

A data-driven approach to support the remanufacturing of automotive parts from end-of-life vehicles

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Remanufacturing is an efficient strategy to close-the-loop on automotive parts by extending their useful lives. The ability to exploit the economic and environmental benefits of remanufacturing practices depends, among other factors, on the condition of the components at the end-of-life (EOL) of the vehicle.

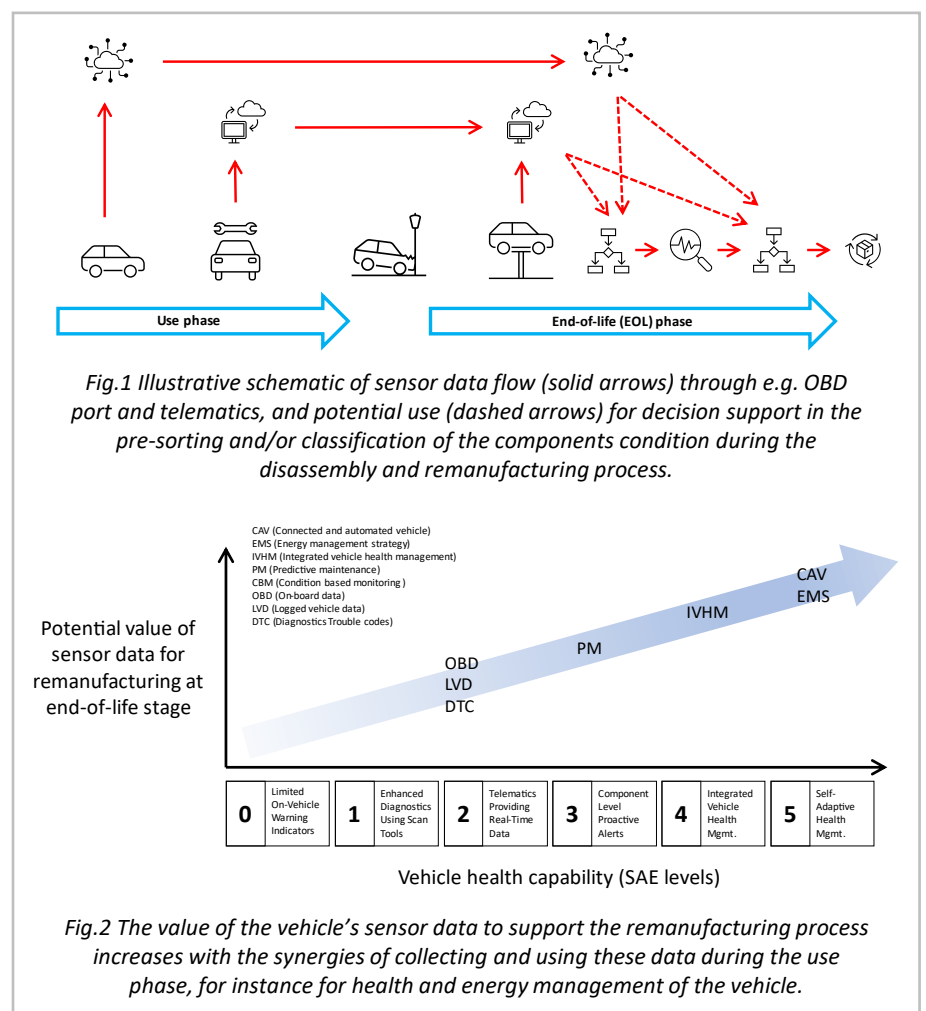
In recent years, there has been an increasing interest to collect and process sensor data from across the vehicle's lifecycle for prognostics and health management purposes. However, our study indicates that the potential to further utilize this data at the end-of-life of the vehicle has so far been largely overlooked. The aim of this study is to address this gap by investigating how on-board sensor data can be used to support the process of inspection and condition assessment of parts from EOL vehicles.

Main highlights from pre-study based on literature review and interviews with industrial partners in the project:

- The use of sensor data from across the vehicle's lifecycle at the end-of-life of the vehicle has been largely overlooked in previous research.
- A lifecycle approach of sensor data and synergies with other key vehicle health capability concepts, such as integrated vehicle health management, has a good potential to support enhanced remanufacturing of automotive parts

Identified potential challenges are, for instance:

- Complexity of the automotive vehicle's systems
- Complexity of the associated usage environment
- Possible mismatch between value components in use-phase (predictive maintenance) and EOL-phase (remanufacturing)
- Limited capacity for on-board data storage & management
- Data format (machine learning methods rely heavily on careful data cleaning and feature extraction)
- Data ownership and data infrastructure



This study is part of the project **SE:Kond2Life – Ecosystem for reuse of automotive components**

The aim of the SE:Kond2Life project is to demonstrate how an ecosystem of circular value chains can be realized, in combination with a business logic for sustainable reuse of automotive components over multiple product life cycles.

Project partners: RISE Research Institutes of Sweden, Linköping University, Swerim, ECRIS, Jönköpings bildemontering, Volvo Cars, Prestando Holding, FKG, Bos NDT Solution

More information: <https://www.ri.se/en/what-we-do/projects/sekond2life-ecosystem-for-reuse-of-automotive-components>

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