Technical Presentations

Using Tables and Drawings

Jeffrey Donnell
MRDC 3104
894-8568

September, 2011
Agenda

• How to organize the talk
• The deliverables we need to see
• How to use and display graphics:
  – Specification lists
  – Function trees
  – Morph Charts
  – Concept drawings
  – Evaluation Tables
• Warnings about slide design
Building Rescue Project
Presentations—19 September

Display
Problem Understanding
Five Design ideas

Speak
Identify and describe each display
IEEE Documentation Guidelines

On the ME 2110 Web page!

Patents obtained online are documented on page 13
Building Rescue Project
Presentations—26 September

Display
Final project design drawing(s)

Speak
Describe the design
Explain its operation
Explain why it was selected (as time allows)
Before and After the Talk

• Face the audience

• Remove your cap

• Introduce yourself and your team

• End the talk with this statement:

“Thank you. I’ll be happy to answer questions.”
Guidelines for Presenting Images

• Describe and explain the diagrams and charts that you display on the screen

• Use a pointer to highlight the things you talk about

• Use specific, descriptive words to name your concepts, their subsystems and their components

• Avoid Photographs
When speakers read slides, they contribute nothing to the presentation.
Here the student describes labeled drawings while we view the drawings.
Questions to Address During the Talk

• For Systems or Subsystems
  – What makes [this] good or bad?
  – What should we remember about this design?

• For House of Quality
  – What relationships are important?
  – What do relationships mean to you as designers?
  – How do relationships impact your design work?
Displaying Figures and Tables on Slides

• Choose light backgrounds
• Make displays fill the screen
• Show descriptive slide title OR figure caption
• You must describe your figures and tables to the audience:
  – What is it?
  – Why is it presented?
  – What should the audience see?

Some tools need reformatting for screen display
Air Powered Catapult

This Drawing:
• Fills the slide
• Has labels
• Shows complete system

Descriptive Title is shown on the slide
Intracavity doubling in Mitsubishi’s laser TV begins when an 808-nanometer diode laser pumps a neodymium-doped yttrium vanadate crystal. The crystal emits light at 1064 nm, and then the frequency is doubled (and the wavelength halved) in either a magnesium oxide or lithium niobate cavity, yielding an output of 532 nm. [1]

Speaking Text: “Intracavity doubling in Mitsubishi’s laser TV begins when an 808-nanometer diode laser pumps a neodymium-doped yttrium vanadate crystal. The crystal emits light at 1064 nm, and then the frequency is doubled (and the wavelength halved) in either a magnesium oxide or lithium niobate cavity, yielding an output of 532 nm.” [1]
Concept Diagram for a Laser Pointer

IEEE Spectrum [1]
# Specifications (for CD Mover)

Slide Titles can be compressed to make room for displays

<table>
<thead>
<tr>
<th>Changes</th>
<th>D/W</th>
<th>Requirements</th>
<th>Resp.</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Move CD Rom to target.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Geometry

<table>
<thead>
<tr>
<th>D</th>
<th>Fit within 24x12x12 inch area</th>
<th>Instructor</th>
</tr>
</thead>
</table>

## Kinematics

<table>
<thead>
<tr>
<th>W</th>
<th>Quick acceleration</th>
<th>Mfg. Engineer</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>Straight line</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>Smooth acceleration</td>
<td></td>
</tr>
</tbody>
</table>

## Forces

<table>
<thead>
<tr>
<th>D</th>
<th>Operates with mouse traps</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Gravity</td>
<td></td>
</tr>
</tbody>
</table>

Spec sheet is cropped to allow for larger fonts

Focus on Your Input!
Function Tree (for CD Mover)

Activate System
Move To CD
Stop At CD
Manipulate CD
Defend Result

Retrieve CD and Place on Target
End Forward Motion
Anchor Capture Device
Capture CD
Deliver CD
Protect Our CD
Move Their CD

Rows align for ease of reading

Use one noun and one verb per box
### Morph Chart (for CD Mover)

#### Row heads from Function Tree

<table>
<thead>
<tr>
<th>Generate Power</th>
<th>Mouse Trap</th>
<th>Transmit Power</th>
<th>Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trap turns axle</td>
<td>Car hit by trap</td>
<td>Ramp</td>
<td>Projectile / Catapult</td>
</tr>
</tbody>
</table>

#### Simple diagrams

<table>
<thead>
<tr>
<th>Move to CD / Target</th>
<th>Move / Pick-up CD</th>
<th>Brake on CD / Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolling</td>
<td>Suction</td>
<td>Anchored</td>
</tr>
<tr>
<td>Sliding</td>
<td>Tape covered platform</td>
<td>String around axle</td>
</tr>
<tr>
<td>Projectile</td>
<td>Trap hits disc</td>
<td>Rubber stopper deployed</td>
</tr>
</tbody>
</table>

Two or three words per cell
<table>
<thead>
<tr>
<th>CONCEPT</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRITERIA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive Distance</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Size</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Speed</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Low Cost</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Ease of Operation</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Ease of Production</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Ease of Reset</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Functional Safety</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>Relative= Total/32</td>
<td>0.5625</td>
<td>0.5</td>
<td>0.71875</td>
</tr>
</tbody>
</table>

Concepts identified by name, by drawing or both
Highlight scores that make a difference
Highlight the main point

Fonts around 20 pt.
Focus, color and information

- Important information must visually dominate any figure or table
- When possible, important information should be clustered and centered
- Color is best reserved to highlight important information
- Light colors often give you the greatest flexibility
Clustered information permits focus

<table>
<thead>
<tr>
<th>Changes</th>
<th>D/W</th>
<th>Requirements</th>
<th>Resp.</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Move CD Rom to target.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Geometry**

<table>
<thead>
<tr>
<th>D</th>
<th>Fit within 24x12x12 inch area</th>
<th>Instructor</th>
</tr>
</thead>
</table>

**Kinematics**

<table>
<thead>
<tr>
<th>W</th>
<th>Quick acceleration</th>
<th>Mfg. Engineer</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>Straight line</td>
<td>&quot;</td>
</tr>
<tr>
<td>W</td>
<td>Smooth acceleration</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

**Forces**

<table>
<thead>
<tr>
<th>D</th>
<th>Operates with mouse traps</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Gravity</td>
<td>&quot;</td>
</tr>
</tbody>
</table>
Motion, Sound and Information

• Motion should highlight important information

Animated concept drawings are very helpful

• Sound is best avoided

Unless the sound IS the information

Animated Text Is Not Helpful
Photographs are not good enough

Sliders for mobility

Mousetraps

Gravity-deployed ramp

Pneumatics for whacking arms
Light is hard to control
You control the light in drawings

Return motor/spindle subsystem

Primary release solenoid

Drawer slider arms

Cross support/diversion arm mounting bracket

Diversion arm

Weight for arms

Bug chute

Control box

Rat-whacking arm/mousetrap subsystem

Diversion arm launch mousetrap
References