Applying Systems Engineering to Operational System Improvements

12th Annual Systems Engineering Conference

October 29, 2009

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Acquisition Logistics Engineering
OVERVIEW

- Current need to reduce cost while improving performance of Legacy Systems
- Definition of Classic Systems Engineering Process
- Example application and Case Study
- Where to from here?
An orderly approach to meeting customer needs through detailed design.
Company Objective: Increase Profitability

Approach: Systems Engineering

Facts: 100 Vehicles, 75,000 Miles/Year/Vehicle
200 Drivers, Management, Dispatch, Advertising, Health Insurance, Auto Insurance, Vehicle Support (Repair, Fuel, etc.)
Full set of requirements constrain the solution space.
### BASELINE COST ESTIMATE

<table>
<thead>
<tr>
<th>Cost Element</th>
<th>Cost / Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Cost</strong></td>
<td>$10,500,000</td>
</tr>
<tr>
<td><strong>Total Labor</strong></td>
<td>$4,340,000</td>
</tr>
<tr>
<td>Driver</td>
<td>$3,200,000</td>
</tr>
<tr>
<td>Dispatch</td>
<td>$140,000</td>
</tr>
<tr>
<td>Management</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Fuel</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>Vehicles</td>
<td>$700,000</td>
</tr>
<tr>
<td>Equipment</td>
<td>$500,000</td>
</tr>
<tr>
<td>Insurance</td>
<td>$1,156,000</td>
</tr>
<tr>
<td>Health</td>
<td>$856,000</td>
</tr>
<tr>
<td>Auto</td>
<td>$300,000</td>
</tr>
<tr>
<td>Vehicle Replacement</td>
<td>$500,000</td>
</tr>
<tr>
<td>Advertising</td>
<td>$52,000</td>
</tr>
<tr>
<td><strong>Miscellaneous Cost</strong></td>
<td><strong>$1,752,000</strong></td>
</tr>
<tr>
<td>(Rent, Utilities, etc.)</td>
<td></td>
</tr>
</tbody>
</table>

*Appropriate cost elements for the particular customer*
ALTERNATIVES BY FUNCTION

- **Support**
  - Smaller Cars
  - Electric Cars
  - Repair Contract
  - Run to Fail
  - Etc.

- **Driver Function**
  - Defensive Driver Class
  - Work for Tips Only
  - Robotic Driver
  - Pull Off & Wait
  - Etc.

- **Insurance**
  - Self Insured Drivers
  - Negotiate with Insurance Companies
  - Hire Lawyers
  - Liability Only
  - Etc.

- **Advertising**
  - Utilize Car In/Out
  - More Trips
  - Double Budget
  - New Media Outlet
  - Etc.

*Broader analysis provides a wider range of opportunities.*
Concentrate on high cost centers.
The Best solution is cherry picked from several solutions.
Systems approach yields a better solution than any individual fix.

Systems Engineering solutions are typically two to three times better at meeting objectives.
How to train Systems Engineering practitioners to work in legacy world.

Are you fired up, ready to go?

Fired up, ready to go?

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