CLAIMS

1. A computer-implemented system architecture for automated vehicle diagnostics relating to a thermal system of a vehicle, the system comprising:

an input/output device adapted to receive a malfunction indication relating to servicing of said thermal system of the vehicle;

a processor;

a storage device for storing a set of predefined multi-tiered service options;

a system bus for coupling each of said input/output device, said processor, and said storage device;

wherein said storage device stores computer readable instructions that when executed on said processor perform the functionality of:

a diagnostic module for determining a diagnostic condition associated with the vehicle, based on information relating to the vehicle and whether the malfunction indication relates to servicing the thermal system of said vehicle;

a service type determination module for selecting, based at least in part on statistical data relating to prior malfunctions associated with the vehicle and said diagnostic condition, one of said service options associated with AC systems for said vehicle; and

a schedule module for scheduling said selected service option for said vehicle.

2. The system architecture of claim 1, further comprising:

a statistical module for:

receiving data to track vehicle performance over time, wherein said data includes at least one of: (i) raw sensor data from the vehicle; (ii) metadata or determinations based at least in part on sensor data from the vehicle; and (iii) user indications; and

providing a course of action to resolve AC system issues, based on a statistical understanding of typical problems per vehicle type and usage profile.

3. The system architecture of claim 2, wherein said statistical module is implemented using at least one machine learning algorithm or heuristic technology.

4. The system architecture of either one of claim 2 or claim 3, wherein said statistical module receives state information associated with the vehicle to determine air-conditioning (AC) system conditions associated with the vehicle over time.

5. The system architecture of any one of claims 2 to 4, further comprising:
a database storing one or more vehicle behaviors mapped to service issues; wherein said statistical module is capable of accessing said database.

6. The system architecture of any one of claims 1 to 5, wherein said diagnostic module determines the diagnostic condition based on vehicle information that includes at least one of make, model, and year.

7. The system architecture of any one of claims 1 to 6, wherein said diagnostic module determines the diagnostic condition based on at least one vehicle condition indicator.

8. The system architecture of claim 7, wherein said vehicle condition indicators include at least one of a fuel efficiency indicator, a temperature indicator, and a battery charge indicator.

9. The system architecture of any one of claims 1 to 8, wherein said schedule module determines a service location based on said selected service option, before scheduling said selected service option for said vehicle.

10. The system architecture of any one of claims 1 to 9, further comprising:
a vehicle location module for receiving location information associated with the vehicle via GPS.

11. The system architecture of claim 10, wherein the vehicle location module tracks the vehicle based on the received location information and sends instructions of a closest service location.

12. The system architecture of any one of claims 1 to 11, further comprising:

an inventory/spare parts module for determining inventory of parts for AC systems servicing.

13. The system architecture of any one of claims 1 to 12, wherein determining said diagnostic condition is further based on statistical data relating to at least one of age, brand, mileage, and associated history of said vehicle.

14. The system architecture according to claim 1, wherein said system architecture is embodied as one of:

(i) a central computer server that receives inputs from one or more vehicle; and

(ii) part of the vehicle.

15. The system architecture of any one of claims 1 to 14, wherein the thermal system is associated with an AC system architecture of an internal combustion engine vehicle.

16. The system architecture of any one of claims 1 to 14 , wherein the thermal system is associated with a heat pump of an electric vehicle.

17. The system architecture of claim 1 , wherein the malfunction indicator is based on a user interface.

18. The system architecture of claim 17, wherein the user interface includes at least one of a determination of: an indication of warm air, an indication of cold air at a reduced rate, or an indication of defogging function improperly working.

19. The system architecture of any one of claims 1 to 18, wherein said computer readable instructions when executed on said processor perform the further functionality of:

sending a diagnostic report of the thermal system regarding the malfunction indication.

20. The system architecture of any one of claims 1 to 19, wherein said set of multi-tier service options include three service options having varying degrees of equipment and capabilities to perform needed maintenance works, diagnostics, and data reading.