Performance Management in the Private Sector

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Agenda

- Private Sector Examples
  - WalMart –Reduced costs through change in shipping method
  - United Airlines – Operational savings by providing piltos with real time weather information
  - Samsung – Reduce manufacturing time and cost by using metrics for each step in cycle
  - Clorox – Developed production planning algorithm based on demand and inventory data to manage inventory and streamline manufacturing process
  - Connected Vehicle Data – New technology with multiple uses

Walmart

- Walmart – Environmental Footprint
  - Use logistics analysis to reduce environmental footprint
  - Goals
    - 100% renewable energy
    - Zero environmental waste
    - Sustainable products
  - Crate/rack system used for shipping milk provided opportunity for savings
    - Evaluation of storage and shipping cost data led to use of crateless containers
    - 9% reduction in volume reduced number of trips translated to $0.20 per gallon cost reduction

United Airlines

- United Airlines
  - August 2011 initiated program to provide all pilots with iPad dedicated to real-time weather and navigation information
  - 1.5 pound device replaced 38 pound flight bags with paper data
  - iPads provide real-time weather data superimposed on flight route
    - 15 minute forecasts
  - Air Traffic Control previously routed planes entirely around adverse weather
    - Pilots able to use data to suggest more direct routes
    - Proactive approach to routing

United Airlines

- United Airlines (continued)
  - Impacts
    - Reduced maintenance due to weather-related damage
    - Fewer turbulence-related injuries
    - Faster flight times = improved customer service
    - Reduced fuel costs due to shorter flight paths
    - 25 minute time savings translates to 2100 pounds of fuel saved

Samsung

- Samsung
  - Use of data for operational optimization of silicon wafer production
    - Break into components of cycle time
      - Wafer fabrication
      - Intermediate sorting
      - Assembly
      - Testing
    - Schedules intermediate goods for specific process steps based on process completion time
      - Inventory levels
      - Steps required to move goods to machine
      - Scheduling of machine time – use for multiple steps

Samsung

- Samsung (continued)
  - Impacts
    - Greater utilization of existing equipment
    - Drop in late production deliveries from 26% to 3%
    - Estimated additional sales of $1 billion in 4 year period
    - 4% increase in market share

Clorox

- Clorox
  - Production planning algorithm
    - Optimize inventory levels
    - Ensure on-time delivery
    - Minimize production, shipping and inventory costs
  - Used demand data and cycle time data to assure production line was fully supplied
  - Reduce production when inventories are high

Clorox

- Clorox (continued)
  - Impacts
    - Reduce inventory levels by 29%
    - Allow scheduling of production down time
      - Reduced inventory costs
      - Allowed for maintenance scheduling

Connected Vehicle Data

Sample Connected Vehicle Applications

Safety
Electronic Brake Lights
Traffic Signal Violation Warning
Stop Sign Violation Warning
Curve Speed Warning
Display Local Signage
Electronic Payment
Tolling
Parking
Automotive
Vehicle Diagnostics
Software Updates

Mobility
Traveler information
Weather Information
Navigation
Ramp Metering
Signal Timing Optimization
Corridor Management
Infrastructure Management
Weather Information
Winter Maintenance
Pothole Detection
Automated Mapping

Connected Vehicle Data

Data Are Critical (and Potentially Lucrative)

- Data drive connected-vehicle applications and services

Entities Interested in Data…	May Create Markets for
DOTs	Probe data, asset management data, road-weather information
Auto manufacturers	Vehicle diagnostics and prognostics, driver behavior
OE Suppliers	Component diagnostics and prognostics
Drivers and passengers	Real-time route guidance, map updates, media downloads, infotainment…
Marketers and providers of location-based services	Driver behavior, vehicle location
Insurance industry	Driver behavior

Connected Vehicle Data

Data Challenges & Opportunities

- Data security
- Threats to personal privacy
- Data analytics and aggregation

Connectivity and Communications Concerns

- Privacy
  - Always an issue when information is shared or tracked over a network
  - Solutions seems to be available (cellular phone providers face similar challenges)
- Driver distraction
  - A significant challenge, and both USDOT and the NTSB have been vocal about this (as has AAA and others)
  - Communications are not the only distraction
  - Hands-free technology becoming more common
  - Could the vehicle drive itself?

Conclusions

- Characteristics of success stories
  - Tie measures closely to objectives and make sure they remain linked
  - Use measures that are meaningful, easily understood and few in number
  - Keep improvement efforts focused on specific functions
  - Encourage employees at all levels to have a stake in the process and bring forward ideas for continuous improvement
  - Recognize that when one bottleneck is solved the next one will show itself – keep looking
  - Build and maintain knowledge database over time

Conclusions

- Applicability to WisDOT Functions
  - Linkages between asset management and maintenance data to reduce inventories, reduce maintenance costs and plan life cycle investments
  - Evaluate component stages of incident response to identify opportunities for faster response and more efficient deployment of resources
  - Continuous feedback on work zone delay with tool to adjust both configuration and timing