Case Study: How Southern California Edison integrated telematics technology with SAP to build a sustainable fleet

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Learning Points

You’ll learn the answers to the following questions and more:

- What is sustainable fleet management?
- What is vehicle telematics?
- What was the business case?
- What was SCE’s implementation approach?
- What does the integrated SAP-telematics solution look like?
- What were some of the challenges and lessons learned?
What We’ll Cover

- Introduction to Southern California Edison (SCE)
- Basic Terminology
- Telematics Business Case
- Implementation Approach
- SCE’s Integrated SAP-Telematics Solution
- Demo of Dashboards & Reports
- Key Learnings
- Q&A
Southern California Edison (SCE) Overview

- Southern California Edison (SCE) -
  - One of the largest electric utilities in California
  - More than 14 million people across 50,000 square-miles
  - Serves more than 180 cities
  - Over 125 years of service
  - Based in Rosemead, California
About SCE’s Fleet

- SCE’s Transportation Services Department (TSD) manages a fleet of over 6,000 service vehicles for our transmission & distribution, customer service, and generation business units.

- SCE’s vehicle fleet covers all 50,000 square miles of service territory including central, coastal, and desert regions of Southern California.

- Vehicle fleet vocations include transmission field crews, distribution construction, substation maintenance, meter reading, and several others.
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What is Sustainable Fleet Management?

Set of fleet business practices that enable long-term profitability by:

- Increasing operational efficiency in the light of severe resource constraints (e.g., fuel)
- Reducing environmental impacts (e.g., carbon)
- Increasing regulatory compliance (state, federal, global)
- Increasing corporate social responsibility (e.g., safety)
What is Vehicle Telematics?

- Vehicle telematics is technology that enables remote monitoring of a vehicle’s location, operation and performance.

- Telematics usually encompasses the following technologies:
  - Telematics device (installed in a vehicle)
  - Global Positioning System (GPS)
  - Cellular network
  - Internet
  - Software
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Telematics Business Case

Vehicle Utilization
1. Manage fleet size
2. Vehicle reassignment
3. Reduce number of rentals
4. Create vehicle pools for short-term use
5. Make informed vehicle replacement decisions
6. Assign right vehicles for right jobs
7. Track unauthorized vehicle use (e.g., location, after-hours use)

Vehicle Maintenance
1. Improved preventative maintenance
2. Improved corrective maintenance
3. Increased safety during vehicle operation
4. Identification of poor performing vehicles/parts for warranty
5. Identification of vehicle tampering or misuse

Environmental Impact
1. Reduce fuel consumption
2. Decrease non-productive idle time
3. Improve driver performance
4. Increase fuel economy
5. Decrease emissions
6. Track fuel costs
7. Achieve optimal routing
8. Maximize fuel tax credits
9. Increase compliance
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**Implementation Methodology**

**Telematics Vendor Selection**
1. Compared vendor strengths – GPS services vs. diagnostics
2. Defined expectations on telematics data points in RFP/contract
3. Involved SAP implementation partner during this phase

**Pilot Implementation**
1. Project preparation
2. Focused on a small subset of vehicles representative of entire fleet
3. Focused on integration with vendor’s API
4. Fleshed out technical architecture
5. Assessed and planned for exceptions
6. Defined KPIs
7. Prototyped dashboards/reports

**Full Implementation**
1. Wrapped up blueprint - SAP PM/BW design specs, test scripts
2. Realization – configuration, code, unit test, integration test
3. Final Prep – user acceptance test, cutover, training, change management
4. Go-live and support
After a significant RFP selection process which included 10 leading vendors, Telogis was selected as our telematics vendor based on their capabilities in the vehicle location services and diagnostics space.

Deloitte was chosen to provide the integrated SAP-telematics technology vision and design based on their deep expertise in SAP, telematics, sustainability solutions, and the utilities space.
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Solution Overview

Fleet Vehicle

Telogis
Telematics

GPS

ECC
EAM (PM)

BW
Dashboards (level 1)
Webl (level 2)
Ad hoc (level 3)

Mobile Asset Mgmt. Solution
Tensing

Mobile Device (Laptop)
Tensing

Clicksoft

Real Experience. Real Advantage.
An XML web service is used to transfer data from Telogis to SCE

### Segmented Data Points

1. Vehicle ID  
2. Odometer  
3. PTO Time  
4. Boom Time  
5. Boom Count  
6. Idle Time  
7. Engine Hours  
8. Fuel Consumed  
9. MPG  
10. MIL  
11. DTCs  
12. Hard Acceleration  
13. Hard Braking  
14. Miles Speeding  
15. Max. Speed

### Unsegmented Data Points

1. Vehicle ID  
2. Key On/Off  
3. PTO On/Off  
4. Boom On/Off  
5. Miles Driven  
6. Fuel Consumed  
7. MPG
Integration Technology

Internet

SCE Network

CPS

ECC (Unsegmented)

Measurement Docs

Notifications DTC’s

Maintenance Plans

Work Orders

Telogis

Segmented Web Service

Unsegmented Web Service

Security Considerations:

- SSL
- 24 hr. session expiration
- 3rd Party Pen-Test,
- SAS 70 Type II Certification

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Data Services W/S

BW (Segmented & Unsegmented)

BW Extractor

ABAP Proxy

SAP PI

https

Firewall

Xcelsius Dashboards (level 1) & WebI Reports (level 2)

Vehicle Utilization

Vehicle Maintenance

Environmental Impact

Real Experience. Real Advantage.
Leveraging SAP Plant Maintenance (PM)

- SAP Plant Maintenance (PM) was leveraged in the following ways:
  - Preventative maintenance
    - Used telematics data to create measurement documents and drive performance-based maintenance plans
    - Examples include odometer reading or engine hours
  - Corrective maintenance
    - Create notifications based on vehicle DTCs
    - For example, cylinder 2 misfire detected (DTC # P0302)
Leveraging SAP Plant Maintenance (PM) (cont.)

Measurement document created for odometer reading “5379.0” received via telematics.

SAP transaction – IK13: Display Measurement Document
Leveraging SAP Plant Maintenance (PM) (cont.)

SAP transaction – IW22: Change PM Notification

<table>
<thead>
<tr>
<th>Notification</th>
<th>VN Cylinder 2 misfire detected</th>
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<tbody>
<tr>
<td>Status</td>
<td>NOPR ORAS</td>
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<tr>
<td>Order</td>
<td>8800003</td>
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</table>

Reference object:

<table>
<thead>
<tr>
<th>Functional loc.</th>
<th>Richmond Garage</th>
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<tbody>
<tr>
<td>Equipment</td>
<td>V21516</td>
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<tr>
<td>Assembly</td>
<td>FORD-F550</td>
</tr>
</tbody>
</table>

Subject:

<table>
<thead>
<tr>
<th>Coding</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTC</td>
<td>Cylinder 2 misfire detected</td>
</tr>
</tbody>
</table>

Notification created for DTC “P0302” received via telematics.
Leveraging SAP Business Warehouse (BW)

- SAP Business Warehouse (BW) was leveraged in the following ways:
  - Xcelsius dashboards (Level 1)
    - Allows upper-management to view and assess fleet performance based on key performance indicators (KPIs)
    - For example, fleet utilization
    - Not customizable on the fly by users
  - WebI reports (Level 2)
    - Provides middle-management with detail data on fleet performance
    - For example, miles driven and engine hours, for each vehicle in the customer service business unit
    - They are dynamic in nature, i.e., users can customize these reports on the fly
Leveraging SAP Business Warehouse (BW) (cont.)

- SAP Business Warehouse (BW) can be leveraged in the following ways: (cont.)
  - Ad hoc analysis (Level 3)
    - Involves the detailed analysis of data to support decision making for specific scenarios (operational/strategic)
    - Examples include root cause analysis, what-if scenarios, predictive analysis using analytics tools (e.g. SAP HANA)
    - Typically used by analysts within an organization
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Demo of Dashboards & Reports

Demo
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Key Learnings

Technology

- Some telematics data points may be affected by vehicle type and age (older vehicles)
  - Mileage may have to be derived from GPS – may not be as accurate due to GPS drift
  - Fuel consumed may have to be derived
  - May not be able to differentiate PTO/boom time from ‘unproductive’ idle time - may require installation of additional sensors for PTO/boom time

- Allow for extra time to validate each vehicle’s hardware install
  - Incorrect wiring may cause major discrepancies in data
Key Learnings (cont.)

Process

- Operational awareness is important to take advantage of telematics
  - A good understanding of where vehicles are used, who is using them, and their vocation will go a long way in getting started
  - Vehicle procurement process needs to be flexible to incorporate valuable information from telematics

People

- Change management with vehicle operators should be handled before the hardware installs
  - Clearly communicate program objectives beforehand, so operators don’t feel pressured because data points like speeding, idle time, location, etc. will be available to management
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Questions?
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