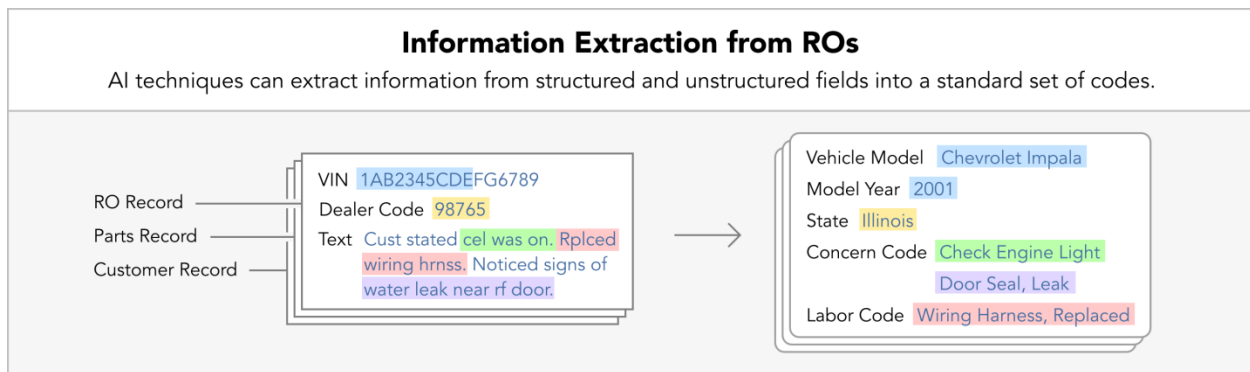# Just Add Data!

Revenue Opportunities with Service Records

Fixed operations obtain the highest profits, and with vehicle sales headed for uncertain times, those profits are likely to become increasingly important. And data-driven software is creating new profit opportunities for fixed ops.

A great revenue opportunity is to leverage fixed ops service data already available at dealerships. In fact, the data is generated and usually owned by dealerships. And compared to aftermarket or independent repair shops, the dealer service data is of much better quality. This places dealerships in a strong position to take advantage of the data-driven technologies now being used for automotive services.

Information Extraction from ROs

AI techniques can extract information from structured and unstructured fields into a standard set of codes.
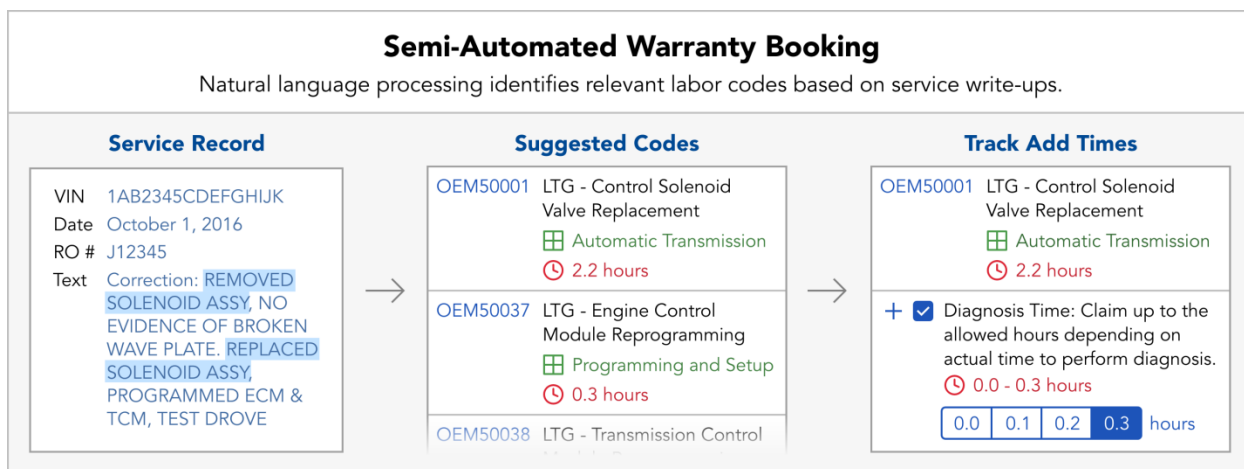
To illustrate the value of dealer service data, consider a wiring harness replacement in which the repair write-up mentions a water leak. Although the labor ops may only indicate wiring harness replacement, the presence of a water leak is important information. This information makes the service data useful for diagnosing future repairs, and also indicates issues to check in similar vehicles. A water leak may suggest the need to check and replace door or window seals, even though that service activity may not have been performed in the particular service instance. These additional repairs are often candidates for service marketing to the customer.
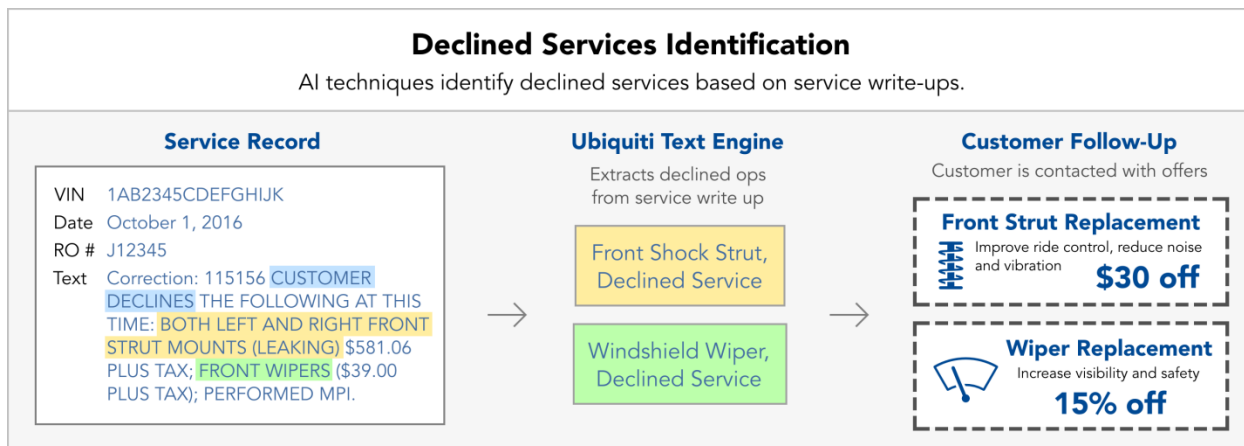
The above example illustrates how detailed information extracted from service records helps with inspection, marketing and diagnostics. There is value in extracting the details from individual records. Extracted information is sometimes even more useful when aggregated over many service instances since, for certain "big data" applications, the aggregations overcome various inaccuracies present in the individual records.

The example also makes clear the importance of using the service advisor and technician write-ups, which are excellent sources of valuable information. Although there are various so-called *structured* data fields, such as parts, labor ops, and other vehicle-specific items, it is the unvarnished write-up on a service instance that is most useful. Extracting such information, be it by manual reading or appropriate technology, is key to utilizing all the valuable information in fixed ops service records.
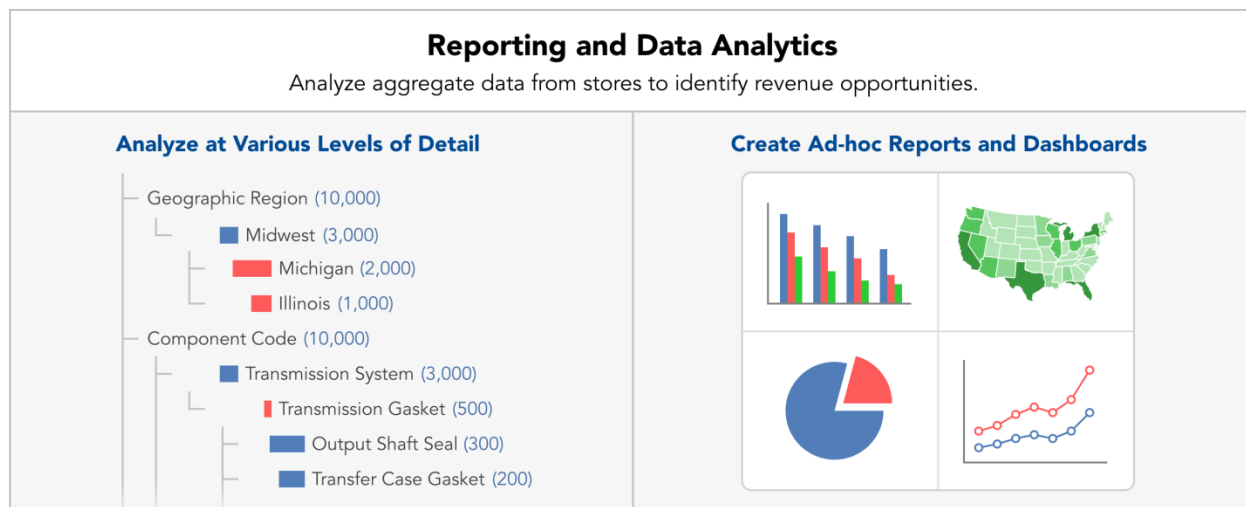
Overview examples of fixed ops applications that do NOT need "Big Data"

Semi-Automated Warranty Booking
Natural language processing identifies relevant labor codes based on service write-ups.

Warranty Booking and Administration: Service records for warranty reimbursement need to be binned into appropriate categories, such as labor codes. Such warranty work can be near-automated with the use of modern computer natural language processing augmented with parts-to-codes mappings. This approach, called *computer-assisted-coding* in other areas such as healthcare, helps to reduce rejections, increase accuracy, and increase overall automotive warranty revenue by 10% or more over the usual manual methods.

Declined Services Identification
AI techniques identify declined services based on service write-ups.

Declined Services Identification: Information extracted from service write-ups helps with *Declined Service Identification* (DSI) for both explicit and inferred DSI cases. Explicit DSI uses assigned DSI codes, or more generally, identifies specific wording used in the write-ups that a customer has declined a specific service recommendation. Inferred DSI compares the service issues mentioned in a write-up with the service work actually performed, resulting in many more DSI cases by figuring out services needed but not performed. These data-driven techniques are seen to increase DSI in the range of 10% to 20%, depending on the extent to which dealer workflows successfully capture explicit DSI. By following up appropriately with the customer, DSI provides a great opportunity for increasing service revenue.

Reporting and Data Analytics
Analyze aggregate data from stores to identify revenue opportunities.

Analyze at Various Levels of Detail

- Geographic Region (10,000)
  - Midwest (3,000)
    - Michigan (2,000)
    - Illinois (1,000)
- Component Code (10,000)
  - Transmission System (3,000)
    - Transmission Gasket (500)
    - Output Shaft Seal (300)
    - Transfer Case Gasket (200)
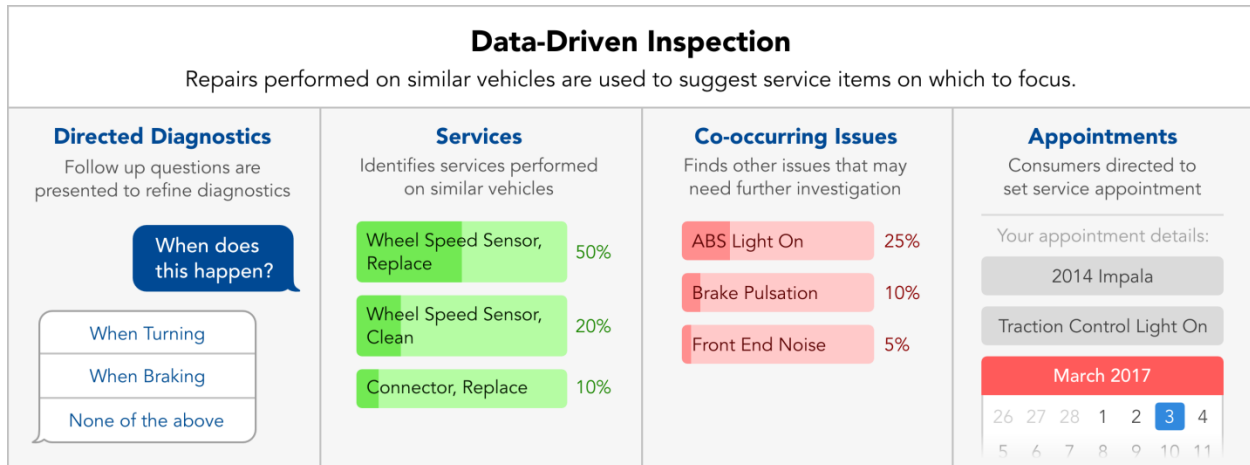
Create Ad-hoc Reports and Dashboards

Reporting and Data Analytics: Monitoring and reporting with analytics on small or large datasets may be used to identify the fixed ops that are underperforming and also those that offer the greatest revenue opportunity. If multiple dealers share summary data, without sharing specific customer identifiable information, useful comparisons may be done to benchmark among peer dealerships.
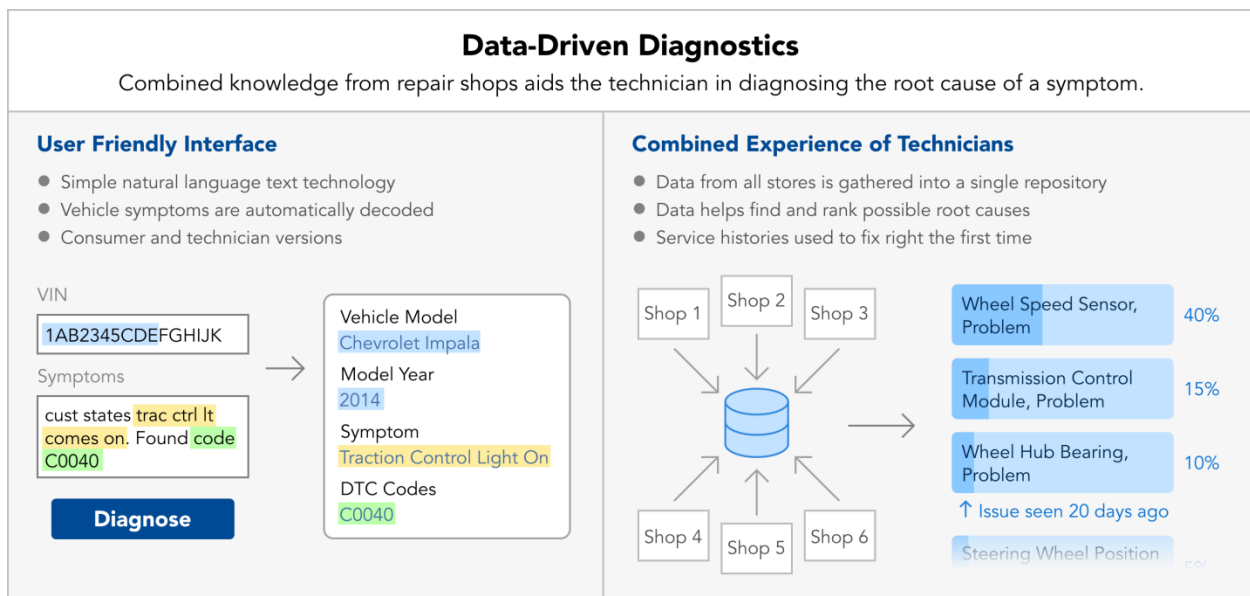
Overview examples of fixed ops applications that leverage "Big Data"

If sufficient quantities of data are available, several very useful fixed ops applications become feasible. These applications leverage the combined experience and wisdom of multiple service advisors and technicians, as represented in the available service data, across different geographies and times. Interestingly, contrary to common wisdom, very large datasets are not needed if sufficient detail can be extracted from service records as discussed above: The higher data quality reduces the need for larger data quantity. Maybe we should refer to it as Not so Big Data!

Service Price Guide: Another example of using service data is to develop a *service price guide* (SPG) with standard statistical queries to generate the needed prices and their ranges for all fixed ops service items. This is possible because the service items and their pricing are usually already available in each service record, and the SPG aggregates that information statistically. In fact, such data-driven SPGs can do much more than simply provide pricing. They can offer guidance on the appropriate price ranges based on geographic regions, customer demographics, and other information available in the service data.

Data-Driven Inspection

Repairs performed on similar vehicles are used to suggest service items on which to focus.

Directed Diagnostics	Services	Co-occurring Issues	Appointments
Follow up questions are presented to refine diagnostics	Identifies services performed on similar vehicles	Finds other issues that may need further investigation	Consumers directed to set service appointment

Directed Diagnostics

When does this happen?

- When Turning
- When Braking
- None of the above

Services

Wheel Speed Sensor, Replace	50%
Wheel Speed Sensor, Clean	20%
Connector, Replace	10%

Co-occurring Issues

ABS Light On	25%
Brake Pulsation	10%
Front End Noise	5%

Appointments

Your appointment details:

2014 Impala

Traction Control Light On

March 2017

| 26	27	28	1	2	3	4
5	6	7	8	9	10	11

Specifying Inspection Items: For the service advisor and technicians, data-driven techniques pinpoint service items on which to focus. These techniques use information such as time-in-service, mileage, and past repairs for similar vehicles to identify potential services needed on a per-VIN basis, and not just for a general class of vehicles.

Data-Driven Diagnostics

Combined knowledge from repair shops aids the technician in diagnosing the root cause of a symptom.

User Friendly Interface

- Simple natural language text technology
- Vehicle symptoms are automatically decoded
- Consumer and technician versions

VIN

1AB2345CDEFGHIJK

Symptoms

cust states trac ctrl lt comes on. Found code C0040

Diagnose

→

Vehicle Model
Chevrolet Impala
Model Year
2014
Symptom
Traction Control Light On
DTC Codes
C0040

Combined Experience of Technicians

- Data from all stores is gathered into a single repository
- Data helps find and rank possible root causes
- Service histories used to fix right the first time

Shop 1   Shop 2   Shop 3

Shop 4   Shop 5   Shop 6

→

Wheel Speed Sensor, Problem	40%
Transmission Control Module, Problem	15%
Wheel Hub Bearing, Problem	10%

↑ Issue seen 20 days ago

Steering Wheel Position   5%

Vehicle Diagnostics: Service data can also be used to diagnose the likely causes for various vehicle symptoms, and then suggest the most appropriate repairs. And using such data has the advantage of facilitating automatic adjustments to help fix right the first time (by learning from repairs that did not work in other instances). In other words, the system automatically learns from new service data that is generated over time and added to the existing set of data. Note also that the technician write-ups help deal correctly with misleading sensor readings, such as when a steering-column issue, say, activates an ABS sensor light.

Customer Relationship Management: Service data is also useful in *customer relationship management* (CRM). For instance, besides typical service reminders, regular vehicle health reports are sent to customers based on likely issues that they should consider specific to their vehicles. Techniques using service data are used to provide consistent communications before, during, and after dealer service visits. Such consistency engenders greater trust, and results in customers being more likely to have dealer-recommended services performed.
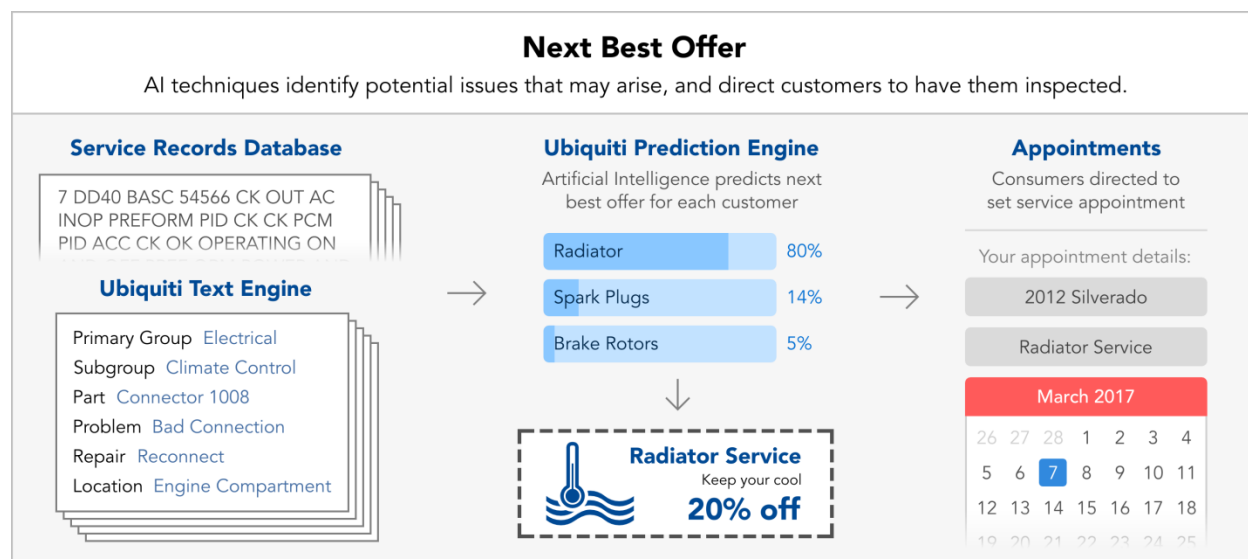
Service Leads: An intriguing near-future possibility is a service leads business, whereby limited diagnostics are made available to customers. Such superficial diagnostics show the likely high-level diagnoses and repairs based on customer input symptoms. Service leads to dealers would be shown in conjunction with the results. These service leads, having been generated by better quality service data available at dealerships, will likely be very accurate and relevant. And thereby, service customers who come to their dealership via such leads are likely to have greater trust and retention.

The Plan: Dealerships should embrace the big possibilities enabled by their service data. In fact, depending on the dealership, some of these technologies may already be in use, since they are built into software used for and by dealers. Dealerships should request that their software providers, such as the DMS, service marketers, advertisers etc., start leveraging their available service records. **Just Add Data!**

(Ubiquiti does not sell directly to dealerships, and our technologies are white-labeled by our partners who interact with dealers directly. Our article here is intended solely for informational purposes.)

Images for service diagnostics, leads, and setting appointments on a mobile device.