Improving Asset Utilization & Profitability for a Long-Haul Trucking Company

Presented by

morpace
Introducing Morpace

40+ yrs B2C & B2B
- Retail OEMs and dealerships
- Commercial OEMs
- Auto Component Suppliers
- Commercial Vehicle/Fleet Ecosystem

- New Product Development
- Customer Experience
- Brand & Communication
Trucking Industry Challenges

- Electronic Logging Device (ELD) Mandate & HOS
- Cumulative Economic Impact of Regulations
- Driver shortage and retention
- Legacy systems and disparate databases
Telematics can be a key enabler

Ultimate goal of maximizing profitability and ROI

Lack the time and resources to leverage data as a true corporate asset

Also lack adequate tools

“I want to look at my phone in bed at 6:00am to see which trucks need my attention as soon as I arrive in the office”

- Sr. Manager, Auto Glass Specialist Co.
Northern Logistics Case Study

We set out to:
- Develop a tool for managing trucks and drivers
- Leverage existing data by integrating into an easy-to-use, single access platform

Accomplished by:
- Analyzing telematics data from ~140 trucks
- Reporting around lag and lead KPI metrics
- Developing a proof of concept tool using Cloud architecture, ultimately built into a mobile app

- HQ in Clare, MI
- ~140 Class 8 semi trucks
- Trucks are over the road, long haul application
Challenge #1: Volume of Data

Each truck streams \(~300\) MB of data per day

Six months \(~9\) TB of data
Challenge #2: Variety & Value of Data

1700+ fields

- Odometer
- RPM
- Seat belt
- Total idle fuel used
- Voltage
- Check engine light
- Engine faults
- Ignition detect
- GPS
- Total fuel used
- Speed

Multi-dimensional KPIs
Approach: Flexible Data Architecture

Cloud-based scheduler to trigger Azure Function call to Geotab

Azure Scheduler

Cloud-based serverless Python app to read data from Geotab API and write to Azure SQL Database

Azure Function

Cloud-based scheduler to trigger KPI recalculation and refresh outputs

Azure Scheduler

Cloud-based Microsoft SQL Server database to store Geotab data, process data into reports and serve Power BI datasets

Azure SQL Database

Cloud-based, interactive Web and Mobile reporting

Cloud-based, interactive Web and Mobile reporting

Microsoft Power BI

Web Reporting

Mobile Reporting

Data Pulls:
- 5 minutes
- 6 hours
Approach: Provide Business Value with Analytics

- **Descriptive:** Lag & Lead KPIs
  - Phase 1
  - Phase 2
  - Big Data Context

- **Predictive:**
  - Phase 3
Phase 1: Business Impact Duration

Data Access
April 2017

Proof of Concept
September 2017

App Complete
March 2018

“In 13 seconds I know the answer
- I don’t need to run the report, download the report, then figure out the answer”
- Mike M., Northern Logistics

Mind Bowser
www.mindbowser.com
Phase 1: Lag Measure KPIs

Six Lag KPIs

1. MPG
2. Idle %
3. Harsh braking / 100 miles
4. Harsh acceleration / 100 miles
5. Harsh cornering / 100 miles
6. Miles driven

- Benchmark
- Time-trended
- Unit-level
Phase 1: Lead Measure KPIs

Four Lead KPIs

1. Data issue/not reporting
2. Vehicle sitting
3. Low MPG vehicles
4. High idle vehicles

Action Needed Report

- Opportunity Profit Value
- Rank order high to low

Action Needed Report

- High values reflect greatest opportunity for improving profitability
Phase 2 & 3: Looking Ahead

Phase 2: Big Data Context
- Driving behavior
- Actions taken
- Layer business Ops data

Phase 3: Predictive Analytics
- Layer driver information onto driving behavior data to predict driver turn-over
- Layer parts and service data onto telematics data to predict system failure
- Recommend actions to be taken based on previous actions/ events in system
Key Learnings

1. Identify narrow and specific business issue(s) (to prevent drowning in the data)

2. Accept incremental business value (resist urge to jump right to predictive analytics)

3. Stay committed to a Minimum Viable Product (in order to deliver on time)

4. Keep telling yourself next time will be a whole lot easier (to maintain your sanity)
Fun Facts

- Trucks move 70% of nation’s freight by weight
- 31+ million trucks used for business
- $39.9 billion paid in highway user taxes
- 279.1 billion miles traveled

Thank you and Q & A
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