Projektförslag Arise

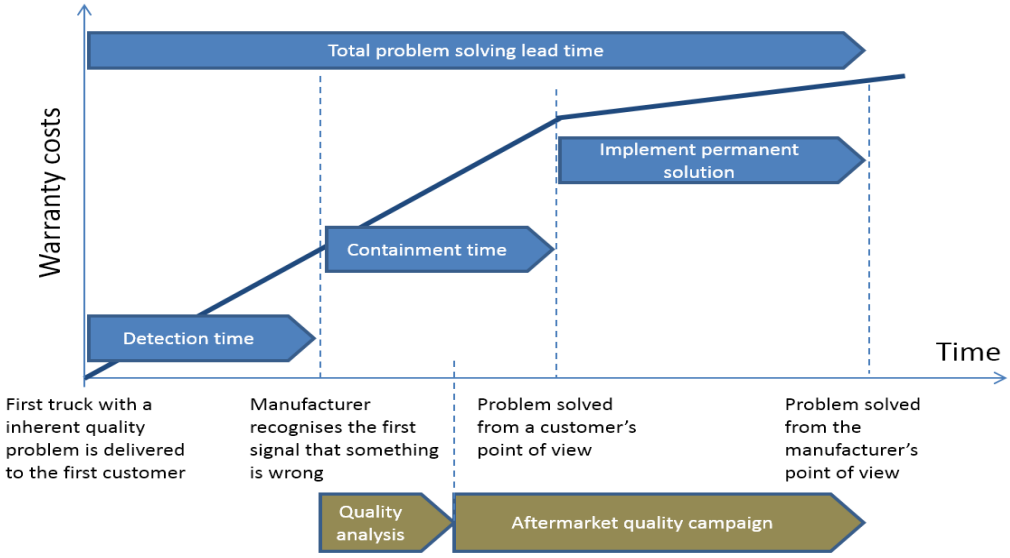
Vinnova FFI, 2016

Rune Prytz, 2016-05-03

Background

- Product quality is the top priority
- We need quicker and more accurate responses
- New technologies can be the solution
  - novel analytics and machine learning algorithms based on telematics data and expert knowledge
  - novel solutions to continuously improve accuracy and level of detail in the data Volvo collects

Targets



- Reduce by 30% the lead time, from quality problem occurring to a solution being designed and deployed
- Increase precision and accuracy of issue detection, allowing for more focused and diverse reaction
- Improve the data that is being collected, by using analytics results to support mechanics filing claims

Research Questions

- Quality issue detection
  - how to do it quickly and reliably in streaming big data?
- Quality issue analysis
  - how to combine data mining and expert's insights?
- Root-cause identification
  - how to bring analytics results back to the workshops?
  - how to improve claims data for the future?

Project results

- Just-in-time decision support based on streaming data
  - early anomaly detection for arising quality problems
  - incremental learning, updated as data is produced and collected
- Collaborative human–machine analysis of patterns
  - semi-automatic pattern recognition, guided by human interaction
- Methods for increasing knowledge reusability
  - transfer learning for improving quality of a new truck model
- Demonstrator
  - Prototype implementation, with real data, after two years

Program Relevance

FFI goals

- A more **sustainable society** through prolonged vehicle life time
- Quality is crucial for **competitiveness** of Swedish automotive cluster
- New solutions rise importance of highly **skilled personnel** in Sweden
- Timely and cheaper transport solutions through **higher dependability**

BADA goals

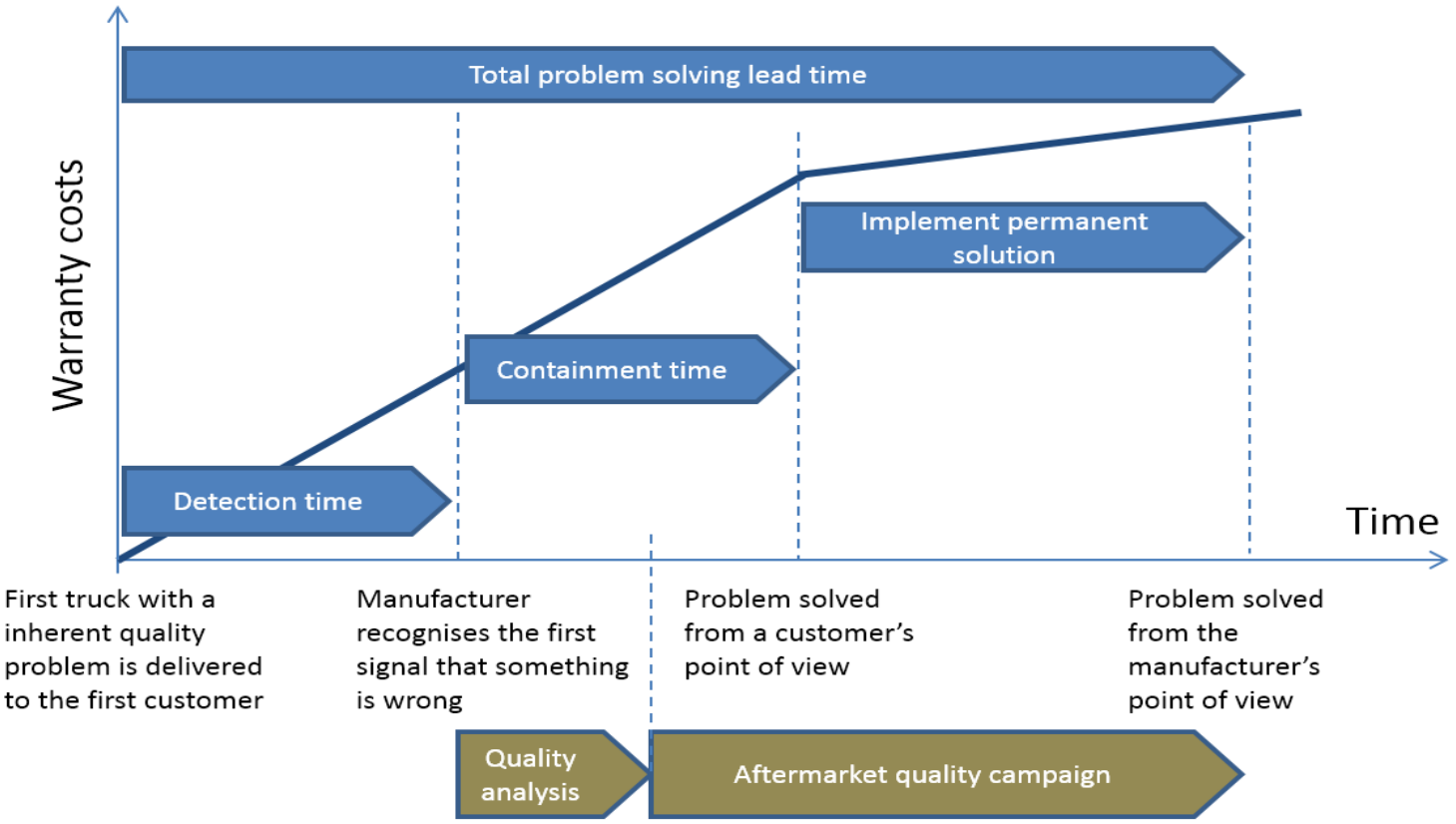
- Show **business benefits** of Big Data: data, algorithms & knowledge
- Quantify **data quality**, methods to improve & evaluate **infrastructure**
- Develop machine learning **algorithms** specific to automotive industry
- Improve modelling, optimization and **decision making** processes

Partners and their contribution

- Volvo contributes with:
  - the analytics platform
  - knowledge of quality analysis
  - data collected on-board
  - data in off-board databases
  - knowledge about truck design
  - business know-how
  - domain understanding

- Halmstad University contributes with:
  - data mining expertise
  - streaming big data competence
  - join human-machine learning
  - state-of-the-art learning algorithms
  - knowledge of data processing
  - creation and evaluation of models
  - access to research networks

Lead time and cost illustration



Tack för att ni lyssnade!

Frågor?