

AN ARCHITECTURE FOR MATERIAL EFFICIENCY DECISION SUPPORT

Overview

Scarce and valuable resources, including potentially hazardous materials, are increasingly present in end-of-life (EOL) vehicles. When recycling EOL vehicles, recyclers are faced with various decisions regarding material value, disassembly cost, reuse potential and legal compliance.

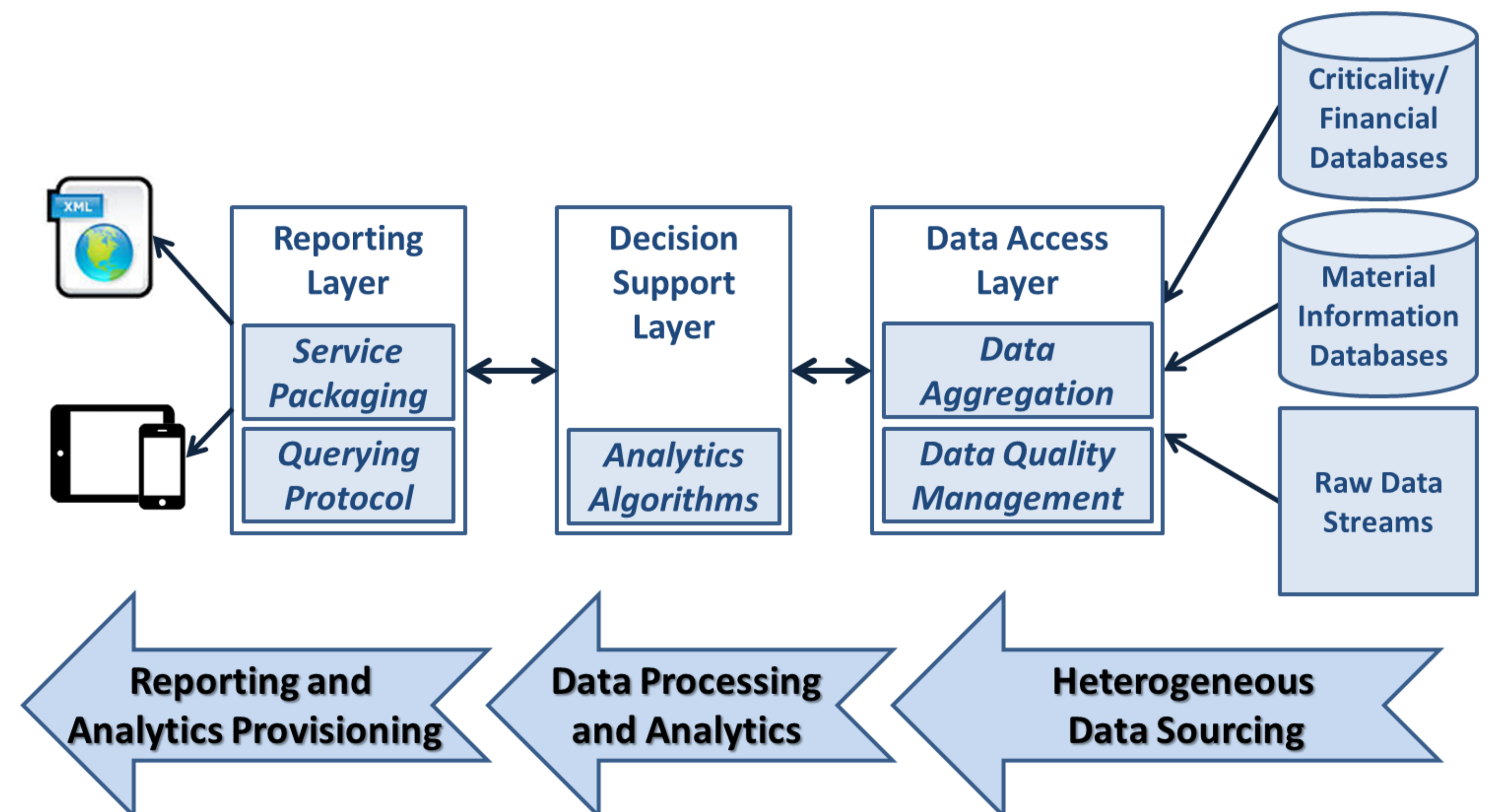
This study investigates the requirements of recyclers when making decisions for recycling to enable closed loop production. Various data sources are aggregated in an architecture to provide multi-faceted decision support. Open issues present in these data sources include the accuracy and completeness of data which necessitates effective data quality management while providing query support in a software tool.



Proposed Architecture

The following decision support architecture is proposed in this study with the following goals:

- Aggregating heterogeneous multiple data sources containing data related to materials and markets
- Providing a concrete data access layer to query the identified data sources while assessing the quality of the data
- Using various analytics algorithms to factor the data contents and quality into a rational report for the identified decision
- To provide a means of reporting on decision related information through a web service that interfaces with external applications



Key Research Questions

The key research questions posed in this study are:

1. What are the key requirements for decision making when recycling automobiles with regards to material value, disassembly cost, reuse potential and legislation compliance?
2. How readily available, complete and accurate are recycling data sources and databases to support decision making?
3. How can the heterogeneous data sources and databases identified be consolidated while providing data quality management to minimise and report on data defects?
4. How can the requirements of the recycling industry be realised using the identified knowledge systems and databases through a software architecture?

Additional Information

Poster presented by:

Clayton Burger

Research Group: Cascade Use
Carl von Ossietzky Universität Oldenburg

[clayton.burger\[at\]uni-Oldenburg.de](mailto:clayton.burger[at]uni-Oldenburg.de)

+49-(0)441-798-2837

Images are copyright of their respective sources:
Header © Alexandra Pehlken
Automobile © LaCozza – Fotolia
Architecture © Clayton Burger

Promoted by



This workshop is supported by
EWE Stiftung **Innovationspool**

