Kfz Elektronik Entwicklung: Trends und Herausforderungen im IoT-Zeitalter

Speed the delivery of sophisticated and connected vehicles

MERKS MOTOR MUSEUM GmbH, Klingenhofstraße 51, 90411 Nürnberg
26th of January 2017
Hans Windpassinger, IBM
Agenda

- Introduction: Market Trends & Challenges
- Examples – IBM in the Engineering Space
- Examples – IBM in the Operations Space
- Summary
Agenda

Introduction: Market Trends & Challenges

Examples – IBM in the Engineering Space

Examples – IBM in the Operations Space

Summary
A look back: The changing landscape of E/E vehicle systems over the last 30 years …
A look back: The changing landscape of E/E vehicle systems over the last 30 years ... kept R&D Manager awake
But the changing landscape of E/E vehicle systems over the last 30 years will even become more complex

in-vehicle focused
- purely embedded
- V-model
- programmable
- fixed
- connected navigation, etc.
- Systems Engineering

IT backend / Cloud focused
- IT/Cloud
- agile
- cognitive, deep learning
- upgradable
- "connected everything"

self - driving
- healing
- socializing
- learning
- configuring
- integrating
In IoT Everything is becoming connected…

- **Market Needs**
- **Social Sentiment**
- **Requirements**
- **Design Models**
- **Testing and Compliance**
- **Device Telematics Data**
- **Warranty & Repair Data**
- **Regulatory Reporting**
- **Driving Data**
- **Learn**

**Engineering**

**Operations**

**Manufacturing**

**Development**

**Operation**
First Conclusions

• E/E engineering cannot be limited / restricted to in-vehicle technology anymore

• Related Connectivity, Upgradability, Cloud and IT Backend components must be taken into consideration within a holistic “System-of-Systems” Engineering

• We see the loop “development” and “operation” becoming more and more closed

Development

Improved Development Efficiency

Operation

Repeatable & Optimized Operations
Agenda

- Introduction: Market Trends & Challenges
- Examples – IBM in the Engineering Space
- Examples – IBM in the Operations Space
- Summary
## Agenda

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Introduction: Market Trends &amp; Challenges</td>
</tr>
<tr>
<td></td>
<td>Examples – IBM in the Engineering Space</td>
</tr>
<tr>
<td></td>
<td>Continuous Engineering &amp; IBM Aras partnership</td>
</tr>
<tr>
<td></td>
<td>Examples – IBM in the Operations Space</td>
</tr>
<tr>
<td></td>
<td>Summary</td>
</tr>
</tbody>
</table>
Continuous Engineering: Evolve your engineering practices to turn today’s market trends into tomorrow’s competitive advantage

Unlock Engineering Knowledge
Access, unlock and understand all engineering information, regardless of source – to enable the right decisions at the right times

Continuous Verification
Verify requirements and design at all stages of the product lifecycle – to prevent rework and achieve faster time to quality

Strategic Reuse
Increase design efficiencies, engineer product lines, and tame complexity

For IoT & Connected Vehicles
Continuous engineering is an enterprise capability that speeds delivery of increasingly sophisticated and connected products by helping businesses to evolve their engineering practices to adapt to the accelerating pace of business change.

- **“Turn Insight into Outcomes”**
  - Unlocking Engineering Knowledge
- **“Measure twice, cut once”**
  - Continuous Verification
- **“Don’t reinvent the wheel”**
  - Strategic Reuse
IBM Continuous Engineering for Automotive

Define, manage, and analyze requirements with IBM® Rational® DOORS® Next Generation

Visually model, simulate, and test architectures and designs with IBM Rational Rhapsody®

Share designs, stay current with others, and manage change with Design Management for Rational Rhapsody

Develop, execute, and report on your test plan with IBM Rational Quality Manager

Plan, track work, and manage source with IBM Rational Team Concert™

Visualize, analyze, and gain insight from engineering lifecycle data with IBM Rational Engineering Lifecycle Management
Announced November 15th, 2016
IBM and Aras enhance partnership

News / Press release

IBM adds PLM platform Aras Innovator to complement Continuous Engineering solution

November 15, 2016 | Written by: Dibbe Edwards
PLM Platform for the Business of Engineering

Native Applications

Digital Thread

Lifecycle Backbone

Platform

- Concept
- Development
- Manufacturing
- Usage & Service

Native Applications:
- MBSE
- Simulation
- Req Mgmt
- ALM
- ALM Int.
- PDM Int.
- ECAD PDM
- PDM Int.
- MCAD PDM
- PDM Int.
- MES Int.
- ERP Int.
- SCM Int.
- MES
- ERP
- SCM
- Maint. Mgmt.
- IOT
**PLM Platform for the Business of Engineering**

Native Applications

- MBSE
- Simulation
- Req Mgmt
- ALM
- ALM Int.
- PDM Int.
- PDM Int. PDM
- ECAD PDM
- PDM Int. MCAD
- MES Int.
- MES Int.
- MES Int.
- ERP Int.
- ERP Int.
- ERP Int.
- SCM Int.
- SCM Int.
- SCM Int.
- Maint. Mgmt.
- IOT

**Concept** → **Development** → **Manufacturing** → **Usage & Service**
PLM Platform for the Business of Engineering

Native Applications

IBM Rational Jazz Platform

Structured & un-structured data
Second Summary: How IBM can improve the automotive product development

Consulting for Modern Engineering Methods & Processes

Engineering Services („Software Factory“) & Technology Infusion

Collaborative Tools for Continuous Engineering

360° ALM and PLM Integration and Operation

IBM Automotive Product Development Support for Continuous Engineering
Agenda

Introduction: Market Trends & Challenges

Examples – IBM in the Engineering Space

Examples – IBM in the Operations Space

Summary
The Internet of Things becomes the Internet that Thinks …

Watson IoT helps companies learn from data…

generated by sensors, devices, and machines… combined with other data sets…

and apply these insights to make the physical world work better…

for business, individuals, and society
Olli – short video

Link to 4:57 video
https://www.youtube.com/watch?v=K564rXrlZbc&list=PLCA938ED437B12C87&index=48
IBM Watson and IoT are at the core of Olli’s cognitive rider experience

Watson APIs used in Olli’s cognitive mobility...

- **Speech to Text**: Understands language from passengers. Watson interprets questions and converts them to text for processing.
- **Natural Language Classifier**: Interprets the intent behind text and returns a corresponding classification with associated confidence levels.
- **Entity Extraction**: Identifies named entities in text that specifies things such as persons, places and organizations.
- **Text to Speech**: Takes text bases responses from Watson and converts to speech to respond to passenger inquiry.
- **Conversation**: Adds a natural language interface to applications to automate interactions with end users.

https://www.ibm.com/watson/developercloud/
IBM and GM introduce new cognitive mobility platform to improve the driving experience for millions of consumers


PR Newswire, DETROIT and LAS VEGAS – Oct 26, 2016
General Motors and IBM today announced a partnership to bring the power of OnStar and IBM Watson together to create OnStar Go, the auto industry’s first cognitive mobility platform.

ExxonMobil, Glympse, iHeartRadio, Mastercard and Parkopedia are the first brands to join the platform.

http://www.multivu.com/players/English/7724254-ibm-watson-general-motors-onstar-go/?cm_mc_uid=&cm_mc_sid_50200000=
Recently at CES Vegas:


Panasonic Automotive and IBM Partner to Develop Cognitive Vehicle Infotainment System with Watson

Technology showcased at CES 2017

LAS VEGAS, NEVADA - 05 Jan 2017: Panasonic Automotive Systems Company of America today announced the introduction of the Panasonic Cognitive Infotainment platform designed to provide OEMs and fleet providers a set of cognitive vehicle solutions combining Panasonic's market leading infotainment expertise with IBM's (NYSE: IBM) Watson and cloud technologies.

The platform leverages Watson cognitive capabilities, including deep natural language processing and understanding, to answer questions and provide recommendations as well as directions while en route. The platform also introduces e-commerce capabilities for convenient in-vehicle purchases to make the most of a driver's time, as well as possible future cognitive driving solutions that monitor the vehicle condition for safer driving.
Munich, Germany - 15 Dec 2016: IBM (NYSE: IBM) has announced a new collaboration with the BMW Group, through which the companies will work together to explore the role of Watson cognitive computing in personalizing the driving experience and creating more intuitive driver support systems for cars of the future.

BMW are co-locating a team of their researchers and engineers at IBM’s global headquarters for Watson Internet of Things (IoT) in Munich, Germany.
Watson IoT Munich Center

With 1,000 Watson IoT experts in a campus environment, the center will provide access to the talent, the technology, and the tools needed to create products and services that deliver on the promise of Cognitive IoT.
A word in a personal matter: The Watson IoT Industry Lab

- Cross-Industry, including Electronics, Insurance, Industrial Products and Automotive
- Main Objectives: Co-Development with ”Discover the Value” Workshops and “Proof the Value” Pilot Projects
- Within the Industry Lab, we have the pieces that will drive transformation:
Agenda

- Introduction: Market Trends & Challenges
- Examples – IBM in the Engineering Space
- Examples – IBM in the Operations Space
- Summary
Summary

• Automotive Industry will experience substantial changes

• Automotive OEMs and Supplier will need to improve on multiple levels
  • Component, Module, System, Vehicle level
  • Connected Backend Systems (“IoT”) – “Systems of Systems”
  • Cognitive Connected Backend Systems (“Watson IoT”)

• IBM invest on each of these levels to meet the increasing demand on new engineering and operational solutions
Any Questions?
Questions? Please contact

Hans Windpassinger
Watson IoT Industry Lab
Automotive Leader

Mobile +49-170-4532278
Hans.Windpassinger@de.ibm.com