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Health-Ready Components / IVHM – Session IIM416-1
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- Current Data
- Freeze Frame Data
- Diagnostic Trouble Codes
- Clear Diagnostic
- Pending Diagnostic Trouble Codes
- Test Results (System Monitoring)
JSON Standard

• Is an open-standard format that uses human readable text to transmit data objects consisting of attribute-value pairs

• JSON is light-weighted which means it’s easier to get and load data quickly

• An Alternative to XML Format

• Primarily used to for sending data over a network connection
Diagnostics vs Prognostics

a distinct symptom or characteristic

an advance indication or portent of a future event.
Problem

Military personnel perform too much maintenance and don’t have enough parts.

**Paper** still used to collect hand written information which involves a lot of human error during data entry.

**No easy way exist** to develop artificial intelligent systems & machine learning algorithms for predictive maintenance.
Solution

A digital platform providing documentation of an individual system’s machine data, and maintenance information enabling predictive maintenance.
The System Health Record (SHR) platform sits on any cloud architecture consuming any kind of structured or unstructured data.

Provides the framework for data collection, integration exchange, and interoperability across levels of maintenance.

Uses Engineering data to provide “current state” of diagnostics and eventually prognostic apps.

Enables machine learning model for operational BIT data, maintenance test results, and maintenance actions.

JSON format (RFC7159 JavaScript Object Notation. (JSON) Data Interchange Format)
OUR PROCESS IS EASY

Collect all necessary data for CBM+ and predictive maintenance.

Characterize

Determine what data can be used for CBM+ and Predictive maintenance applications.

Cloud

Vizulize data to understand how to implement AI systems & ML algorithms.
Maintenance Data Flow
Uniron your muck ride is a lawn mower (not disassembled), your engine probably has more than one cylinder. Here's a 4-cylinder setup.

**RPM**
RPM means Revolutions Per Minute. If your engine is running at 3500 RPM, that is 3500 full crankshaft revolutions per second.

**Crankshaft**
The crankshaft carries piston power out of the engine and eventually to the wheels. It has counterweights to produce a balanced spin.

**Timing belt (or chain)**
A timing belt or chain synchronizes the rotation of the crankshaft and the camshaft(s) so that the engine's valves open and close at the proper time: during each cylinder's intake and exhaust stroke. If it breaks, the piston from striking the valves.

A timing belt (or chain) is a rubber belt that usually features teeth on the inside surfaces, while a timing chain is a metal roller chain.

**Other engine configurations**

- **V-TWIN**
  A two-cylinder arrangement. Many Harley-Davidson motorcyclists use this configuration, for instance.

- **FLAT FOUR**
  Four cylinders arranged in a flat, opposing configuration. Found in classic VW Beatles and various current Subaru models.

- **V-6**
  Six opposing cylinders. Well suited for sports cars or mid-size cars.

- **V-8**
  Eight opposing cylinders. Generally suited for muscle cars or applications or heavy-duty engines.