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Answer to the Foreseeable Flood of Diagnostic Data for the Life Cycles of Vehicles

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Introduction

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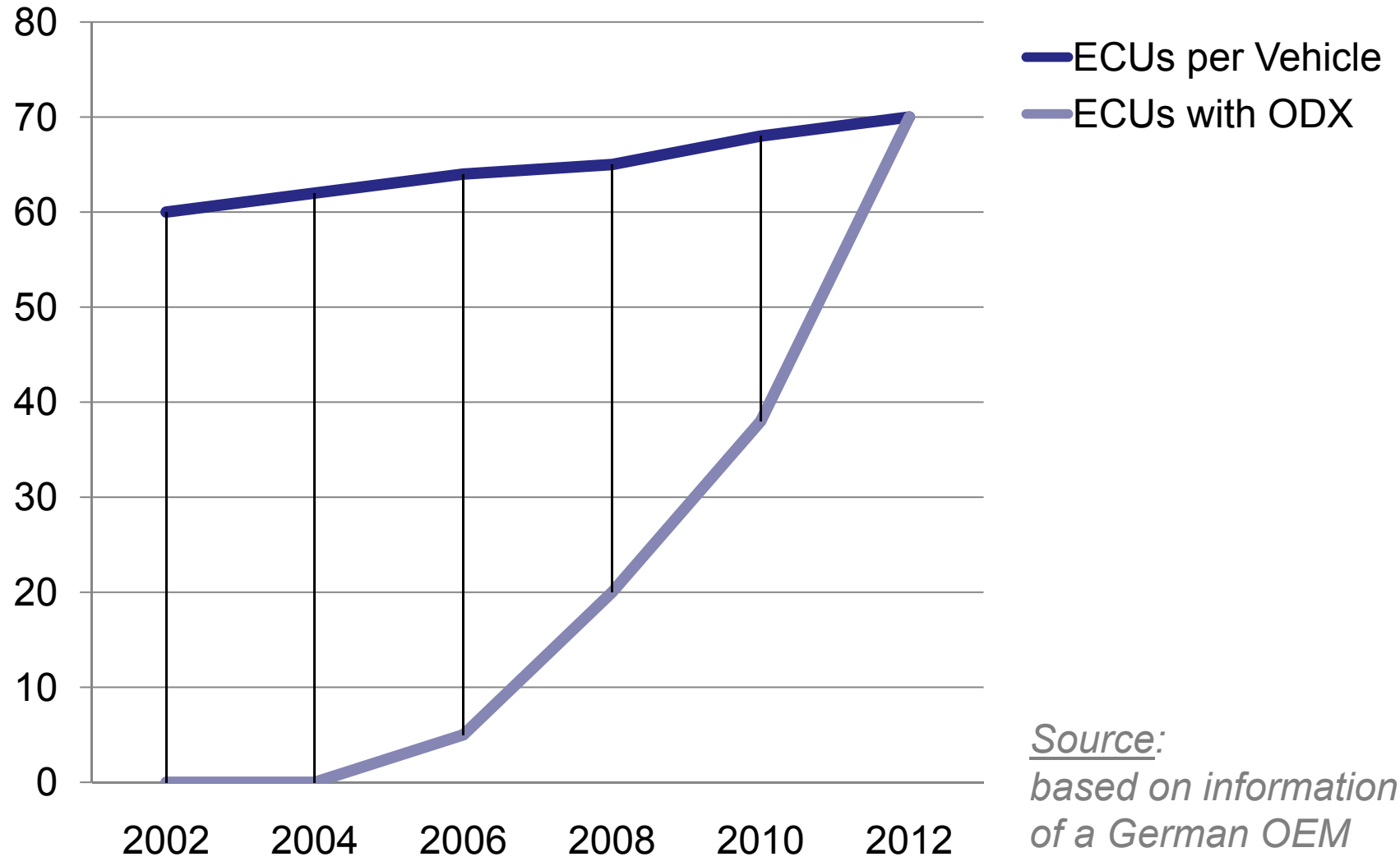
Reasons for Data Growth



Source:
based on information of a German OEM

Main Factor for Data Growth

- Individual Diagnostic Descriptions
  - Diagnostic information is described ECU specific
  - E.g.
    - No generic DTC table valid for the whole vehicle project
    - Detailed description of measurements
- Data-Driven Diagnostic Functionality
  - Diagnostic functionality held outside the ECU and tester implementation
  - E.g.
    - Acuator (Input/Output) Control Services

Life Cycle of Vehicle

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- Increase of Project Size (in MB) for one vehicle with 5 ECUs described in ODX

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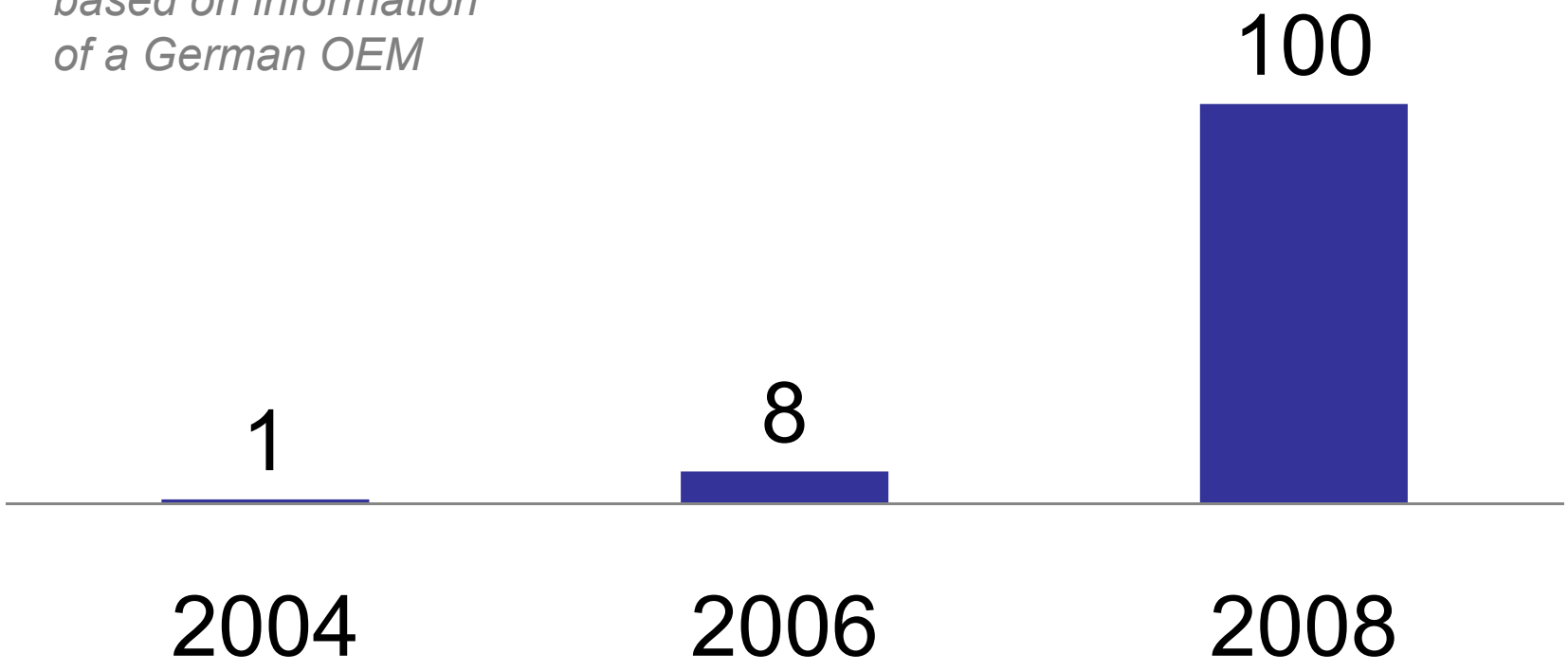

Consequences for the User

- Memory Load and Performance
  - Hardware for diagnostic systems can not be updated (with more memory and faster processors) frequently
  - Increased performance requirements
    - E.g. Parallel communication / flashing
- All Diagnostic Tools are effected!
  - Editors and other tools for development that process ODX data directly
  - Converters to other formats
  - Testers and other diagnostic modules using binary formats

Best Possible ODX Design

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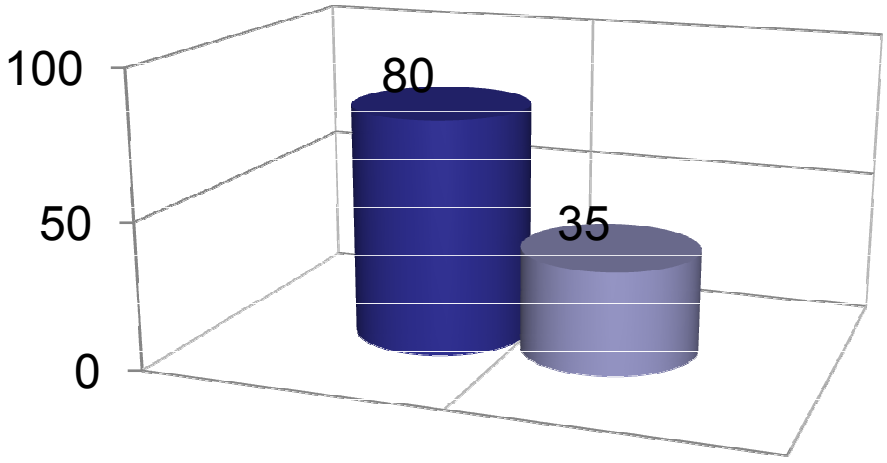
- Reducing Redundancy
  - Using the ODX Object-Oriented approach
  - Considering vehicle's life-cycle within the design
- E.g.
  - VisualODX Optimizer reduces project sizes by >50%



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Handling ODX Data Intelligently

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- For tools processing ODX data directly
  - E.g. Editors, Checker, Formatter, Converters, etc.
- How?
  - Loading only required data (logical links)
  - Using advanced data management technology
- E.g.:

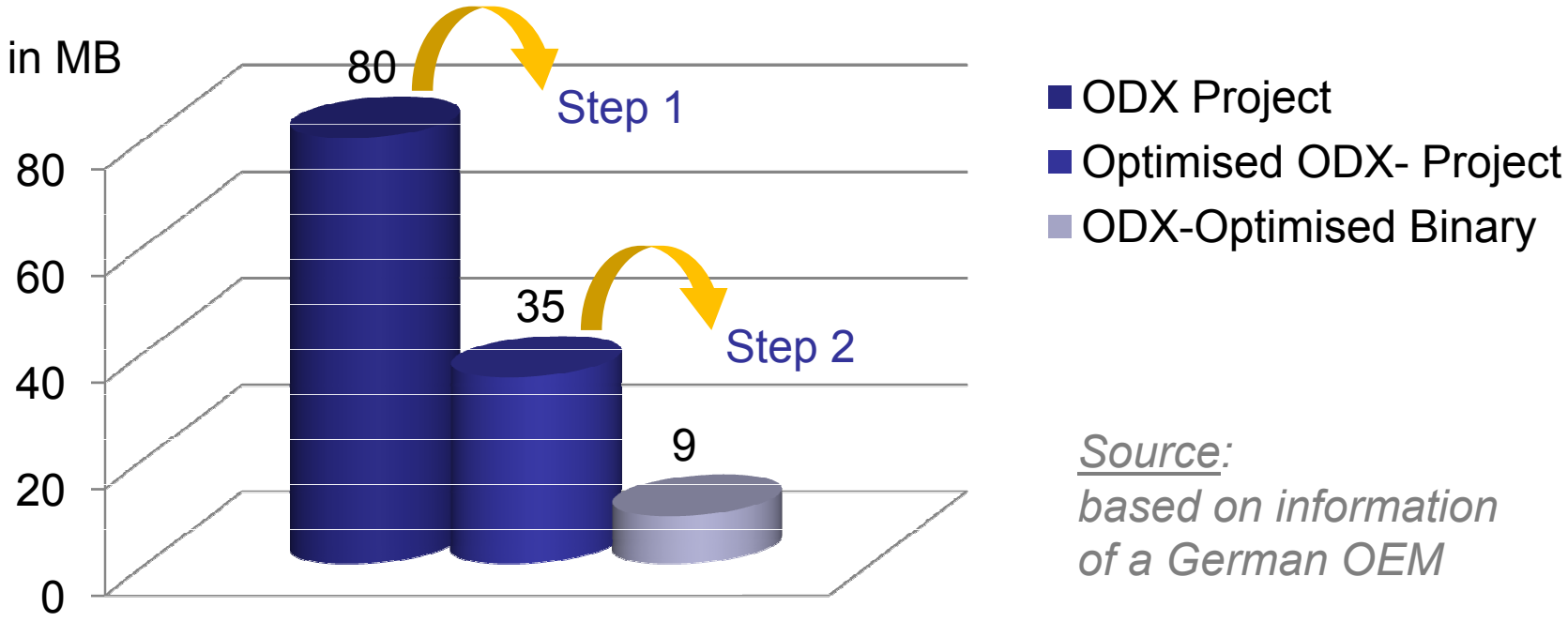
	Common Parser	VisualODX Tools
Project Loading Time	6 :1	
Memory Requirement Factor	12	5

ODX Optimised Binary Format

- For high-performance diagnostic use cases
  - E.g. production and service testers, flash tools
- How?
  - Reducing redundancy
    - Using ODX Object-Oriented approach for the binary format
  - Providing modularity
    - Alowing exchange of individual data objects
    - E.g. comunication parameters
  - Optimising data for execution
    - Eliminating the transformation step between binary data and runtime data objects

Data Reduction Overview

- Step 1:
  - VisualODX Optimizer reduces project sizes by >50%
- Step 2:
  - ODX Data are transformed into ODX-optimised Binary



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Summary

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- The diagnostic data will grow drastically!
- Answer to the Foreseeable Flood of Diagnostic Data for the Life Cycles of Vehicles:
  - ODX Design
  - Intelligent Loading and Processing Mechanisms
  - ODX Optimised Binary Format

Thank you!

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Intelligence in Software

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