very different than Wycliff – culture of change – was BFGoodrich before Noveon – fear and bad habits on that side. Brecksville

LZA (additives side) and has a long history and segment of the market it serves.
Not problem finding / tools for product solving – problem prevention and using good tools for solving the problem – other than maybe finding the root cause. Wycliff

Ever since the acquisition has been a fighting battle with the Brecksville culture – they’re very silo / transactional / less overlap no necessity to communicate with one another (the things that they do don’t have nearly the overlap that LZAM – so the need for centralized communication is hindered....

Here is a link on the Lubizol website to this division: http://www.lubrizol.com/Our-Company/Business-Segments/Lubrizol-Advanced-Materials.html

The problem may end of being that Domenic is not a very senior person where he could have much impact on all the business units on this side – unless he’s on a special task force...

Market Segment Manager / America’s Plumbing – he reports to a business director named Peter Clough – Biz Director of EMEAI

Eric R. Schnur is corporate vice president and president of Lubrizol Advanced Materials.

Concerned about the kind of support we might receive if we are only working with one Namebrand of plumbing stuff is Floguard / Industrial side is Corzan

How does this task fit
interview with Martin Mensch (works at Lubrizol since 2013)
Interviewer: Lubrizol group

What is it like to work for Lubrizol?
What do you do?
Are there any problems working with other Lubrizol employees?
Do you think there is a difference in the culture based on interns and full-time employees?

January 20, 2014: Meeting

Initial Problem Statement

The focus of the problem at Lubrizol after meeting is to create a process or program to analyze several business activities that can help to predict or find problems with customers that are:

a) not brought up to sales representatives or product teams, or
b) Unknown by both Lubrizol and the customer.

The purpose is to foster greater relationships with Lubrizol’s customers by using a proactive method of problem solving in order to cement Lubrizol’s position as a valued partner rather than just a knowledgeable supplier. Moving to a method that can find problems before Lubrizol would currently be aware of them can give them a leg up on the competition and help to carve out a market leadership position in areas where they currently are not the leader.

The Lubrizol group at this stage did background research in problem-finding to gather more information and attempt to find companies that have done something similar. The Lubrizol group read “What is a system?” from “The Researcher and The Manager: A Dialectic of Implementation” From Churchman & Schainblatt.

Modified Problem:

After meeting with the Domenic, we realized our interpretation of the problem statement
they provided was slightly off from what they were looking for.

The primary challenge presented for our team was to improve the perception of the industries Lubrizol serves which will by default, improve the Lubrizol brand as well. It's important to clarify however, that our sponsor doesn't feel the brand is bad, but that the industries they serve are viewed as old, non-innovative, not trendy which in turn makes Lubrizol less attractive to students and researchers. Instead, our sponsor would like to position Lubrizol as using cutting-edge tools and technologies in order to help foster communications between Lubrizol and universities which will in turn help to get a fresh perspective on problem solving and problem finding.

A secondary component of the problem presented to our team was regarding two new collaborative spaces (one at each Cleveland location) and how to best use those spaces to educate employees on a human-centered approach to problem finding and solving tools with the hopes of working to encourage a more innovative culture at Lubrizol.

FEBRUARY

**February 4, 2014: Meeting Notes**

On January 27, 2013 the Lubrizol group turned in their Design Brief

**COMMENTS FROM DESIGN BRIEF:**
Dick doesn't like our problem statement and wants it considerably more refined (though he understands that we are behind - he says this is the most challenging problem in the class)
Dick wants to see more user research...but who is the user?!?
Kip and Michael were mostly silent and let Dick do the talking, Kip just brought up the two divisions comment that we were talking with him about last week and Dick seemed to like that after I described it to him...but then said worry about Domenic's segment first

**February 5, 2014: Meeting Notes**

Book: the making of meaning...?
Attempting to define problem-finding, what it means to find problems and how it is different form problem-solving. The Lubrizol group discussed various approaches to the problem such as how the customers are affected or how the customers play a role in problem-finding. Additionally, the Lubrizol group brainstormed how the Lubrizol employees can play a role in problem-finding and if they are willing to. After talking to Richard regarding possible approaches, Richard suggested some literature that could possibly be useful in trying to find problems.

Record meetings...

- Problem solving
- Herbert Simon –
- Wicked problems
- Horst riddle
- Churchman
- Donald Schone – the reflexive professor
- In search of excellence – tom peterman

The Lubrizol group developed a list of possible hypothesis to the problem:

Group Training

Seminars

Program

Four orders... physcial space / signs and symbols / actions / system and environments

To do:
- Post articles / read
- set up timing for meetings
2/5/14

What is problem finding?
  What does it mean to find a problem?
  Literature on what is a problem?

What makes a science vs. opposed to clinical?

I don't know.

Readings for KP - email
  1. Wicked Problems
     - deangelis cloninger version emailed
  2. Recursive Proofs
     - chapter 2
  3. Herb Simon

11. Structured

What are something that is decidable within a certain problem space
  "a big puzzle"

Wicked
  Ill-structured & unpack to make it solvable

Structured
  I.e. engineering problems

Dick's essay is on wicked programs

If idea - phone tom
  Then once works
  (problem are undefined)

all hypotheses
February 10, 2014: Meeting Notes

What type of problem is this? Wicked or Ill-structured? In between?

This issue/problem:
Has a lot of touch points
Might be cultural/systemic
Could be systematic (as a result of current systems)
Could be communication (Matt experienced that this week-/ points/strategy from VP clearly not communicated through org structure before they get down to regional product managers)

Side note: wickedproblems.com possible resource

What does it mean to find a problem?
What is a problem? Every problem has two sides – polemic and defensive

Types of problems:
Historical problems
Mathematical problems

For Lubrizol, is the problem negative or innovative? (a problem exists, and it must be found
or we need to find a problem to fix with our technology/create new technology to solve a
new problem that we find?)
Ultimately boils down to proactivity v. reactivity – WHICH IS IT in this case?

So where do we start?
In Kip’s terms, can (or should) our solution be a “nudge”
If so, and if not, how do we bound the solution so it doesn’t change things that are working
well or that this does not affect?

Ideas:
Business Canvas
Mind map

Empathy comes from understanding and experiencing – important because will need to get
buy-in for solution from those who have to live/use it (could be technical people – adverse to
change).

If we were to create a persona, who would it be? Business person? Technical person? Both
(business person who previously was a technical person)?

Why do they want to/not want to find problems?
How can we enable or empower them to do so?

2/10/14

Meeting with Matt

Notes from Wickedproblems.com:
*diffused* consequences: great power yielded without the ability to see direct causality from
those powerful actions.

You have to pick something very concrete and very tiny, and not worry that you won’t fix all
aspects of the problem. You start on one of the smaller problems, someone else focuses on
something else, and eventually, after a long period of seeing no change, you will have
enough scaffolding—support base—in place for the community to enjoy some results.
For example, in a project to combat homelessness, people might say things like “Man, I used to sleep on the street, and it’s terrible. But now I have this great base of support. I have my case manager, I talk to him on the phone, and I have a good relationship.” The guy who did say it lived in transitional housing with three people who were going through similar experiences, so they would hang out and go shopping together. The project gave him skills he needed and the support he needed to function in life. We all need that. I have my family, my friends, my education, my job. All these things keep me off the streets at night. Few homeless people have them, but they need them to thrive—individually and interdependently—in society. These essentials also include source of income and life skills, such as the ability to show up at a job.

You can focus on one of these skills, some education, better family connection, or a case manager, but any one of those things is not enough to lift them out of their situation. Homeless people need all of those things to work before they can move off the streets. So our job is to pick one of these and make it a little better. And we hope someone else who is part of a bigger program will work on another thing. Eventually all these things fit together and give people the skills and support base to be independent and interdependent, able to exist in society as a contributing member.

The same thing happens in other aspects of community life. A community needs all of the same elements in place to be able to support itself and grow. So people who do economic development build capacity focus on just one little area. We understand that it’s very slow, long, incremental work.

Working in communities, you may find lot of people who are creative, entrepreneurial, and capable of helping their community. But you also may find they lack skills or resources to make a difference. So while you provide some direct service, you also must build the community’s creative capacity. You must hire and train people from that community and bring in resources. And you need to make connections so other community members can access those resources.

Dealing with wicked problems is not just about showing up and building houses, giving things away, or delivering any direct service—even if you’re in the community for the long haul. You have a moral imperative to build capacity, to enable the community to solve its own problems, lift itself up. If you’re not helping the community build its ability to improve either its skills or its support network, you’re not making a difference.
A designerly approach looks for factors that contribute to negative behavior and tries to shift them through some form of designed intervention. The constraints for the designed intervention include the cultural norms, access to education, the physical and financial access of the users, and all of the other qualities that acted as barriers to the more objective or scientific approach.

A "designerly approach" embraces a methodical and often exhaustive form of craftsmanship, achieving success through informed trial and error. This approach empathizes and reflects; it has an intimate view of people's aspirations and emotions. Several vivid examples of design-led culture change illustrate the power of this approach.

While a more typical approach to educational reform might try to shift policy by changing curriculum standards or changing incentives for teachers, a design-driven approach uses research to understand a larger picture of education. Design-driven innovation reframes the problem and offers solutions that offer both utility and emotionally positive changes. Studio H tackles the “wicked problems” of education and poverty by using design skills to build confidence and personal awareness in students who typically could not have escaped their low-income environment.
Don't Quest:
- Cultural shift
- Training history trends
- Job despar
- Where does he see prob
- Problem prevention
cast
lab.
- Innovation creating
Comes back to buy-in.

**February 12, 2014: Meeting Notes**

To do week of 2/17:

1. Talk to Domenic - get feedback from questions
2. Where is the problem? Based on our assumptions and discussion we see the problem at this point as: probably
3. If Dick speaks with Domenic - get his feedback
4. Write up the summary
5. Add hypotheses to wiki
6. Interview with students

Notes re: 2/10 image - divide plumbing team by technical team / commercial team.
Possible issues:

Training

- Does their training force them to be less innovative because it confines their ability to think outside the box?
- What are the incentives? What are the impacts?

HR

- Is this connected to HR more?

IDEA / CONCEPT:

- Problem Partners - ?
- Rotational program - expertise in one area - limited innovation / too comfortable to see beyond
- Steve Jobs / bathrooms / Pixar approach
- Demographic breakdown / impact on culture

February 17, 2014: Meeting Notes

The Lubrizol group used the four orders of design to analyze the problem
<table>
<thead>
<tr>
<th>Symbols</th>
<th>Objects</th>
<th>Services/Activities</th>
<th>Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symbols</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objects</td>
<td>X</td>
<td>product (mass)</td>
<td>Lub</td>
</tr>
<tr>
<td>Services/Activities</td>
<td>?</td>
<td>error system</td>
<td>Exxon how used</td>
</tr>
<tr>
<td>Systems</td>
<td></td>
<td>training-external</td>
<td>Lub/prob sol technique</td>
</tr>
</tbody>
</table>
Summary
- Explored possible problem space
- Explored different hypotheses
- Talked with [Name]
- Potential features of SA

"Regulation" feels on how many programs
- "must be positive"
- "atmosphere is "mean" for most of us"
- "The only spot in [Room (Jackson)]"
- "That's [Name's] idea but what about desire to do?"
- "You can make people want to go but how do you make them want to do?"

Insiders ("new insiders") - not totally assimilated to culture yet (younger)
- "How does it feel to be a part of the team?"

What if you create a dept. for this?
- "One person from each dept. (new representative)"
- "How are problems found or 'solved' once dept. becomes"
paragraph

1. Why start an HMO plan in 2001?
2. Don’t suppose I know anyone else
3. Career-focused
4. NVC’s
5. “But, we’re an insurance company, not a hospital.”
6. There are procedures to do if (some values).

Process allows creation desire to use new HMO plan to keep problem at bay.

1. Is it a training plan? How to deal with these problems?
2. Start w/ initial training, then allow EEO to come back & more like they want to think problems.
3. If people don’t like it, if they see value in it, they will like it.
4. Is it more work? Must must work.
5. Assumes or more standard, better results.

Newsletter = Pulse
Channel stories = does everyone need stories to let people know of successes
After analysis, the Lubrizol group developed a preliminary draft of concept where all the ideas can be collected from Lubrizol employees, customers and their systems.
The Lubrizol group presented our preliminary idea to the class. It was met with some interested although there are various areas that can be improved.

The concept revolves around a program. The program receives information from customers, Lubrizol employees and systems. Using points or monetary reward as incentives, the employees will find it worthwhile to contribute to problem-finding. The problems that are found are placed within a program where Lubrizol employees have access to the program. The program then classifies the problems as one of the four categories: problems, innovations, solutions or opportunities. They then go to a filter that filters the problems that can be solved with current limitations. The data from the solved problem is then looped back to the employees.
March 3, 2014: Interview/Meeting

Statement to email to people:
I’m working on this project for a class that involves a large multi-national corporation. Our project is to identify possible ways for the organization to find problems. We are looking to see what’s already out there in the way of existing software that would use internal and external data to track and/or identify potential issues or problems that the company could fix. We see this program as a way to help identify overlooked trends, statistics, opportunities and patterns. Are you aware of any programs that conduct this type of analysis?

Other programs: [http://www.eyelit.com/pro_quality.html](http://www.eyelit.com/pro_quality.html)
March 5, 2014: Interview/Meeting

Phase 1: ID'd/interpreted problem statement

Phase 2: ID'd possibilities/created a vision/possible idea

   Idea: system + process

Phase 3: exploring what existing software solutions may be part of final designed solution (to determine what exists and what can and needs to be done. Benchmarking what exists)

Phase 4: Create the process (still TBD). The process isn't the software. The software is a likely component of the process

Phase 5: create process framework, test

Detective / sleuth


Articles to read:

http://seekingalpha.com/article/1677452-putting-tesla-motors-gargantuan-battery-supply-problem-into-perspective

http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/identifying_problems_-_an_overview.html

http://www.studygs.net/problem/problemsolvingv1.htm

http://corporatevisions.com/blog/2013/06/04/problem-finding-vs-problem-solving/

http://www.tandfonline.com/doi/abs/10.1207/S15327744JOCE1301_1#.Ux-6DV5DGCx
Tips/ lead to department / leads to investigation / identification / hand back to proper department to solve

Soft problems / hard problems

Color coded

Training – open / not mandatory – encouraged – encourage cross-fert / team building

- Software training
- Process training
- Technique / methodology

Rewards / for training – earn new status /

Time stamping / mathematical data /

Problem finding requires a need / understanding

Kick off – scavenger hunt

Rewards – tips

March 7, 2014: Interview/Meeting
Interview with Domenic DeCaria, Girish Rao, Mark Knurek
Interviewer: All

1) Get titles/how long they've been at LZ etc. Basic background stuff

2) We want to get a bit more on your interpretation of this problem statement. Do you view this as a more internal problem finding issue (i.e. b/w sales and segment/ segment and operations etc.) or a more external problem finding issue (i.e. b/w LZ and customers/markets)

3) Here's the problem statement "We are working with a formal and structured method of problem-finding right now, which still depends heavily on the perspective and even the relationships held by our own team. What interests me is the possibility of having a university perspective, with university relationships, to bring some fresh problems to our world."

We've attacked this so far as a company-wide problem-finding exercise, with particular attention to additives (based on our knowledge and resources). We've created this preliminary idea that we think can be built into the organization regardless of segment. We think this initiative can be adopted on an organization-wide basis once its tested and begun in the plumbing dept.

4) What are your goals with this project? What kind of resources do you think can be devoted to implementing it>

5) How willing do you think the culture is to change to adopt something like this

6) Are you aware of any previous initiatives like this in LZAM?

March 19, 2014: Interview/Meeting

After the meeting, we changed our issue statement to focus more on methods to get fresh perspective from university students and problem-finding from university students rather than Lubrizol-employees. There are three main topics that the Lubrizol group focused on:

1. re-branding / re-education (plumbing)
2. collaborative space

3. connections with universities

There were a couple of products that the Lubrizol group looked out to get some information because it seems to fit the idea.

Twitch brains / ideas/ prospective

brief

**March 24, 2014: Interview/Meeting**

Met to discuss how we can use a website as a platform for problem-finding. The website is able to be accessed by both Lubrizol and students. Incentives will be continued to be used for Lubrizol employees

This was attempted idea to gather both the perspective of Lubrizol employees and university students.

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**APRIL**

**April 1, 2014: Interview/Meeting**

Draft of the platform was drawn

Leverage the new collaborative space to engage employees in communications between Lubrizol and local universities to get a fresh perspective on problem solving and problem finding.

LZ will create an internal department with its own unique identity that is made up of committee members from various departments. For the purpose of this video, we will refer to this department as **Special Ops**. In an effort to gain a fresh perspective on problem solving and finding, this multi departmental team will use a software tool to help them filter, track and manage problems and opportunities to collaborate with both employees and university students and faculty in the new Lubrizol collaborative space to find solutions.

**Special Ops** will offer incentives to employees for providing problems which will in turn be categorized in terms who would best work to understand the
issue. undergraduate students, graduate students or a specific Lubrizol department. Additionally, the software asks different questions if the user is either a customer, employee, professor or student.

**Special Ops** will have representatives from each department who can collaborate with each other to find problems within Lubrizol. Training for problem finding for the representatives is also one of the responsibilities of the **Special Ops** department.

**Special Ops** will also run an internal social media space in which the departments can upload videos to present their “high end product” or problems with their product that other department/ members can advise and comment on. This can foster innovation and awareness for each department in the organization. The video/ social media space would be both public and private. All public videos could be used for marketing to university students in an effort to improve collaboration and interest between Lubrizol and the university.
Possible projects:
- Categorize between undergraduate, graduate, or lab staff employees

Luba.261.video.com

- Public
- Private
- Username
- Login

- What is the problem?
- Post a video?
- Describe the problem?
April 9, 2014: Interview/Meeting

Presented the idea to Richard and the class however, it was seemed with some controversy and concern.

Met with Richard to discussed other options

The idea to use 10 second videos was mentioned. Other platforms such as vine exists and compared.

The idea to present the 10 second videos as a challenge for branding purposes. Other challenges such as GE lighting and Carnegie Mellon Egg drop was mentioned, they usually garner a lot of attention from the locals.

April 11, 2014: Interview/Meeting

Drafted other ideas such as:
1. Contests / Lubrizol challenge - monthly (or something) contests to involve students and lubrizol employees /
   a. Vine / Twitchy concept
   b. Monthly/6-weekly challenge?
2. use the suggested website to send out information for people interested in taking part
3. Class project - i.e. each spring for design or a newly created class
4. Involve Design for America in some way (or some other club/society)
5. pass a idea / solution - tell the person something then a person has to add something - then pass it on…. - - building on an idea - concept
6. “Dinner and a Challenge”
7. In-person meet/design effort @ LZ collab spaces. bring students on fri afternoon when no classes and LZ employees on fri afternoon for 'easy' end to week
8. Co-product/polymer development. develop partnerships around university research for commercialization (PhDs)
10. Reality TV - follow an employee around and make the workplace more fun with challenges

April 12, 2014: Interview/Meeting

Final Idea Draft:

- lubrizol challenge - 2 sides- how do engineers want to participate - rewards - personal growth/resume or a short challenge with access to prize -
- short challenge (30 min) / good chance of winning or easy task -
- novel.com - easy and chance to win a prize - not tons of effort / in effort required -
- has to be interesting (life filled with school / geekiness - need fun) -
- macro level so can see impact

fall / september - starter competition - would lead to a longer competition (maybe 2 hours) need to get invited to 2nd ? (mini challenge) - start small - develop interest / prize could be mentorship

website as central hub - a facilitating / interface - once interest is developed - spring

bring Lubrizol on campus - small group sessions

an optional credit for program..

professor involvement? - yes - but limited / maybe structured as an independent study - graded as A, B, C, D, F
missing leavetaking - how to build connection to make it positive on both ends - see Dewey (intellectual engagement, practical getting it done, emotional leave-taking)
- 4 orders - which one - does leave taking fall in - across silos - what does it do from a management perspective here that lubrizol can take away - collaborative space - early anticipation problems
- 3M - a thread - / woven throughout the org / Club within

April 18, 2014: Interview/Meeting
Met to discuss the poster for our idea

Basic layout of the idea
April 28, 2014: Interview/Meeting
Met to discuss the final presentation

Draft:

1. explain design problem
   Statement from sponsor: “We are working with a formal and structured method of problem-finding right now, which still depends heavily on the perspective and even the relationships held by our own team. What interests me is the possibility of having a university perspective, with university relationships, to bring some fresh problems to our world.”
   two parts: problem finding and connections with Univs to help find/solve more problems

Design Problem:
Leverage the new collaborative space to engage employees in communications between Lubrizol and local universities to get a fresh perspective on problem solving and problem finding.

2. overview / timeline
   January - Meet, discuss preliminary issue statement
   Attempt to contact sponsor (unsuccessful)
   Use connections at the company to start gathering preliminary research (Liz, Matt's bosses)

   February - Develop preliminary ideas surrounding system for problem finding. Systems, processes, rewards, administration

   March - Meet with sponsor for first time, realize issue statement was misunderstood
   Attempt to recreate the wheel and start over
Realize that was a bad idea, try to merge old ideas with some new ones to satisfy needs of us and sponsor

3. explain preliminary research
   In order to get different perspectives on the organization, we interviewed multiple employees of the corporation, in both additives and advanced materials. These ranged from managers who have been with the company for over 20 years to interns who have been with the company for less than one year. They were comprised of market managers, support services employees, product managers, a global business manager and graduate student interns. We also looked into what literature we could find on problem finding, including papers by Herbert Simon on Wicked Problems. Currently we are conducting a survey to discover in what ways students may be open to collaborating with a large local employer on real world business problems.

   Interviews with Liz Schiferl, statistician (LZA); Martin Mensch, intern (LZAM-CPVC); Gary Garling, product manager (LZA-DL/OH); Chris Engel, product manager (LZA-DL/AGO); Greg Huss, global business manager (LZA-DL)
   Matt's experience in LZA-DL; Domenic, Mark Knurek, Girish Rao
   Herbert Simon papers- renee you know the titles better than me
   preliminary survey for user research