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Leveraging Data Analytics for Customer Support Efficiency

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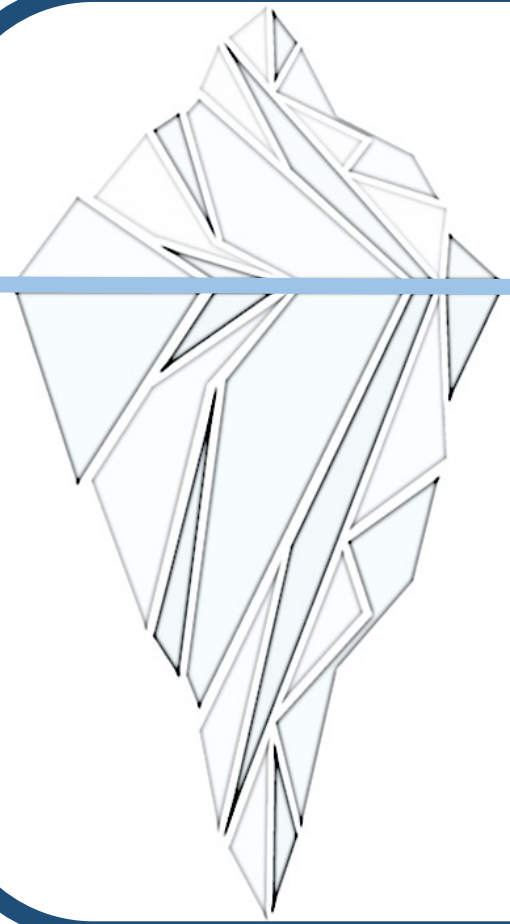
Service Strategies

Overview

Discussion Topics



- Types of Data
- Structured vs. Unstructured Reporting
- Tips for Working with Unstructured Data
- Unstructured Data Analytics Readiness
- Use Case: *Support Issue / Brief Description*
- Other Practical Examples & Ideas

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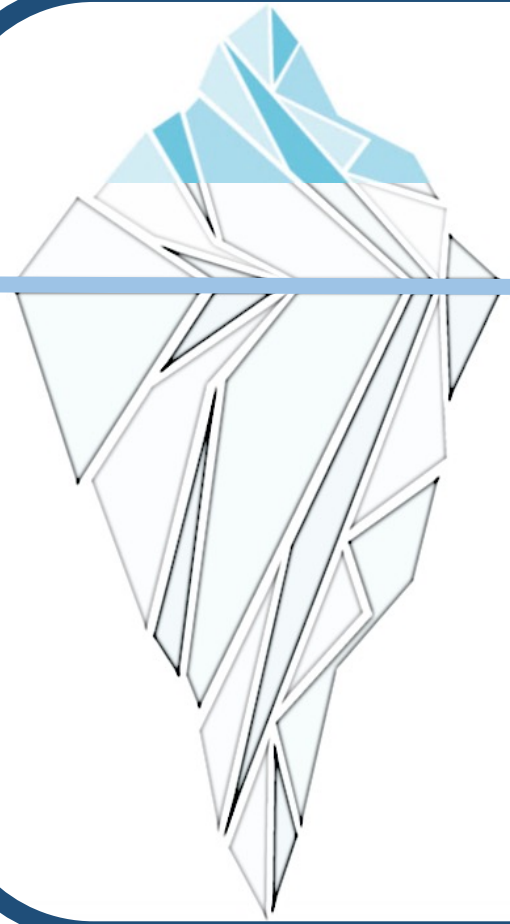
Types of Data: **Structured Data**

"A DBA walks into a restaurant looking for a job as a busboy. He gets hired based in his experience with cleaning tables and working with servers."



- Stored in relational SQL database
- Easily mapped into pre-designed fields
- Simplest way to manage information
- Represents only 5 to 10% of all informatics data

5-10%

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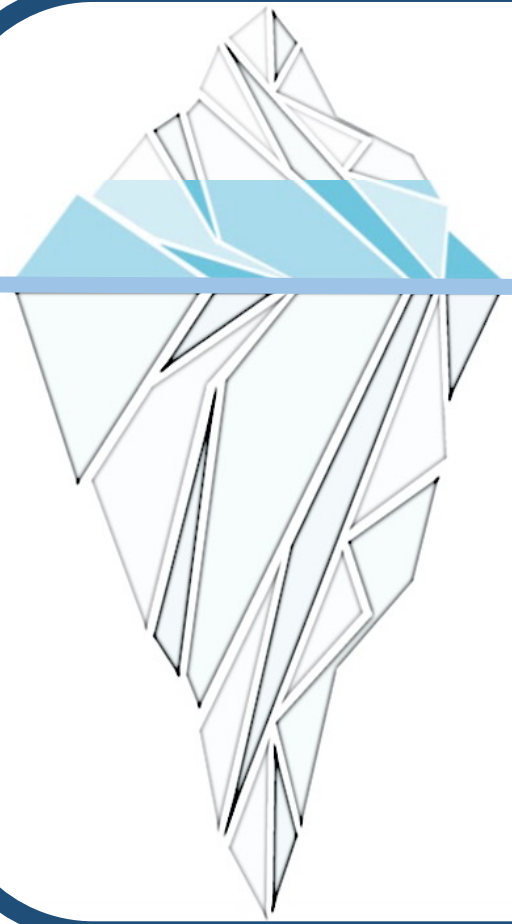
Types of Data: **Semi Structured Data**

"A DBA walks into a NoSQL bar, but turns and leaves because he couldn't find a table"



- Doesn’t reside in a relational database
- Some organizational properties and tagging makes it easier to analyze
- Semi structure exists to ease space, clarity or to compute
- **Examples**: *NoSQL, CSV, JSON, XML*

5-10%

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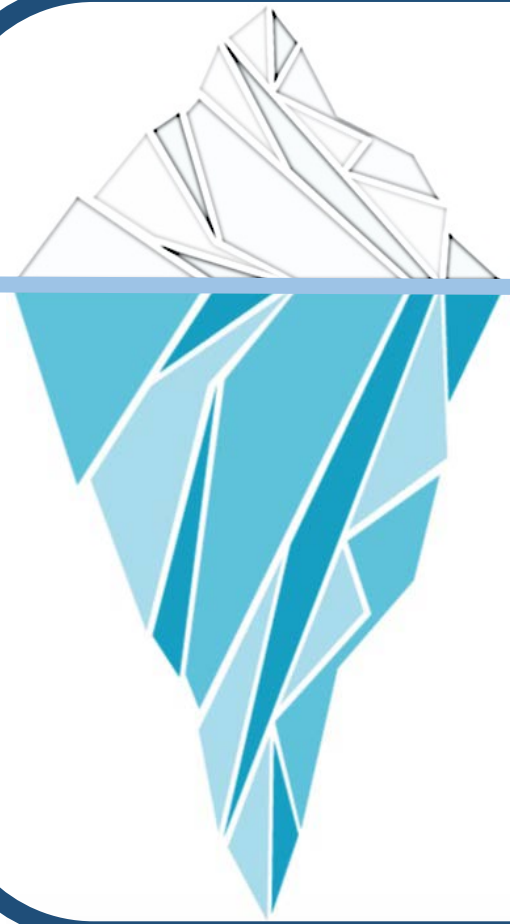
Types of Data: **Unstructured Data**

"I hate the term 'Big Data'. It's all just data. Someday we will call it just data, but for now it's 'Big'."



- Often includes text and multimedia content
- Mostly referred to as "*Big Data*"
- Unstructured data is everywhere

- **Examples**: *Satellite Images, Sonar Data, Photos & Videos, Social Media, Web Content, Text Messages, Enterprise Data (survey results, logs, emails, customer communication)*

80%+

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Reporting: Structured vs. Unstructured

Structured

- Mostly clean
- Easy to report
- Industry prescriptive reporting & protocols

- Very banal (so lacking in originality as to be obvious and boring)

Unstructured

- Messy, not clean
- Difficult & relatively new discipline
- Non-prescriptive & no protocols

- Creative & fascinating
- Understanding your unstructured data will be required to compete

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Reporting: Structured vs. Unstructured

	STRUCTURED	UNSTRUCTURED
SEARCH *Task-Oriented*	Data Retrieval	Information Retrieval
DISCOVERY *Opportunity-Oriented*	Data Mining	Text Mining

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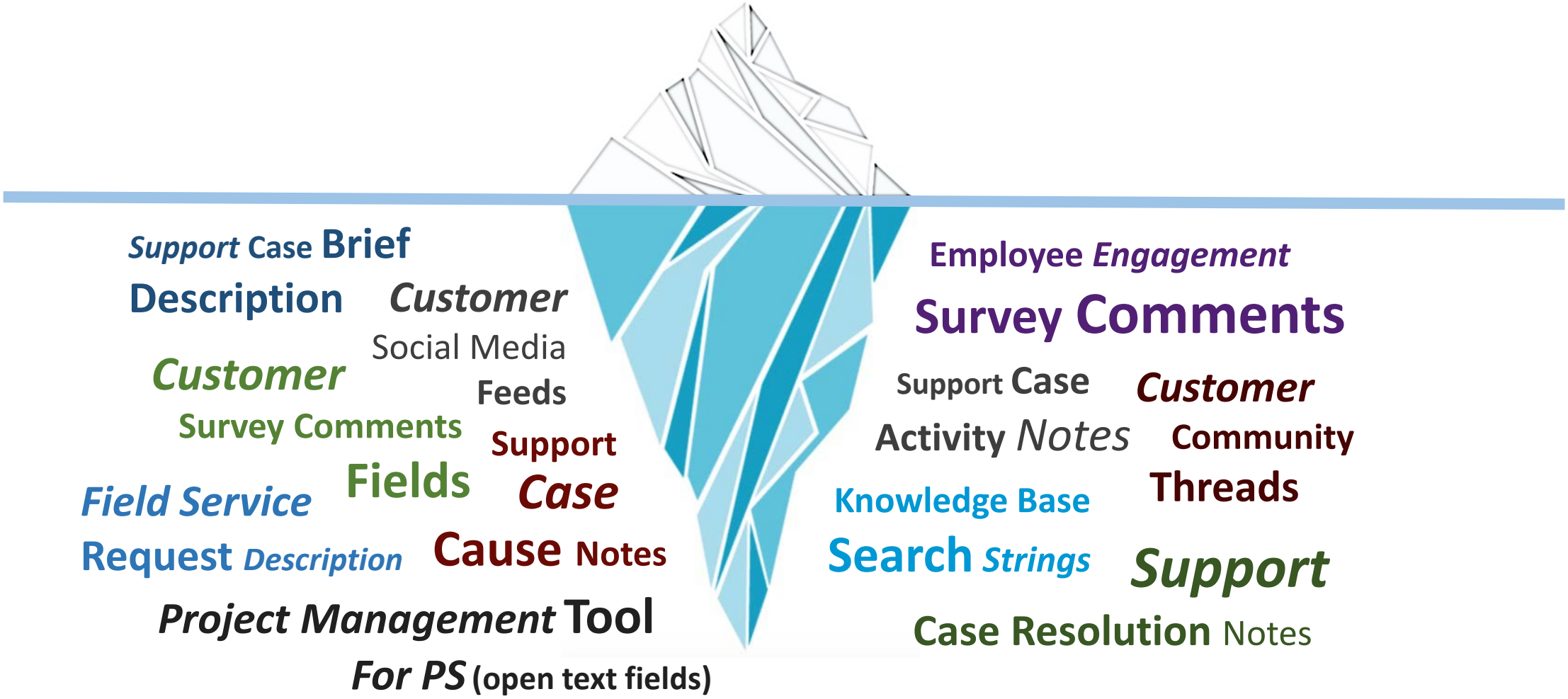
Unstructured Customer Service Text Data

Opportunities to gain deep insight in to your customer service business



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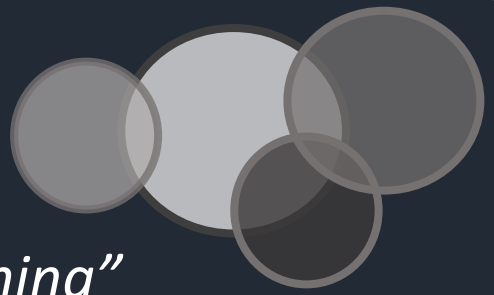
Unstructured Text Mining & Analytic Techniques

Clustering



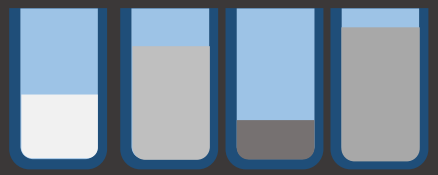
"Unsupervised Learning"

Term Frequency (Inverse Document Frequency)
Word frequency & relative importance to the set

Similarity Matching
Matching based on similarity algorithms

Topic Modeling
Dominant theme clusters

Classification



"Supervised Learning"

Sentiment Analysis
Analyze the opinion or tone

Named Entity Recognition
Proper noun determination (using NLP)

Event Extraction
Relationship between words to determine events

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Tip #1 for Working with Unstructured Data

#1 TIP *Avoid creating Structured Data as a* **BAND-AID** *to get to your Unstructured Data*

#2 TIP

#3 TIP

#4 TIP

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Tip #2 for Working with Unstructured Data

#1 TIP

#2 TIP *If possible, put* **GUIDELINES** *in place to Better Manage Unstructured Data Entry and Maintenance*

#3 TIP

#4 TIP

Industry Best Practice Guidelines

Guidelines that add process steps to your workflow (avoid)

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Tip #3 for Working with Unstructured Data

#1 TIP

#2 TIP

#3 TIP *Consider using* **OPEN SOURCE SOLUTIONS** *as a Starting Point*

#4 TIP

Open for Innovation KNIME

rapidminer

R

orange

QDA MINER

python™

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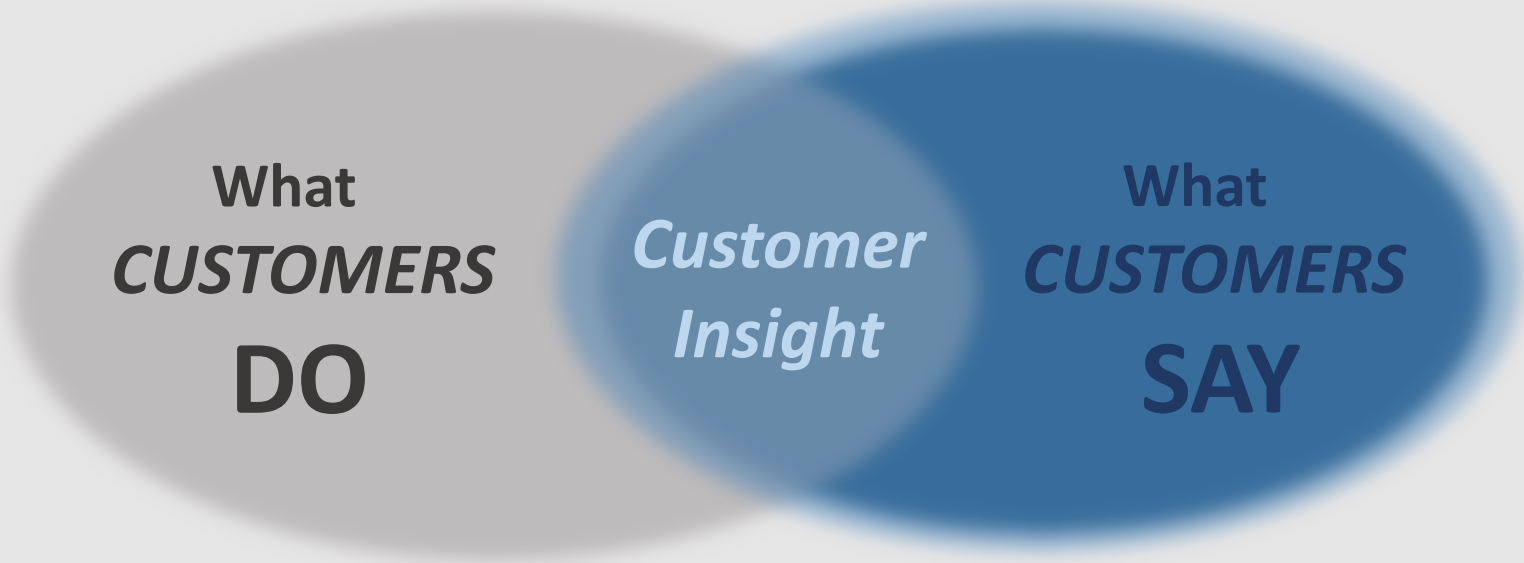
Tip #4 for Working with Unstructured Data

#1 TIP

#2 TIP

#3 TIP



#4 TIP **COMBINE** *Structured and Unstructured Reporting for Enhanced Business Insight*

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Unstructured Data Analytics Readiness

PHASE	PLAN Pre-Work	DO Definition	CHECK Adopt	ACT Value
What does it Look Like?	No Templates or Guidelines for Data Entry & Maintenance	Templates & Guidelines Ready for Use	Templates & Guidelines Consistently Used	Sustained Adherence & Enhanced Reporting
What are the Next Steps?	Develop Industry Standard Based Guidelines with Minimal Workflow Overhead	Effective Training & Communication	Automated Monitoring To Manage Adherence	Realize & Communicate Value

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Use Case: *Support Issue / Brief Description*

Project Objective

- Increase self service effectiveness
- Remove redundant work
- Gain better insight to product quality cost

Project Method

Better analyze support issue brief description to find opportunities to increase customer satisfaction and reduce cost

Company Overview

$68.3 M	Support Revenue
$19.7 M	Support Cost
71%	Contribution Margin
118,000	Annual Case Count
105	Internal Headcount
60	External Headcount
$167	Ave Cost/ Case

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Phase 1: Pre-Work

Pre-Work State

- Unstructured brief descriptions
- No templates, guidelines, or discipline
- Non-descriptive:
  (i.e. "*Customer needs help*")
- Some system generated
  (i.e. "*Customer Portal Request*")

Future State Plan

1. Identify 3 categories of customer issues:

"How Do I" (Q&A) | Request Fulfillment | Problems

2. Put guidelines in place for each category
3. Apply Industry Best Practice

Example Brief Description Guidelines: Problems

- Capture "*What Is*" vs. "*What Is Desired*"
- Free of Causes, Solutions, & Effects
- Capture using Object/Deviation Format
- Capture in the Customer's Context

Phase 2: Definition

Brief Descriptions - Before

Customer #42012 called in w/complaint & is not happy.

Error: "disk is full" - what should I do?

New Portal Request

We just get blinking lights and no communication. Here are the serial number: 8102-122156

Brief Descriptions - After

The architecture postscript auto-calculates even though the input variables are invalid.

The GC application abends with multiple queue sum errors indicating the disk is full.

A virtual basic diagnostic test does not distribute the object oriented module to the desktop.

FX control does not respond even though green I/O light blinks indicating positive server communication

- Templates & Guidelines Ready for Use
- Effective Training and Communication

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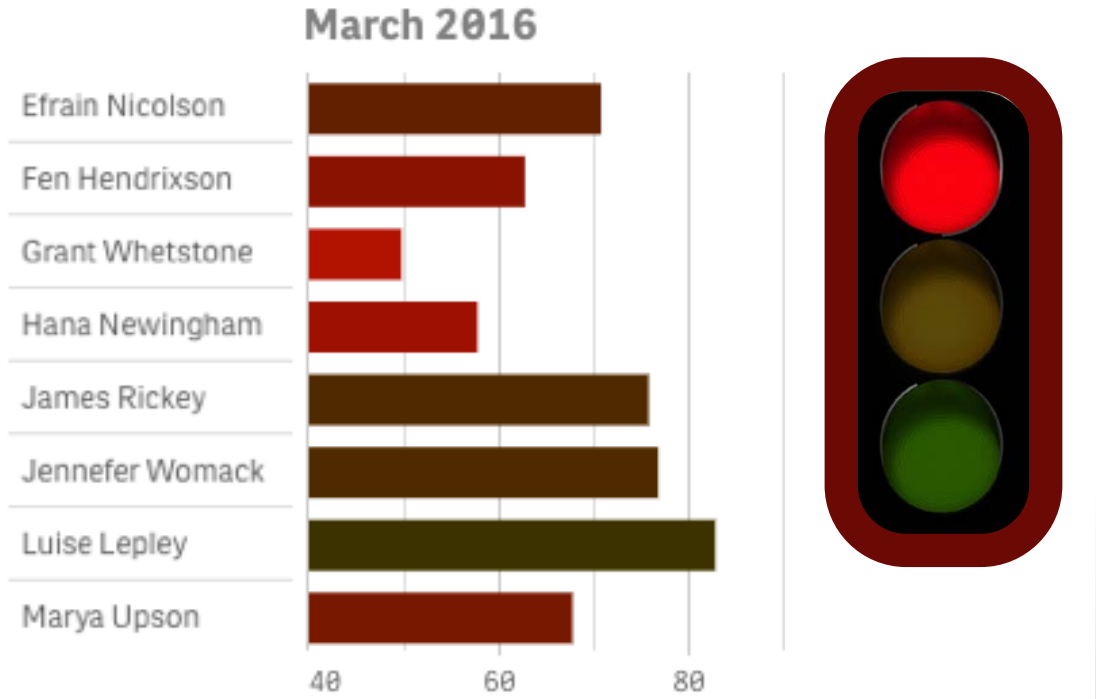
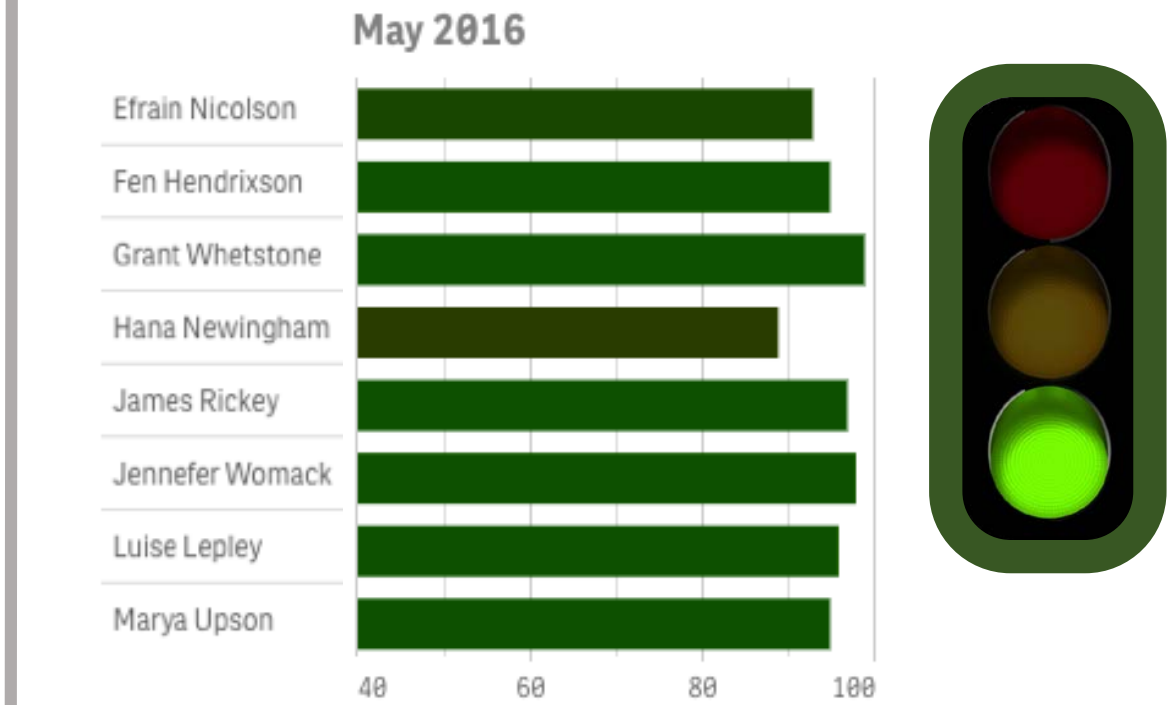
Phase 3: Adopt

Brief Description Format Compliance Report





- Templates & Guidelines Consistently Used
- Automated Monitoring to Manage Adherence

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Phase 4: Value - *Brief Description Text Analytics Model*

Unstructured: Brief Description

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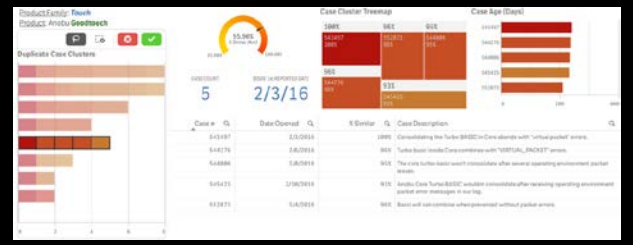
- Similarity Matching
- Named Entity Recognition

Product L1 | Product L2 | Env L1 | Env L2

Structured: Environment Data

Duplicate Case Reports



ACT

Value

- Sustained Adherence
- Enhanced Reporting
- Realize and Communicate Value

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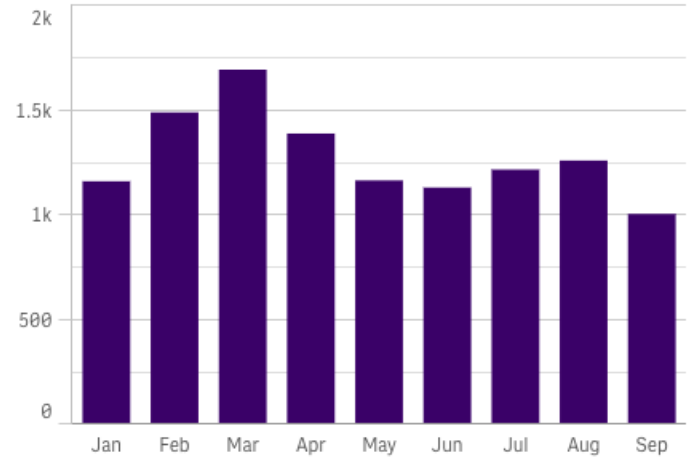
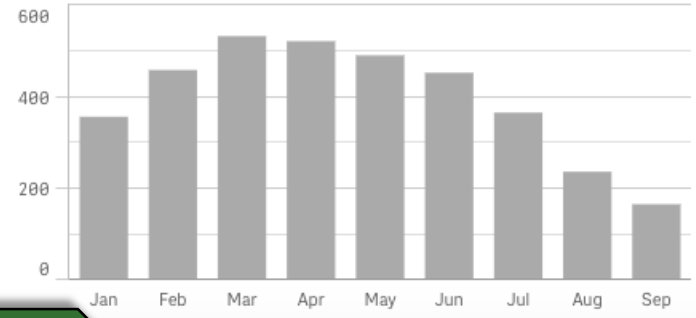
Phase 4: Value

DASHBOARD: *Duplicate Case Cost Overview*

2016 Duplicate Case Count by Month



2016 Initial Case Count by Month



TOTAL DUPLICATE CASE COST

$1,896,061

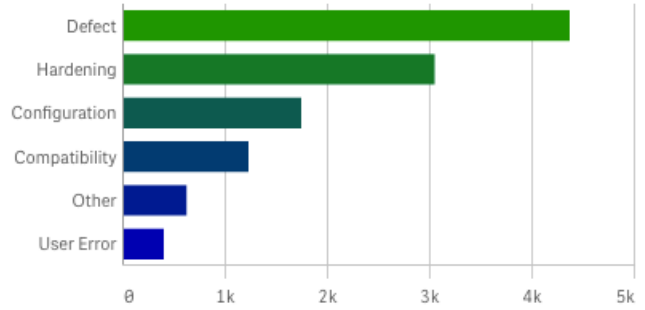
Estimated Annual Cost

2.53M

Duplicate Case Count

11,449

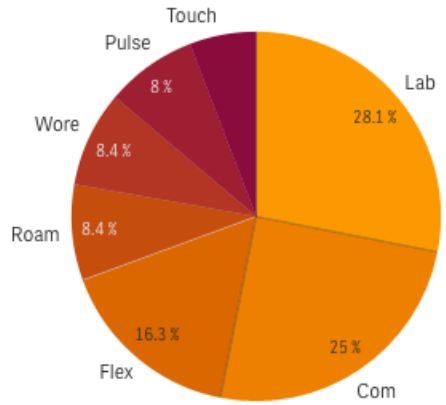
Duplicate Case Count by Cause Code



Product Family Case Count & Cost

Product Family	Duplicate Case Count	Cost
Com	3,143	$474,593
Flex	2,255	$308,935
Lab	2,173	$532,385
Wore	1,212	$158,772
Touch	948	$110,916
Pulse	934	$151,308
Roam	784	$159,152
Total	**11,449**	**$1,896,061**

Cost Percent by Product Family



- Sustained Adherence
- Enhanced Reporting
- Realize and Communicate Value

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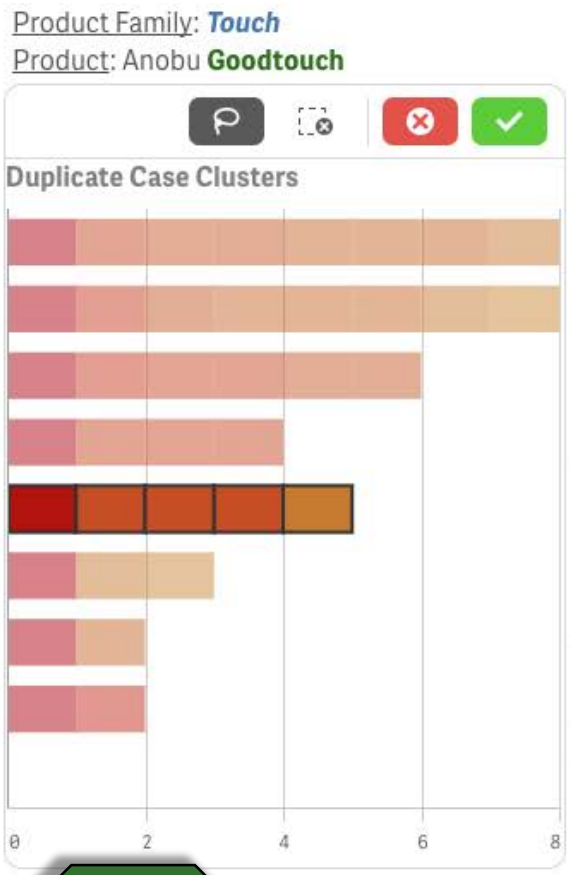
Phase 4: Value

DASHBOARD: *Duplicate Case Cluster Report*

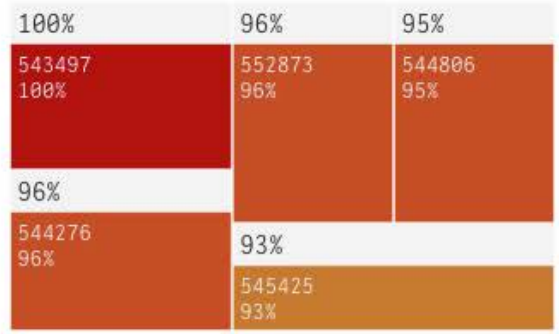


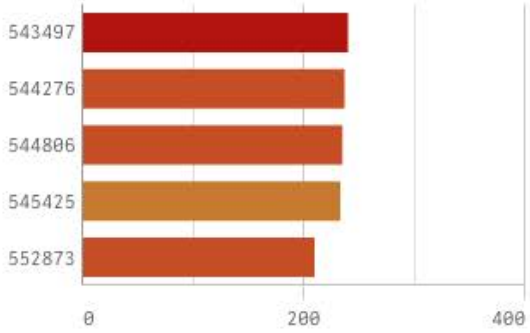
CASE COUNT

5

ISSUE 1st REPORTED DATE

2/3/16





Case #	Date Opened	% Similar	Case Description
543497	2/3/2016	100%	Consolidating the Turbo BASIC in Core abends with "virtual packet" errors.
544276	2/6/2016	96%	Turbo basic inside Core combines with "VIRTUAL_PACKET" errors.
544806	2/8/2016	95%	The core turbo-basic won't consolidate after several operating environment packet issues.
545425	2/10/2016	93%	Anobu Core Turbo BASIC wouldnt consolidate after receiving operating environment packet error messages in our log.
552873	3/4/2016	96%	Basic will not combine when prevented without packet errors.

- Sustained Adherence
- Enhanced Reporting
- Realize and Communicate Value

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Use Case: *Results*

Project Outcome

- Early detection of reoccurring issues
- Ability to remove redundancy
- More insight to the cost of product quality
- Increase opportunity for more effective self service
- ~$2.5 M cost savings opportunity

Project Results

Ongoing ability to leverage brief description data in order to find opportunities to increase customer satisfaction and reduce cost

- Realize and Communicate Value

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Other Practical Examples & Ideas

Unstructured Text Analytics

- **T**ext & trend analysis on queries submitted to the your KB
- **S**entiment analysis on customer survey comments to find skill gap & training opportunities
- **A**nalysis on PS/PM open-ended fields to better understand reasons for project delays
- **E**mployee loyalty analysis based on employee engagement survey comments
- **C**ase description & resolution combined to find skill gap and training opportunities
- **T**ext & trend analysis on social media and community threads
- **A**nalysis on support case notes to better determine customer adoption rates
- **U**nstructured text analytics to predict churn and manage loyalty drivers

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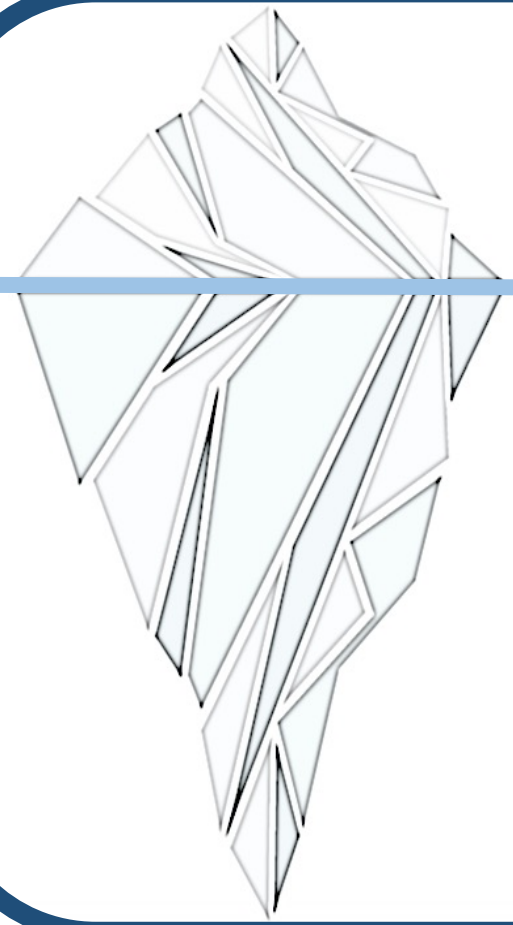

QUESTIONS?

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Thank You

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