Fleet Management (FM)

Overview

Automated Fleet Management solutions to connect vehicles and monitor driver activities, allowing managers to gain an unprecedented level of insight into fleet performance and driver behavior. This enables them to know where vehicles and drivers are at all times, identify potential problems much sooner and mitigate risks before they become larger issues that can jeopardize client satisfaction, impact driver safety or increase costs.

Applicable Industries

- Automotive
- Heavy Vehicle
- Equipment & Machinery

Applicable Functions

- Logistics
- Maintenance
- Procurement & Sourcing

Case Studies

Ride-Sharing Service for One of the Largest Car Manufacturers

A youth transportation service was developed and launched for a local community car-sharing service leveraging Sirqul's platform and technology.

IoT Based Asset Tracking System

The existing system used by the customer could only track a few thousand assets and was able to generate only a few standard set of reports.

As the number of assets tracked grew exponentially, the ...

NB-IoT Boosts Smart Bike Sharing

Ofo Bike sharing company wanted to improve its user experience by providing seamless network connectivity to its users where they can locate bikes and pedal away quickly exactly when and where they ne ...

Market Size

Estimate A	$8.0 billion (2015, Global, FM), $22.5 billion (2020) Source: Markets and Markets Details: http://www.marketsandmarkets.com/Market-Reports/fleet-management-systems-market-1020.html
Estimate B	$11.7 billion (2023, Global, FM) Source: Machina Research Details: http://network-control.com/2015/10/the-emerging-need-for-iot-internet-of-things-expense-management/
Estimate C	$10.9 billion (2013, Global, FM), $30.5 billion (2018) Source: Markets and Markets

Details: http://www.machinetomachinemagazine.com/2013/08/19/fleet-management-market-worth-30-45-billion-by-2018/

User Viewpoint

Business Value

How does this use case impact an organization's performance?

Fleet Management (FM) is an early IoT application area, particularly the tracking of vehicles and goods. FM is poised for sustained growth due to the need for differentiated performance in consolidating markets. Developers are responding with highly integrated solutions used for in-vehicle tracking and enabling more competitive, real-time services provided in the field. As technology becomes more agile at collecting, sharing and acting on real-time information, the scope of fleet management has evolved in step to improve efficiencies, increase safety, reduce maintenance cost and improve customer service.

Higher efficiency and monitoring capabilities over assets, less environmental damage by lowering the time drivers spend on the road. Also OT CAPEX reduction, OPEX reduction and benefits for environmental protection.

Key Performance Indicators

How is the success of the system measured for users and for the business?

Costs per mile, idle time percentage, costs per case delivered, costs per delivery, on-time delivery rate, accident frequency, maintenance facility audit scores.

System Capabilities & Requirements

What are the typical capabilities in this use case?

Increasing efficiency through IoT solutions enhancing the fleet management. Real-time data and algorithms allow to take the most efficient routes and measures.

Performance Requirements: High uptime and connection security for reliable data collection and real-time analytics.

Technology Viewpoint

Sensors

What sensors are typically used to provide data into the IoT system, and which factors define their deployment?

Location tracking sensors, vehicle remote control and disabling systems. Sensors for identifying fuel level/status, driver identification, and collision prevention system.

Analytics

What types of analysis are typically used to transform data into actionable information?

Analytics of best route based on location and traffic information, vehicle condition, operation and cost prediction.

Cybersecurity

What factors define the trustworthiness of the solution?

Vehicles as moving objects in different locations can be tampered with. Tracking information needs to be securely transmitted.

Cloud & Edge Platforms

What factors define the cloud and edge platforms used to integrate the solution?

Edge devices integrated into the vehicles combined with an uplink to cloud servers for data storage.

Connectivity

What factors define the connectivity solutions used to provide both device-to-device and device-to-cloud communication?

Latency requirements.

User Interface

What factors define the interfaces available to the system users?

Management Interfaces: these interfaces control the business management functions such as custom branding of the portal, vehicle information such as registration, servicing, administration of users/privileges through the DATA aggregation layer. This includes administrator management, vehicle information, and custom branding.

GPS device Interfaces: these interfaces do metering based on how much is consumed and alerts predefined by the customers in order to alert them about their fuel consumption, driver identification, geo-fencing.

Data Viewpoint

Data Sources

How is data obtained by the system?

IoT sensors and tracking devices reporting about location and condition of the vehicle.

Data Types

What data points are typically collected by the system?

Management data: Vehicle management data includes, but is not limited to types, quantities, locations, and ages of vehicles; maintenance costs; operations costs; and vehicle use.

Accounting data: Vehicle accounting data includes, but is not limited to parts, materials, and fuel inventory accounting; vehicle cost accounting; and vehicle asset accounting.

Shared data: The primary types of data that flow between the VMF and servicing Postal Data Center (PDC) are: a. Labor hours from Form 4543, Vehicle Maintenance Work Order. b. Purchase of inventory. c. Issuance of parts, materials, fuel, and oil. d. A physical inventory of parts, fuel, and oil. e. Contract and local purchases of parts, fuel, and services. f. Vehicle use.

Data Requirements

What other requirements define data behavior?

Location data must be available in real-time to be able to adapt the calculated best route to changing conditions.

Implementation Viewpoint

Business & Organizational Challenges

What business challenges could impact deployment?

Cost-Reduction Initiatives:

The call to reduce costs typically comes from the very top of the business hierarchy and applies to every department. When this responsibility falls on the shoulders of the fleet manager, he or she is faced with a myriad of variables in budgeting and forecasting.

For example, driver reimbursement, tensions with procurement created by resource sharing, and lifecycle costing are all affected by external market factors, further

challenging fleet managers looking to cut down on costs. Reducing costs also involves managing unexpected expenses, like vehicle maintenance, which cannot be directly controlled. Again, skill in forecasting becomes imperative.

Fuel Price Volatility: A major factor in the effectiveness of any cost-reduction strategy for fleet managers is the volatility of fuel prices. Fuel prices are difficult to forecast, and as a result, difficult to budget for. Creating an effective cost-management strategy, then successfully executing it as planned, has become incredibly difficult.

Source: (chrwtrucks.com)

IoT ONE Use Case

Accelerating the Industrial Internet of Things

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