Lean Six Sigma Project Report Out
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DAS
January 19, 2017

MARCS Billing Process Redesign
Multidivisional representation from MARCS (Multi- Agency Radio Communication System), OIT Business Office, and Finance
The MARC billing process is convoluted resulting in a 10%+ error rate* producing frequent customer complaints. The process involves 17 different IT mechanisms to track data and three DAS offices who do not always have access to the same information.

Scope:
- First Step: Customer submits a request to be activated or for a change in MARCS Services
- Last Step: Customer is provided an accurate Invoice which matches services requested

* 10% verifiable error rate based on Service Now Tickets from customer- Actual error rate is much higher but unable to calculate due to lack of process for capturing defects
Why are we doing this event?

– To scope billing processes
– To improve accuracy in the maintenance of customer information
– To reduce customer discrepancies with invoices that are not accurate
– To accommodate the rapidly expanding MARCS customer base, while redeploying resources to other high volume activities
– Customer Asset Management reporting is not consistently accurate
Project Goals

• **Standardized** activation and billing
• **Reduce time** to produce billing by 50%
• **Reduce** invoicing **errors** to 1%
• **Consistent and real time reporting**
• **Accurate Asset Management**
Baseline Data Collected
Time Frame (Aug 2014 – Feb 2015)

- 2200 Customers
- 800 Invoices
- 80 Defects (10% Defect Rate)
- Billin: 12 days
- Defect Resolution: 6 days
## Data Collection Plan

### Device Requests (MARCS)

<table>
<thead>
<tr>
<th>Item #</th>
<th>Customer ID Numbr</th>
<th>Radio ID (s)</th>
<th>Date of Request (When MARCS receives it)</th>
<th>Date Set to Bill (Billing Database)</th>
<th>Request Type</th>
<th>Total Number of Devices on Request</th>
<th>Date actually billed (Calculated by Business Office)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MR21</td>
<td>7790005</td>
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<td>2</td>
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<td>10/2/2014</td>
<td>4/1/2015</td>
<td>Activate</td>
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</tbody>
</table>
Data Collection Plan
Defective Invoices

- 80 Help Desk tickets were submitted
- Tickets were analyzed

- Invoices with errors took an average of 6 additional days to investigate and correct
Root Cause Analysis

Fish Bone Diagram

- Errors
  - Multitasking
  - Outside of scope
- Defect Activation
  - More work on defects
- Lack of standardization
  - Too many systems
  - Customer does not own info
  - Too many hands
- People
  - Too many hands
- Process
  - Too many hands
- Responsibility of info not on customer
- Faulty IT systems
- Lack Asset mgmt.
  - Too many hands
- Poor Access to Info
  - Access field staff
  - Inconsistent info
- Poor Customer Info
  - Too many hands
  - Too many processes
- Policy
  - Policies too complex
- Standards
  - Lack of standards
Drilling Deeper

• From the Fishbone and discussions we formed two hypotheses:
  – Billing time differs between Activations and Upgrades
    • Ho: Billing time = for activations and upgrades
    • Ha: billing time is not = for activations and upgrades
  – Billing time is related to Number of radios on the request
    • Ho: Billing time = across all number of requests
    • Ha: Billing time is not = across all number of requests
Activations vs. Upgrades

• Hypothesis was NOT supported:

Mood Median Test: MARCS Time to Process (Days) versus Request Type

<table>
<thead>
<tr>
<th>Request Type</th>
<th>N≤</th>
<th>N&gt;</th>
<th>Median</th>
<th>Q3-Q1</th>
<th>Individual 95.0% CIs</th>
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<tbody>
<tr>
<td>Activate</td>
<td>45</td>
<td>45</td>
<td>175</td>
<td>359</td>
<td>(150,300,450)</td>
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<tr>
<td>Upgrade</td>
<td>3</td>
<td>3</td>
<td>250</td>
<td>439</td>
<td>(150,300,450)</td>
</tr>
</tbody>
</table>

Overall median = 175

A 95.0% CI for median(Activate) - median(Upgrade): (-411,151)

• Time to bill is not related to type of request
Devices in Request

- Hypothesis was NOT supported:

- Time to bill is not related to number of devices in request
Data is not stable and is out of control.
Through our analysis we were able to identify that the problem was widespread and multi-faceted and not easily deduced to a few issues.
• Process is not capable of consistently meeting customer specification of <60 days
MARCS Billing Process - SIPOC

**Supplier**
- Vendors
- Regional System Owners
- Legal Office
- CSC Help Desk

**Input**
- Devices
- Request for Service
- Phone calls/emails/paper requests
- Service Now request
- Contracts
- Agreements
- Computer Systems (Remedy/ EAM/ SUMS/ OAKS)

**Process**
1. Request Submitted
2. Determine new or current customer
3. Determine type of request
4. Inventory entered & ID Generated
5. ID Activated & device programmed
6. Determine device billing status
7. Activate device for billing
8. Billing data pull (quarterly & annual)
9. Load billing data into SUMS
10. Data validation
11. Print Invoice from SUMS
12. Accurate Billing

**Output**
- Programmed, operational, billable device
- Invoice
- Billing File
- Public Safety
- Reports
- Billing adjustment request
- Revenue received

**Customers**
- Citizens of Ohio
- Radio Programmers
- Public Safety Officials
- MSS (Service Shops)
- External Programmers
- Local & State agency Administrators
- Non Public Safety
- OIT Business Office
- ITS
- Finance office
- MARCS
- Agencies Business Offices
- Schools (non public safety)
- Other state agencies
- Federal Customers
Current State Process Map
Other Tools Used

- Operational Definitions
- Brainstorming
- Root Cause Analysis
- Project Management
  - Managing Subgroups
- Waste Identification
- Affinity Diagrams

- Graphical Displays
  - Normality tests
  - Histograms
  - Boxplots
### Process Maps & Project Metrics

<table>
<thead>
<tr>
<th>Measure</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measure</strong></td>
<td><strong>Before</strong></td>
</tr>
<tr>
<td><em>Steps</em></td>
<td>108</td>
</tr>
<tr>
<td>Tracking Systems</td>
<td>17</td>
</tr>
<tr>
<td>Errors</td>
<td>80</td>
</tr>
<tr>
<td>Invoice Processing Time</td>
<td>12-18 days</td>
</tr>
<tr>
<td>(Business Office)</td>
<td></td>
</tr>
<tr>
<td>Asset Processing Time</td>
<td>14-976 days</td>
</tr>
<tr>
<td>(MARCS Office)</td>
<td></td>
</tr>
</tbody>
</table>
Project Benefits - Intangible

- Accurate, reliable, timely and accessible customer asset and billing information
- Real Time reporting
  - Better management insight derived from accurate data
- Customer Satisfaction
- Employee morale
- Increased employee productivity
- Better collaboration among DAS offices
Improvement summary

Current Key Issues

- Multiple points of entry for customer requests
- Multiple systems storing customer demographics & asset information
- Inconsistent application of agreement, policies & contracts

How We Improved

- Standardized point of entry for requests
- One system storing both customer & asset data
- Operations definitions & standardization of customer agreements, policies & contracts
Implementation Plan

MARCS Billing Process Action Plans

Actions are used to help the team plan and track their implementation of changes. They are listed documents that are designed to guide or ensure compliance with the overall goal of implementation. The team developed several action plans to help them implement their new improvements. Action items will be tracked on 60, 90, 120 day follow-up meetings with the team to ensure the successful implementation of the change. If attachments need to be included and/or reviewed, please let me know.

Legend:
- New stage or new plan
- Marked for deletion

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Action Plan</th>
<th>Phase</th>
<th>Timeline</th>
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</thead>
<tbody>
<tr>
<td>Internal</td>
<td>Define business case.</td>
<td>Design</td>
<td>Phase I</td>
</tr>
<tr>
<td></td>
<td>Implement changes.</td>
<td>Implementation</td>
<td>Phase II</td>
</tr>
<tr>
<td></td>
<td>Monitor and evaluate.</td>
<td>Follow-up</td>
<td>Phase III</td>
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</table>

<table>
<thead>
<tr>
<th>Task</th>
<th>Responsible</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update</td>
<td>Jennifer</td>
<td>February 2017</td>
</tr>
<tr>
<td>Update</td>
<td>Bob Smith</td>
<td>March 2017</td>
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</tr>
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</table>

SIMPLET. FASTER. BETTER. LESS COSTLY.
As A Result

- We have made great strides in this process and Phase 1 is complete!!
  - Yea!! Go team!!!

HOWEVER, we know there is much to come
- The new tracking system and portal for MARCS Asset Management (Phase 2) goes live in **February 2017!!**
  - Thanks Service Now team!!

But we are not done yet!
- We will be collecting data for 2 billing cycles after the go live
- Then we will report out again at the end of the year to share the results of our final Implementation and Control Phases
- In phase 2, we hope to demonstrate that this process is now in control, capable, standardized, faster, and defect free!!!!!
Special thanks to...

Senior Leadership
• Director Bob Blair
• Stu Davis

Sponsor:
• Steve Boudinot
• Rich Schmahl

Team Leaders:
• Doug Forbes
• Evan Hood
• Becky Vanest (former Team Leader)

Our Black Belt friends and mentors:
• Julie Trackler
• Michael Buerger

Our Bosses for allowing us the time to complete this 2 year project:
• Carolyn Chavanne
• Tim Krall
• Tom Terez
• Bill Demidovich

Subject Matter Experts
• Tom Bretthauer
• Jack Haueisen
• Stacey Green
• Deanna Moore
• Mary Sen
• Jason Kirby
• Dick Miller
• Loretta Herron
• Jennifer Allwine
• John McMahon
• Mensur Sejfovic (former team member)
• Gary Swat (former team member)
• Bonnie Gerardi (former team member)
• Barry May (former team member)
• Chris Wells (former team member)
• Jody Pizzuto (former team member)

IT System Experts
• Service Now Team (Renee Evans)
• Enterprise Assets Team