Summer 2010 Group Topics

- PSU Administration - Problem Topics (001)
  - Continuing cuts in state funding (11,4)
  - Lower than desired ongoing alumni support (9,10)
  - Dissatisfied students/morale/complaints (8,5)
  - Low national brand recognition (6,1,2)
  - Difficulties in attracting high quality tenure track faculty (3,7)

- PSU Administration - Problem Topics (002)
  - Continuing cuts in state funding (8,6)
  - Lower than desired ongoing alumni support (10,1)
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PSU Problem Solving Process

1. Position
2. Sense
3. Uncover
4. Solve
5. Build
6. Achieve
The “Real” Problem

The Professor says, “You can’t outrun that bear, even in running shoes!”

The student replies, “I don’t need to outrun the bear; I only need to outrun you!”

Problem Definition

“The mere formulation of a problem is far more often essential than its solution, which may be merely a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old problems from a new angle requires creative imagination and marks real advances in science.”

- Albert Einstein

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Find, define, and prioritize problems

What Is The Problem?

- Junior is getting poor grades in school
  - DAD: “He just doesn’t apply himself.”
  - MOM: “I know. He really isn’t interested. His mind wanders.”
  - DAD: “I’m tired of harping about it all the time.”
  - MOM: “Me, too. It doesn’t seem to have any effect.”
  - DAD: “Maybe he needs tutoring in how to study.”
  - MOM: “Lord knows it wouldn’t hurt. He has terrible study habits.”
  - DAD: “I’ll call the school tomorrow and arrange something.”
  - MOM: “Good. I’m sure it will help him.”
- How do they define the problem?
  - Poor grades caused by Junior’s lack of interest and a wandering mind.
  - These may be symptoms of a deeper problem.
    - What are possible “deeper” problems?
**Problems Versus Symptoms?**

- What is the definition of “problem”?
  - A gap between the desired and the actual situation.
  - In business - declining profits, high failure rates, employee attrition.

- What is the definition of “symptom”?
  - An indicator or warning sign.
  - In engineering, it is an undesirable effect occurring in a system.
  - In problem solving - trace the symptom to its cause, through the cause’s cause – until you get to the root cause.

**What Is The Problem?**

- Hospital is getting complaints about the food.
  - Problem: Poorly managed and ineffective kitchen?
  - Solution: Outsource food service.

- Ask some questions first:
  - Is the problem with all the food?
    - No, just breakfast.
  - What’s wrong with breakfast?
    - It arrives cold.
    - All servings in each breakfast?
      - No, just the eggs.

- Solution:
  - Put procedures in place to ensure warm eggs!

- Result – no more complaints.

**Improving Problem Definition**

1.) Collect And Analyze

1. Collect and analyze information and data.
2. Explore the origins of the problem.
3. Use the Present State/Desired State technique.
4. Try stating and restating the problem.

- Learn as much as you can about the problem.
  - Write-down everything you can think of.
  - Determine what is missing and what is extraneous.
  - Use sketches, drawings, and graphs – make the data talk!
1.) Collect And Analyze

- Talk with people familiar with the problem.
  - Look past the obvious.
  - Challenge the basic premise.
  - Dumb questions can produce profound results.
  - Ask for clarification when you don’t understand.

- View the problem first-hand
  - Don’t rely solely on interpretations.
  - “You can see a lot just by looking.” – Yogi Berra.

2.) Explore The Problem Origins

- When given a problem by someone else...
  - Where did it originate?
  - Who posed it in the first place?
  - Can that person explain the reasoning?
  - Are the reasoning and assumptions valid?
  - Has that person considered different viewpoints?
  - Has information been collected about the problem?

3.) Present State/Desired State

- Break your problem statement into two parts:
  - Part 1 – description of the ideal scenario (goals, desired state, or values), from a stakeholder perspective.
  - Part 2 – description of the present state.
- Make sure that both parts are framed consistently:
  - Reworking is a technique that increases the probability of getting to the true problem statement.
3.) Present State/Desired State

- Situation:
  - During WWII, many bombers were shot down over Germany. Many planes that made it back were riddled with bullet holes in the same places.
  - Instructions to solve the perceived problem – reinforce these areas with thicker armor plating.

<table>
<thead>
<tr>
<th>Present State</th>
<th>Desired State</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.) Many bullets penetrating aircraft</td>
<td>a.) Fewer planes being shot down</td>
</tr>
<tr>
<td>b.) Many bullets penetrating aircraft</td>
<td>b.) Fewer bullet holes</td>
</tr>
<tr>
<td>c.) Many bullets penetrating aircraft in critical &amp; non critical areas</td>
<td>c.) Fewer bullets penetrating critical areas</td>
</tr>
</tbody>
</table>

4.) Statement & Restatement

- Restating a problem:
  - New ideas, not just a new word order
  - Use restatement TRIGGERS.

- Original Problem Statement: Cereal is not getting to market fast enough to maintain freshness.
- Trigger #1 – vary the stress pattern:
  - Cereal is not getting to market fast enough to maintain freshness.
  - (Do other products we have get there faster?)
  - Cereal is not getting to market fast enough to maintain freshness.
  - (Can we make the distance or time shorter?)
  - Cereal is not getting to market fast enough to maintain freshness.
  - (Can we distribute from a centralized location?)
  - Cereal is not getting to market fast enough to maintain freshness.
    - (How can we keep cereal fresher, longer?)
4.) Statement & Restatement

• Original Problem Statement: Cereal is not getting to market fast enough to maintain freshness.
• Trigger #3 – make the opposite statement:
  • How can we find a way to get the cereal to market so slowly that it will never be fresh?
  • (Makes us think about how long we have to maintain freshness and what controls it.)

• Original Problem Statement: Cereal is not getting to market fast enough to maintain freshness.
• Trigger #4 – use an equation or a picture:
  • Freshness is inversely proportional to the time since the cereal was baked, i.e.,
  \[(\text{Freshness}) = \frac{k}{(\text{Time Since Baked})}\]
  • What does k, the proportionality constant, depend on?
  • How can we change the value of k – storage conditions, packaging?
  • How can we shorten the time component – delivery time, time to sell?

Evaluate The Problem Definition

✓ Have all of the pieces been identified?
✓ Have all of the constraints been identified?
✓ What is missing from the problem definition?
✓ What is extraneous to the problem definition?
✓ Have you challenged the assumptions and information?
✓ Have you distinguished fact from opinion?

Sample Problem Statements

• Amazon
  • The most important issue facing Amazon is their pricing strategy relative to competing retailers.
• Sprint/Nextel
  • Sprint has an inability to retain their subscribers.
• Google
  • For Google – copyright issues are a problem.
• Conoco-Phillips
  • Conoco-Phillips has not achieved it's desired 20-25 percent debt to capital ratio.
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Solve The Right Problems

<table>
<thead>
<tr>
<th>Urgent</th>
<th>Not Urgent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission Critical</td>
<td>Must be solved immediately in order to meet our mission</td>
</tr>
<tr>
<td>Not Mission Critical</td>
<td>Must be solved “at some time” in order to meet our mission</td>
</tr>
<tr>
<td></td>
<td>Address immediately, resources permitting</td>
</tr>
<tr>
<td></td>
<td>At your discretion</td>
</tr>
</tbody>
</table>

Improving Prioritization

- Use problem-solving teams
  - Key managers and stakeholders
  - Diversity aids in problem finding & prioritization
- Actively review problem portfolios
  - Know mission, vision and values and stakeholder interests
  - Review urgency and mission criticality
  - Prepare time and resource allocation plans
  - Formalizing the process improves efficiency

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Find, define and prioritize problems

BA 301 Winter 2011 Chapter 2 - Sense
What Good Is Problem Finding?

- Potential problems can be opportunities if identified early.
  - New markets
  - New products
  - New channels
  - New people

- Bad things can happen to companies and groups that fail to plan and anticipate.

Find The Problems Early

- Watch the stakeholders
  - Competitors
  - Union activities
  - Political organizations
  - External distribution channels

Find The Problems Early

- Do environmental scanning:
  - Economic – factors and trends related to income levels and production of goods and services
    - Sudden change in market viability
  - Political/Legal – factors and trends related to governmental activities and laws and regulations
    - New regulations affecting promotion or distribution
  - Social – factors and trends relating to groups of people
    - Changing demographics, changing culture
  - Technological – factors and trends relating to innovations in products or production
    - A major competitive technology breakthrough

Find The Problems Early

- Practice scenario planning
  - Helps the organization predict and plan for unforeseen circumstances
  - Planning can uncover assumptions that might impede problem-solving
Activity 2.1 – The Video Store

- Read the case scenario by yourself:
  - What is Max’s mission? What is Max’s vision? Who are the key stakeholders? Develop a preliminary analysis of Max’s problems – it should be a long list!
  - As a group – brainstorm and expand the list of challenges and problems faced by Max.
    - What types of things may have caused these problems?
    - Think about the difference between problems and symptoms.
  - Do scenario planning as a group.
    - What’s happening in the video industry – political/legal, economic, social and technological – that might affect Max and his business?
  - Create a “problem/issue” table – categorizing the problems relative to mission-criticalness and urgency. Consider this question carefully – is it really mission-critical?