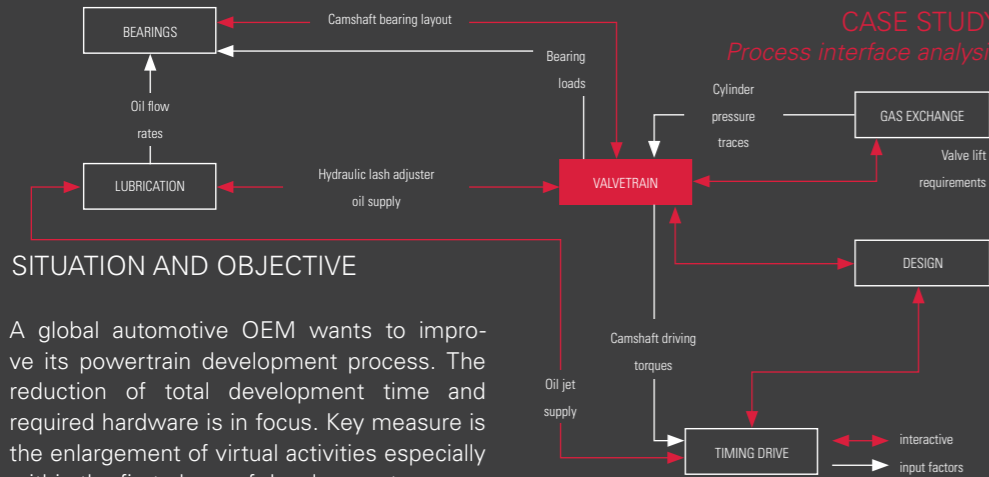


CASE STUDY
Process interface analysis



SITUATION AND OBJECTIVE

A global automotive OEM wants to improve its powertrain development process. The reduction of total development time and required hardware is in focus. Key measure is the enlargement of virtual activities especially within the first phase of development.

- Analysis framework covering eight improvement areas applied
- 40+ managers and experts interviewed during on-site analysis/audit
- 120+ findings documented and evaluated
- CAE-process and model maturities assessed in-depth
- 5 strategic and technical workshops conducted
- Roadmap for "future of virtual development" established

FEV APPROACH

An interdisciplinary FEV expert team has conducted more than 15 interviews with different development teams on-site. Focusing strongly on activities related to virtual development and CAE, 120+ findings within different fields (tool landscape, IT, data management, etc.) were identified. The maturity of CAE-models as well as underlying processes were analyzed in detail, the results were used to derive recommendations focusing on a stronger inclusion of simulation resp. CAE-related activities within the development cycle.

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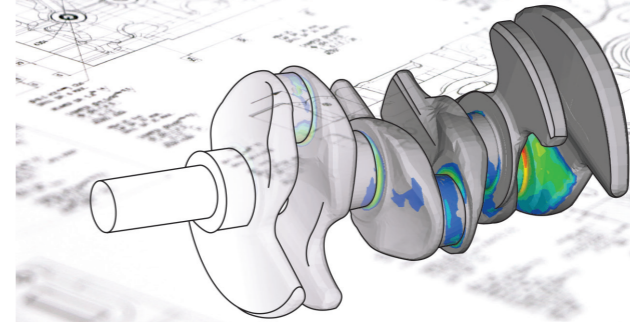


ABOUT FEV CONSULTING

FEV Consulting combines top management consulting expertise with the technical capabilities and know-how of the FEV Group. Our deep industry knowledge enables us to create pragmatic solutions to some of the most pressing and complex issues facing today's enterprises.

Our team consists of experienced strategy consultants with deep industry knowledge and the backing of FEV's extensive technical expertise to provide solutions that are both practical and sustainable.

**VIRTUAL POWERTRAIN DEVELOPMENT
ASSESSMENT AND BENCHMARKING**



Reducing time-to-market with CAE

www.fev-consulting.com



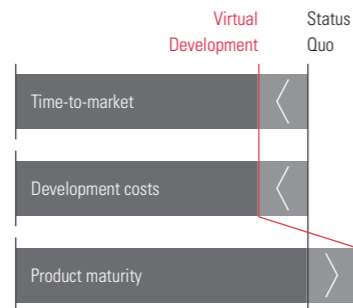
REDUCTION OF TIME-TO-MARKET AS A KEY SUCCESS DRIVER

Today's customers demand regular updates of existing or entirely new developed products. The resulting challenge for the manufacturers are shortened development cycles, combined with a high pressure on development costs and product maturity.

The stronger inclusion of virtual development activities especially at early stages of the development process helps to reduce the overall development time, but also lowers costs e.g. due to a reduction of required hardware. CAE also helps to accelerate the ramp-up of product maturity, the essential for market acceptance.

» BENEFITS FOR YOUR BUSINESS

- Assessment and ramp-up of virtual development capabilities
- Reduced time-to-market of new and revised products
- Reduction of hardware within the development cycle



VIRTUAL POWERTRAIN DEVELOPMENT Reducing time-to-market with CAE



#1 External Network

Successful R&D organizations have established an external network of R&D partners like universities, suppliers or service providers forming the "extended enterprise". FEV analyzes the structure and quality of these relationships to external partners.

#2 Human Resources

Key of all development activities are the people who do the job. FEV conducts analyses (number of employees, qualification, etc.) focusing on a clear description of the status-quo.

#3 Organization & Structure

The organization within different development teams often shows characteristics based on the historical developments. FEV analyzes and benchmarks different approaches and conducts recommendations.

#4 Processes

Well-defined working processes are key for a successful virtual development. FEV examines in- and output relations and benchmarks the processes as part of an in-depth analysis.

#5 Tool Landscape

The predictability of applied CAE models and the underlying CAE tool landscape is basis for the virtual development of powertrains. FEV applies its standardized CAE model maturity assessment framework and benchmarks the results to best-practices competitors.

#6 Hardware & Equipment

State-of-the-art hard- and software is an underlying requirement for successful virtual development. FEV examines the status-quo and derives recommendations

#7 Data Management

The handling of simulation data has become one of the major challenges for today's development teams. FEV discusses pursued approaches and helps to manage the massive amount and variety of data.

#8 Knowledge Management

Knowledge increases with each development project and is often not accessible for the entire development organization. FEV analyzes applied knowledge management tools and discusses alternative solutions