The Port of Seattle

Special-purpose municipal corporation serving Washingtonians since 1911
SEATTLE-TACOMA INTERNATIONAL AIRPORT
Growth in Passenger Volume

- 5 Million 1968
- 33 Million 2012
- 50 Million 2018

Total SEA Pax

- 10,000,000
- 20,000,000
- 30,000,000
- 40,000,000
- 50,000,000
- 60,000,000

- 1968
- 1970
- 1971
- 1972
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- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
# Space Constraints

## Airport Size Comparisons

<table>
<thead>
<tr>
<th></th>
<th>Passengers/year</th>
<th>Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seattle-Tacoma International Airport (SEA)</td>
<td>50 million</td>
<td>2,500</td>
</tr>
<tr>
<td>Denver International Airport (DEN)</td>
<td>58 million</td>
<td>53,000</td>
</tr>
</tbody>
</table>
Growth Leads to Problems with Flow

**Aviation Operations:**
improving flow at airport roadway

**Aviation Maintenance:**
a safe, efficient flow of bags
Our Operating Environment

• We don’t own many key processes; we’re the landlord.
• Bad to make problems visible. (public eye)
  – Don’t see a problem or
  – Very hot problem!
    (No time to understand- just act!)
Challenges

• Competing stakeholder objectives
• Creating safe space to risk, experiment.
• Understanding what motivates people.
• Prioritizing and commit to the CPI Process.
Airport Roadways

Mike Ehl,
Director, Aviation Operations

Jim Witzman,
Manager, Aviation Maintenance
Background

Roadway System Designed 1968... 50 Years Ago

1968: 5 million passengers

Traffic Mitigation Plan 2012

2018: 50 million passengers

Burning Platform

Total SEA Pax

[Graph showing passenger growth from 1968 to 2018]
Engagement is Key

- Select a priority shared with business partners
- Confirm executive support
- Nemawashi
- Andon
Landside Access Critical to SEA
Stop and Go Conditions: 4 hours/day, on average
Three Teams

30 participants
6 partner businesses

Bus & Shuttle traffic

Transportation Network Companies (TNC): Lyft, Uber

Privately Owned Vehicles (POV)
Privately Owned Vehicles

Stop & Go conditions recorded a total of **1,645** hours in the year 2017

- **Challenges:**
  - Multiple Data Sources
  - Iterative Process
  - What is Stop & Go?!?

- **S&G > 80% of 1 hr. with stop and go vehicle traffic**

**ULTIMATE GOAL**

CREATE IDEAL TRAFFIC CONDITIONS TO INCREASE CUSTOMER SATISFACTION

**IDEAL SITUATION**

- STOP & GO
  - 1,645

**CURRENT SITUATION**

- STOP & GO
  - 2017
  - 1,645

**BIG PROBLEM STATEMENT**

2017 STOP & GO HOURS

- 1,645
Data Breakdown

- 2017 Total – Stop & Go (1645)
  - Location – Departures (831)
    - Day of week – Monday (161)
      - Time of day – 06:00 (46)
Keys to Success

• Data sources became available—because the right people were involved
• Go see! Validate the data
Root Cause Analysis

Demand Exceeds Capacity

All Traffic Uses Dep Drive for Drop Off

Commercial Traffic Must Use Departures

Existing Policy
Root Cause: Limited Space

- PAX Don’t Use Curbside Lane
- Curb Under-Utilized
- Limited Space
- TSS Not Always Available
- Static Cars Blocking Curbside Lane
Countermeasure: Lane Utilization

1. FULL UTILIZATION OF DEPARTURE CURBSIDE LANE
   – Relocate police squad cars
   – TSS focus at Alaska Doors
Results

Baseline
- Lane 1 (Curbside): 43%
- Lane 2: 57%

6-Jun
- Lane 1 (Curbside): 66%
- Lane 2: 34%

7-Jun
- Lane 1 (Curbside): 77%
- Lane 2: 23%

TSS DOUBLED POV USAGE OF LANE 1
Root Cause: Excess Volume

- Excess Volume
- Commercial Vehicle Policy
- Congestion at Entry
- Highest POV Volume
- Highest Departure Volume
2. **BALANCE DRIVE WITH TNC RE-ROUTE**

   – Altered Drive Signage

   – Police to draw attention

<table>
<thead>
<tr>
<th></th>
<th>Departures (T4)</th>
<th>Arrivals (T3)</th>
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<tbody>
<tr>
<td>1,257</td>
<td>770</td>
<td></td>
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<tr>
<td>1,228</td>
<td>567</td>
<td></td>
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<tr>
<td>1,022</td>
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<td>1,053</td>
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<td>1,113</td>
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<td>1,214</td>
<td>781</td>
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<tr>
<td>1,298</td>
<td>761</td>
<td></td>
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<tr>
<td>1,298</td>
<td>775</td>
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</table>
Results

COUNTERMEASURE SHIFTED 300 VEHICLES AN HOUR TO ARRIVALS

Baseline

6-Jun

7-Jun

POV

ALL COMMERCIAL TYPES

44% 56%

56%

44%

61% 39%
Results: Ongoing

STOP & GO CONDITIONS
(2017 vs. 2018 @ 06:00)

54% REDUCTION SINCE IMPLEMENTATION OF COUNTERMEASURES

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
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</thead>
<tbody>
<tr>
<td>2017</td>
<td>13</td>
<td>5</td>
<td>23</td>
<td>25</td>
<td>29</td>
<td>22</td>
<td>24</td>
<td>31</td>
<td>28</td>
<td>21</td>
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<tr>
<td>2018</td>
<td>13</td>
<td>12</td>
<td>22</td>
<td>29</td>
<td>23</td>
<td>7</td>
<td>17</td>
<td>26</td>
<td>13</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5 teams involving
34 participants
2 Divisions
TSA, CBP, Delta & Alaska
Keys to Success

• Select a priority shared with business partners
• Involve the right people
• Demonstrate it is your priority
• Ensure each team is focused on a recognized problem
We thought we knew what problem the team should be working on...
The Plan
Engagement is Key

- Engage front line workforce
- Have the humility to listen and adjust
The Real Pain Point – Operational Issues

• Baggage Jams
  – Increased the potential for injury
  – Frustrated workforce
  – Damaged the “product”
  – Risk of delayed or missed bags on airplanes
Breaking Down the Problem

• Process Problems

• Physical Design Problems
Two teams

Team 1: Day shift leads & airlines: focused on the process problems of bag hygiene.

Team 2: Swing shift crew mechanics – Monitored Baggage Hygiene, worked on “Physical Changes” to the systems
Problem Part 1

Poor Baggage Hygiene
What is Baggage Hygiene?

• Baggage Hygiene describes how the operators insert baggage into the system.

• Good baggage hygiene results in good system performance, and fewer bag jams.
Examples of “Odd-size”
Can this strap be saved?
Problem Part 2

- Physical Design Problems
Team 2: Nightshift Mechanical Techs

- Felt the pain of dealing with defects from operators.
- Used them to gather performance data for Operations team.
Set a Standard

• Used our technical Subject Matter Experts to define the standard. What does good Baggage Hygiene look like?

• Captured video and data to share with Daytime Ops team.
A cautionary tale...

• Working with “partners” can be difficult. No control over their process.
• We try to influence, but we struggle to get them to understand what’s in it for them....
Understanding the value

- A group of “do-ers”
- Lacked data to support improvements.
- Intuitively “knew” where the problems were.
Focus on what you can control

• Defects caused by the physical nature of the system
• An anecdotal example that we used to teach with...
• Fortunately, with data systems in place, we could re-create the before and after data.
Continued Efforts

- Armed with the success seen here, began to tackle other problem areas.
Began chasing other problems
Working to Sustain

• Identifying with the technicians what it would take to sustain the initiatives
Continuous Improvement

First shot at Daily Management board

Current version
Improvements
Before and after...
What’s your burning platform?
Questions?