



Forum Motion & Drives

Challenges for SMEs in the bearing industry

Christian Kunze

Deputy Managing Director



The future of drivetrain production

- ❖ Innovation trends in Germany and Europe
- ❖ Challenges in drivetrain and bearing industry
 - Data driven business models
 - Reduced time-to-market
 - Data transparent products
- ❖ Instruments and tools to prepare change
 - VDMA Future Business
 - Pre-Competitive research
 - Workbench
 - REXS
- ❖ Summary and outlook

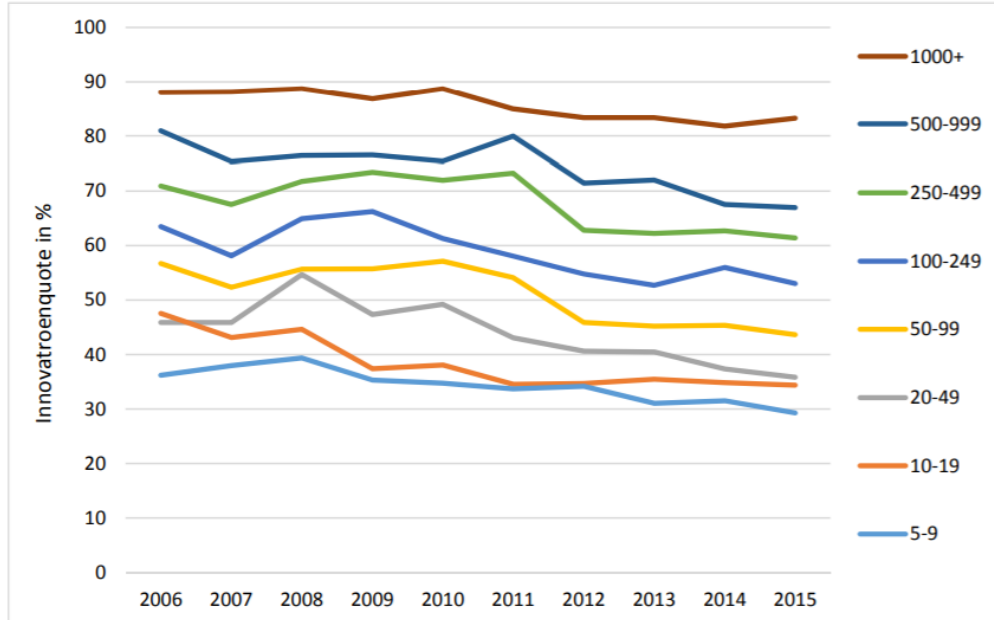
The future of drivetrain production

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Innovation reality

Abbildung 10: Innovatorenquote 2006 bis 2015 nach Größenklassen in Deutschland (Basis nationale Statistik)



Unternehmen ab 5 Beschäftigte.

Quelle: ZEW: Mannheimer Innovationspanel; Berechnungen des ZEW.

Innovation decreases by company size

Innovation is concentrated on fewer industry sectors

Innovation is dependend on:

- Budget
- Human Ressources
- Understanding future business

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Data driven business models

50% OF REVENUE BY DIGITAL SERVICES IS REALISTIC... BUT NOT BEFORE 2050

Automotive / Mobility-related Revenues
[in Billion Dollar]



Car related revenues will decline,
digital services will overcompensate

Völlig neue Dienstleistungen

**Audi-Geheimplan: Digitalgeschäft soll 2020
Hälfte des Umsatzes ausmachen**

Gabriel Pankow am 04. Februar 2016 um 12:17 Uhr

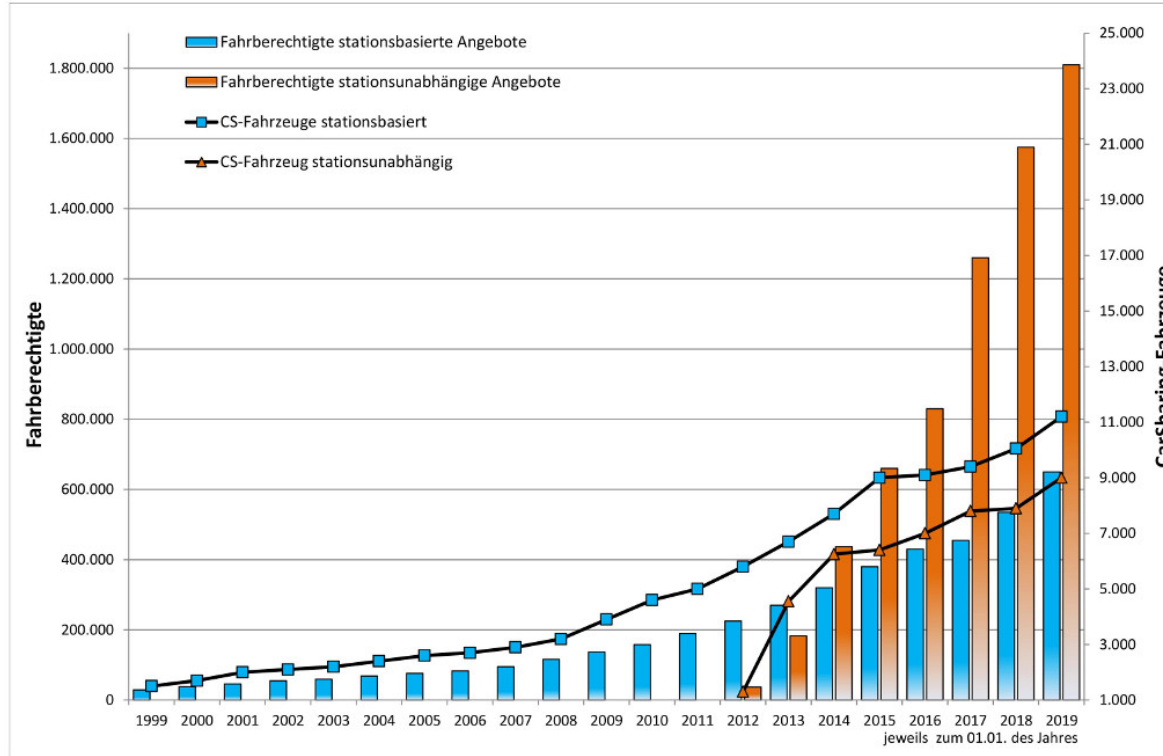
Aktualisiert am 16. Februar 2018 um 14:04 Uhr

Source: www.automobil-produktion.de

Source: Accenture based on iHS, Allied Market Research, ABIresearch, BlackRock/MCK

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Data driven business models



Source: Bundesverband car sharing e.V.

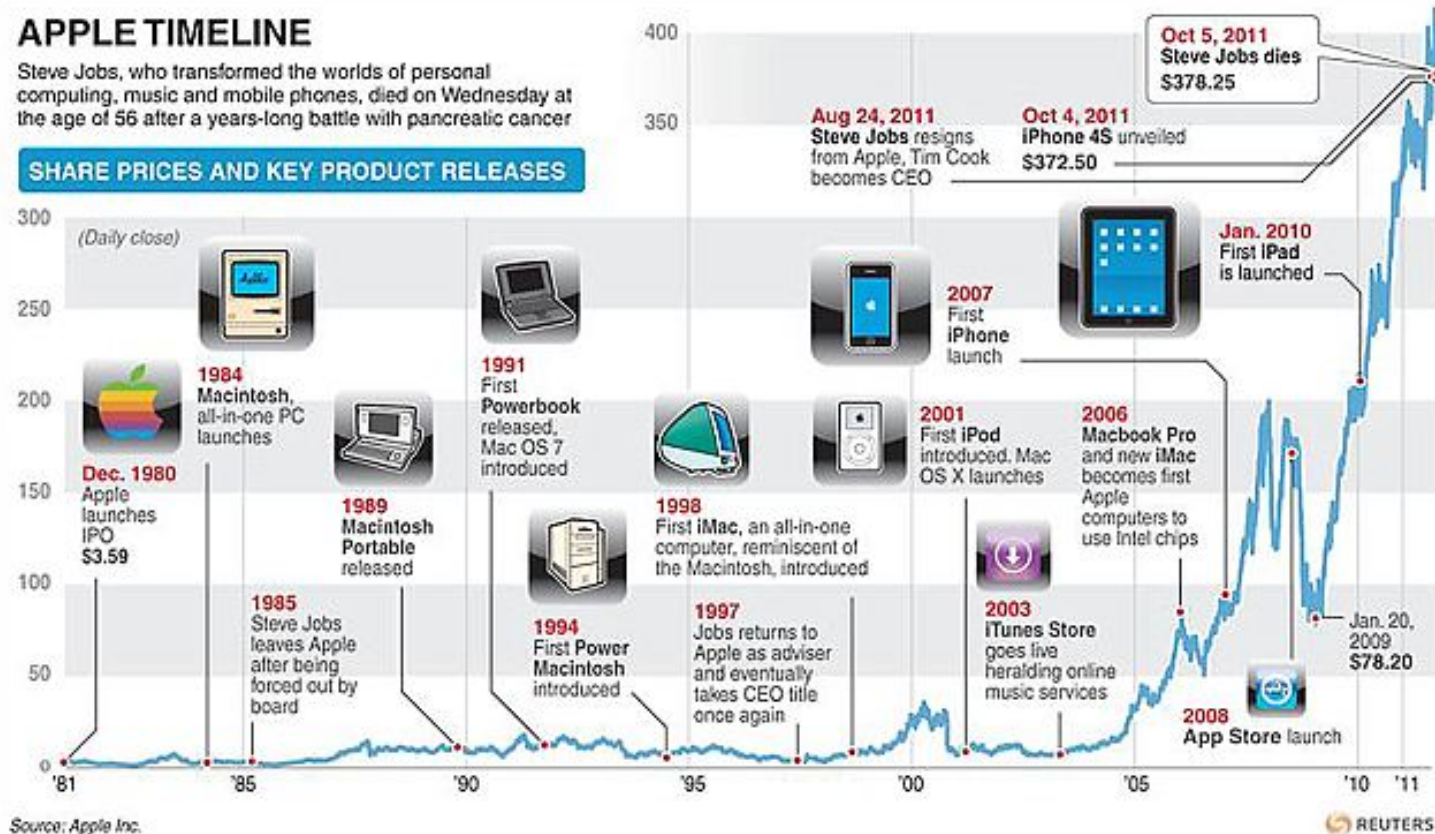
- Car sharing is exponentially increasing
- Sharing economy is based on digital business models
- Each driver/customer creates and utilizes data
- New challenges also for „old“ products -> reduction of downtimes

Reduced Time-to-market

APPLE TIMELINE

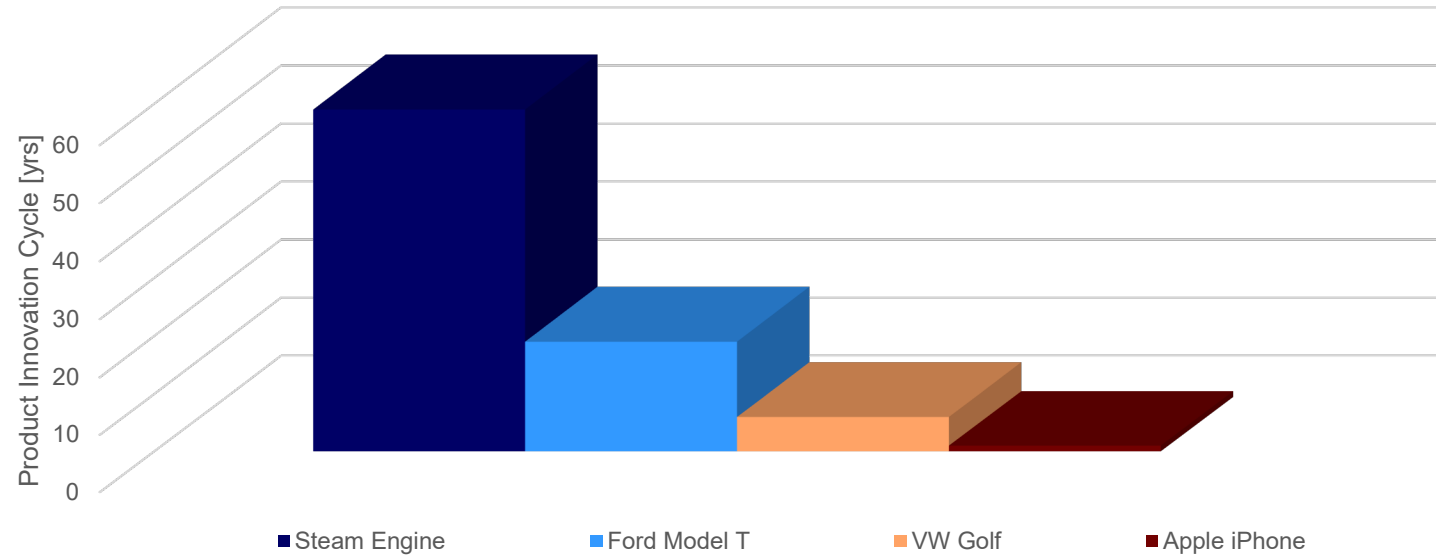
Steve Jobs, who transformed the worlds of personal computing, music and mobile phones, died on Wednesday at the age of 56 after a years-long battle with pancreatic cancer

SHARE PRICES AND KEY PRODUCT RELEASES



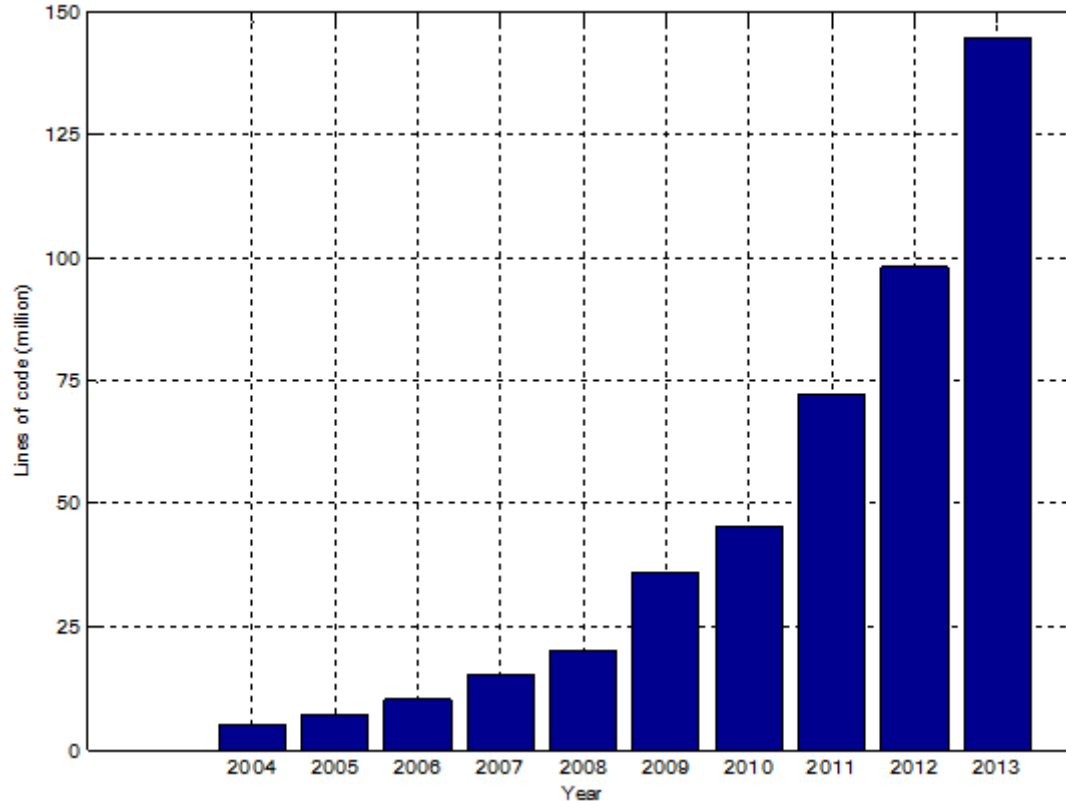
Reduced Time-to-market: Product Innovation cycles

Disruptive Innovation



Innovation cycles are dropping drastically from 1st industrial revolution till today

Transparent products



- Utilization and availability of data increases.
- Digital twin leads to data transparent products.
- Data transparent products are enabler for cyber-physical-system.
- Consistency and transparency of data needs to be ensured!

Khan, Zeashan & Khan, Arsalan. (2015). Perspectives in Automotive Embedded Systems: From manual to fully autonomous vehicles.

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Instruments and tools to prepare change



Instruments and tools to prepare change

VDMA Future Business: Trendscouting

Orientation for 2030+
Think Tank
for Mechanical and plant engineering

Picture: Thorsten Schier | fotolia.de

<https://future.vdma.org/trends>

Instruments and tools to prepare change

VDMA Corporate Foresight: Best Practices, How-to Coaching

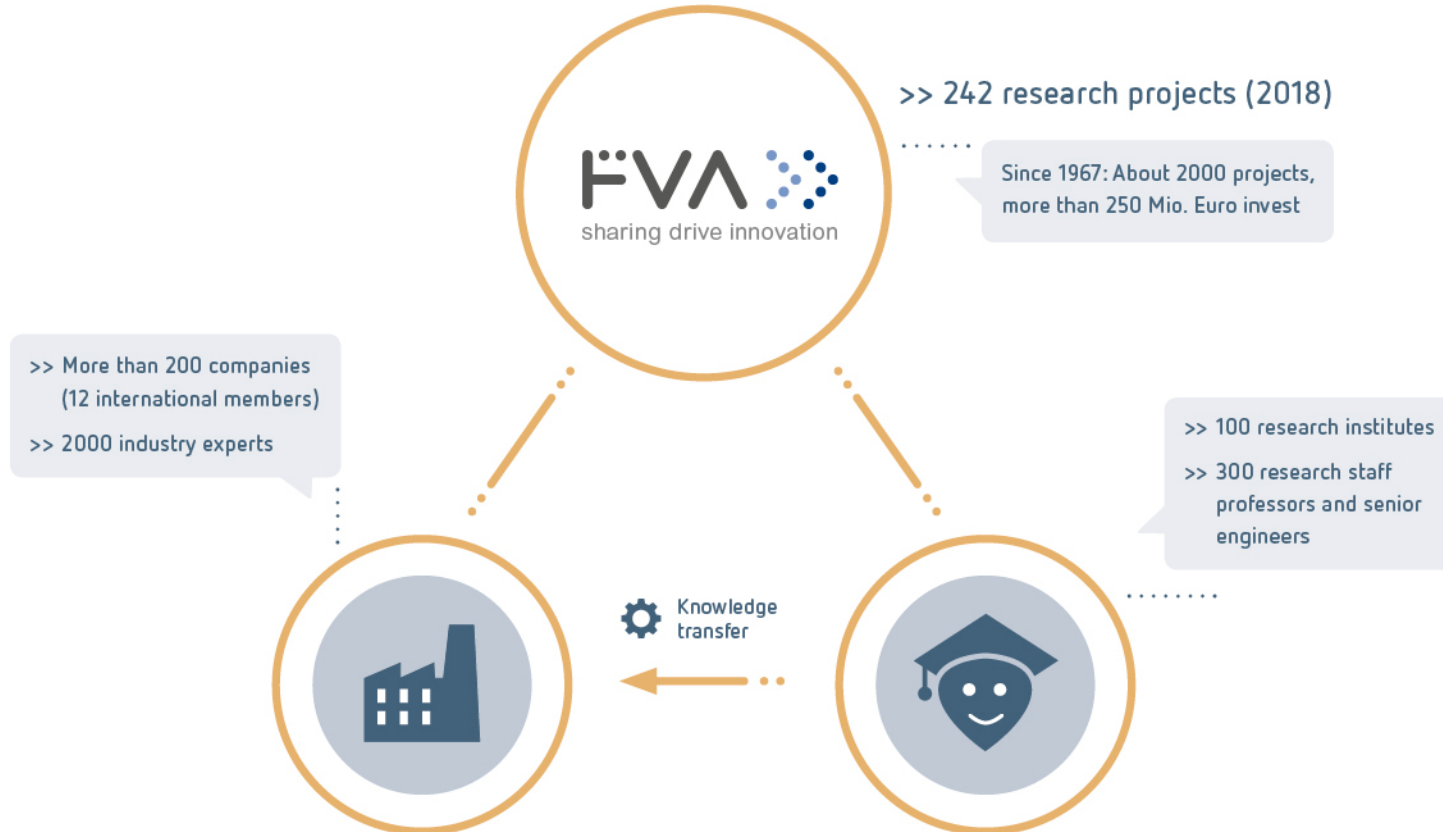
**Be prepared
Learn to ride the waves of change
(instead of drowning!)**

<https://future.vdma.org/foresight>

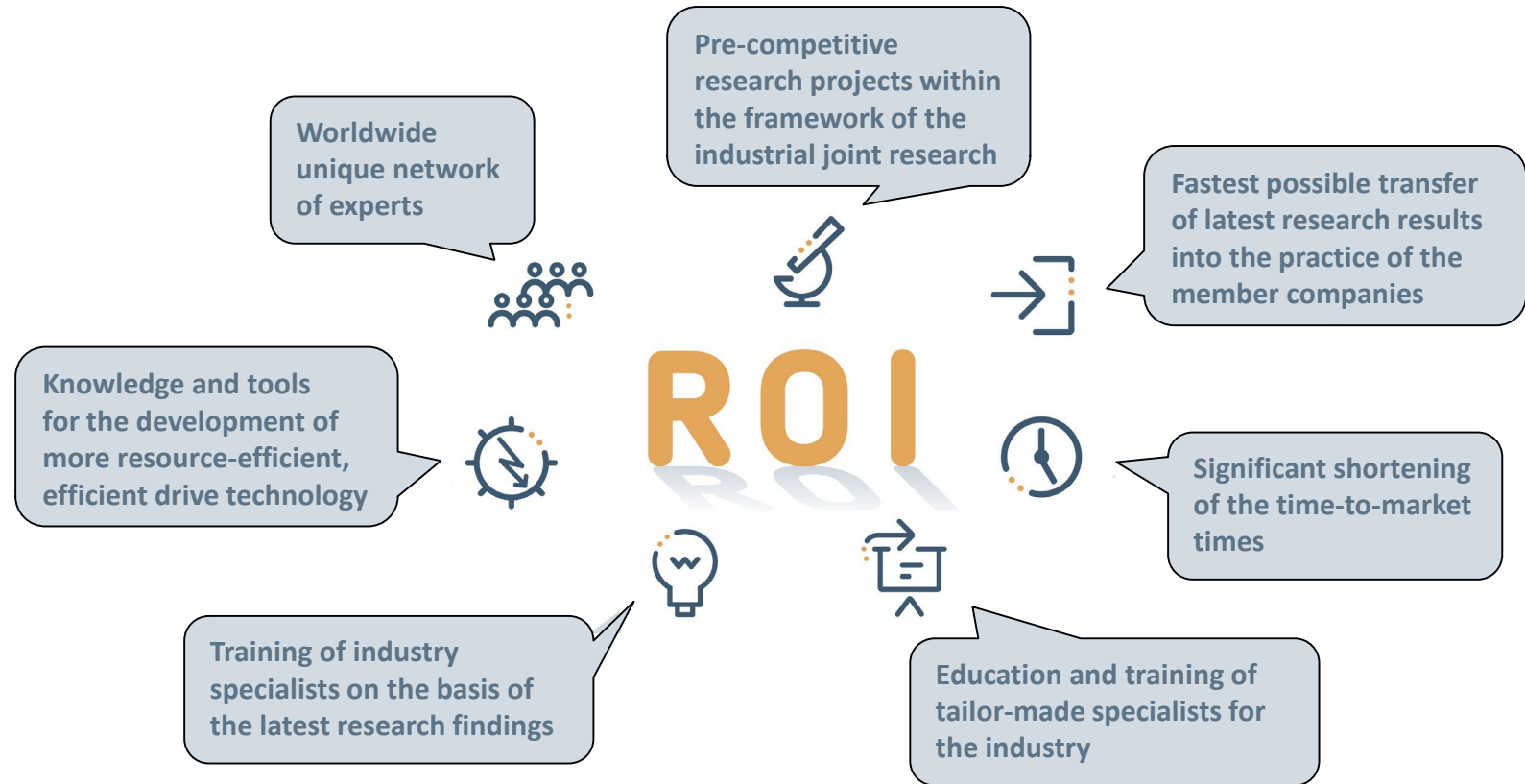
Dr. Eric Maier

Picture: pixabay.com, CC0 License

FVA - A worldwide unique network for drive technology



FVA - More than research



New FVA Software Release - FVA-Workbench 5.5

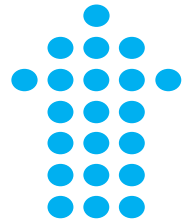


Released July 2019

Free BETA-Workshops ahead!

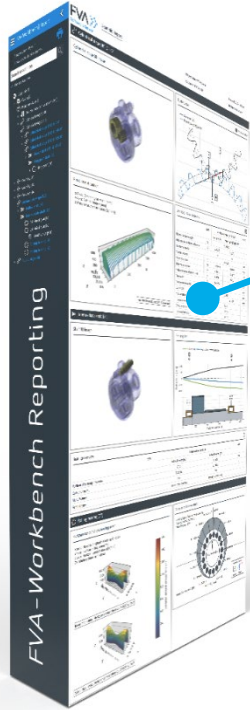
Increased efficiency in day-to-day business with the FVA-Workbench

- Simple modeling & parameterization
- High-performance
- High-quality output of results



www.fva-service.de

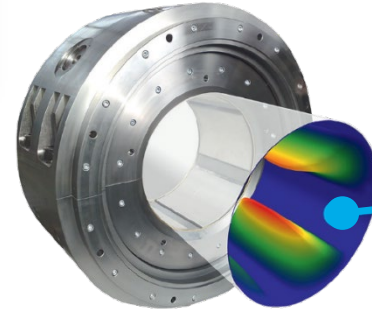
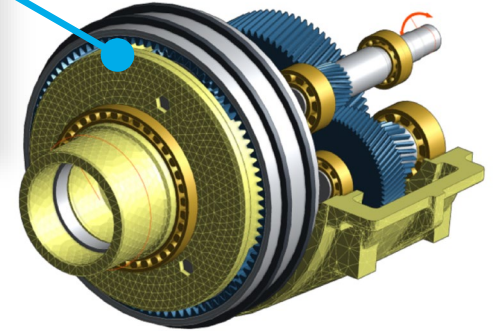
FVA Software - What's New in FVA-Workbench 5.5



High-quality
results reports

Import &
integration
of CAD models

REXS Interface
www.rexs.info



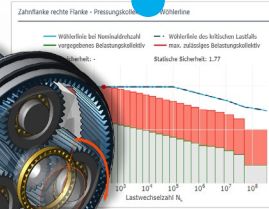
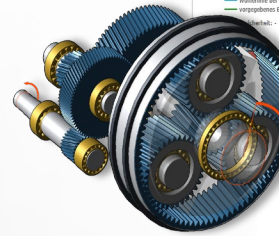
Detailed
simulation of
plain bearings

www.fva-service.de

FVA Software - What's New in FVA-Workbench 5.5

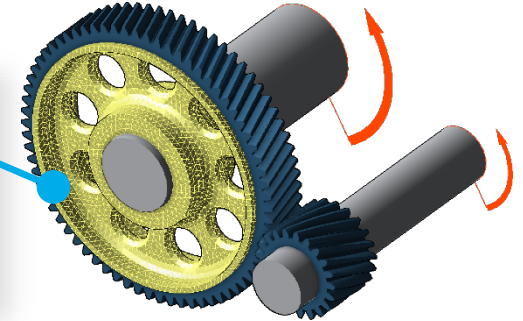


Updated SKF, Schaeffler, and DIN/ISO 281 bearing catalogues



Complete system
collective
calculation

Flexible wheel
bodies

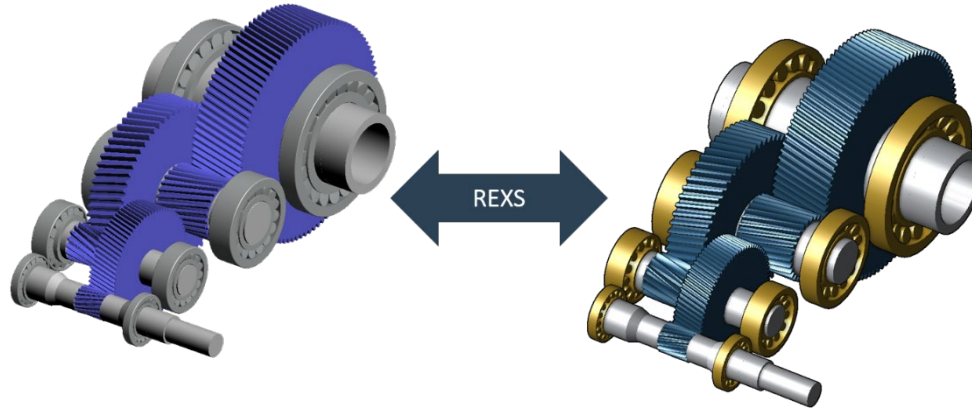


www.fva-service.de



REXS - Simple Exchange of Gearbox Data

REXS establishes a comprehensive standard for the calculation and simulation of gearbox models.



Reusable
Engineering
EXchange
Standard

Greatly
reduced
development
time
and costs

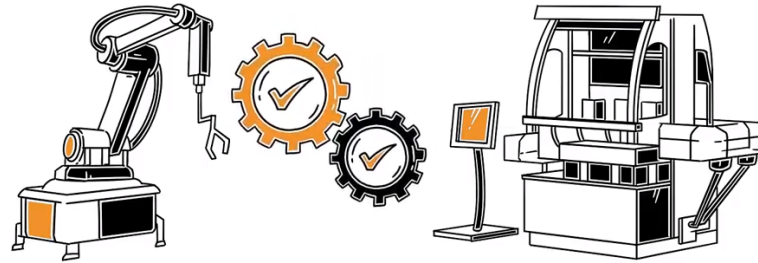
Simple, automated exchange of data between CAE tools, e.g. Bearinx and FVA-Workbench
(Most commercial software providers have already implemented the interface).

www.rexs.info

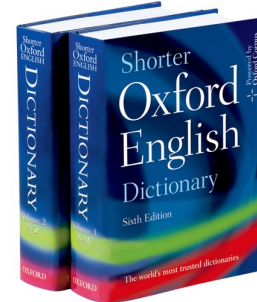
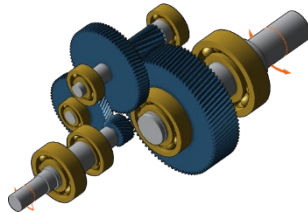
REXS – Interface for I4.0



VDMA develops OPC UA
Companion Specification



FVA develops REXS as data dictionary for drivetrains



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Summary and outlook

- ❖ Major challenges for SMEs (also in the field of bearings) are right ahead.
- ❖ Innovations are developed by fewer companies in fewer sectors
- ❖ 4th industrial revolution is happening right now. I4.0 has turned real!!!
- ❖ Innovation will speed up further in the next years and we have to cope with that.
- ❖ Strong networks are more important than ever to innovate and keep up pace with the change.
- ❖ Data analytics and data maintenance will be value adding process just like grinding or honing.
- ❖ Common interfaces and specifications will create equal conditions for the entire industry.
- ❖ FVA and VDMA will support SMEs to change successfully and sustainably.

Gadgets from „Back to the future“ that came true



Source: Motion pictures „Back to the future“, „Back to the future II“, „Back to the future III“ – Universal Pictures

BACK TO THE FUTURE

