



# Experience report: software quality assurance for vehicle programming

**Dipl.-Ing. Michel Loubaresse** 









#### **Agenda**



- 1. ISTEC company profile
- 2. Software Quality Assurance Our services
- 3. Customer scenario
- 4. Customer requirements
- 5. Customer solution Test strategy
- 6. Customer solution Test automation
- 7. Customer solution Vehicle simulation
- 8. Conclusion
- Announcement
- 10. Questions



### 1. ISTEC Company Profile



- Independend software and system house
- ➤ Since 1982 successful on market
- ➤ 60 regular employees
- Development of customer specific solutions from the identification of problems up to the system installation
- Offices at Ettlingen (Karlsruhe) and Leinfelden (Stuttgart)







#### 2. Software Quality Assurance – Our services



### **Quality assurance**

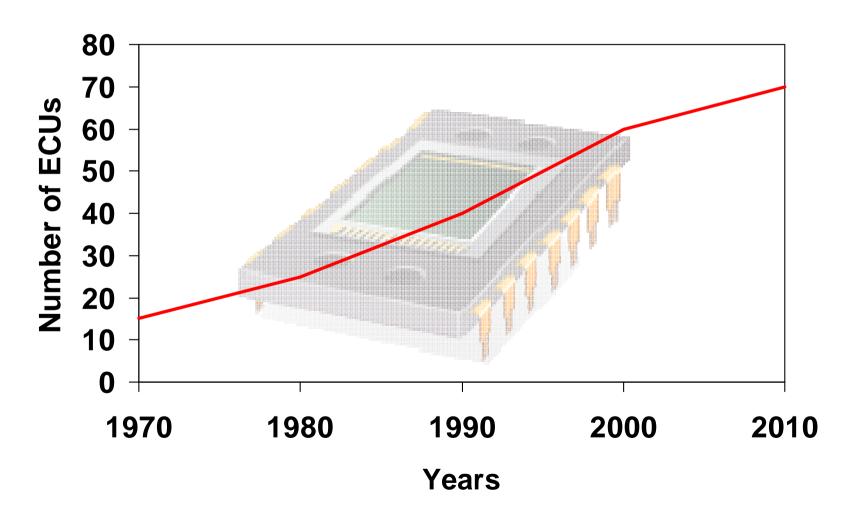
**Analysis** Development Final acceptance **Phase** Rollout **Planning** Integration > Specifications > Quality analysis analysis Reporting Customizing > Risk analysis > Requirement Trouble shooting Testing analysis > Service Problem management Test evaluation ➤ Hotline service > Technical analysis **Processes** Development support Test automation Operative support > Test strategy > Test concept > Reporting > Integration Test environment Test planning Test conception ISTEC ISTEC ISTEC **Tools** Test-Center Hardware-Simulator Tracking-Tool



#### 3. Customer scenario



Raising number of electronic devices (ECUs) in passenger cars





#### 3. Customer scenario

# automotive testing PMD 2010 europe

### Software quality as a global success factor

4400 service dealers

Service application

1

20 production plants

Production application

7

13000 development engineers

Development application

4

global vehicle programming core



### 4. Customer requirements

automotive testing BADD 2010 europe

Central role of the quality assurance in the development process

# **Project management & Suppliers Analysis Discussions Advices Reports** independent quality assurance **Problems** Requests Issues **Demands Production Service Engineering**



#### 5. Customer solution – Test strategy

# automotive testing PMP 2010 europe

# Reasons for using test automation & regression testing (Using ISTEC Test-Center)

- > Frequent releases
- ➤ Highly complex use cases
- > High demands on software quality
- Huge failure costs
- Short response time on issues



#### 5. Customer solution – Test strategy

# Reasons for using hardware simulation (Using ISTEC Hardware-Simulator)



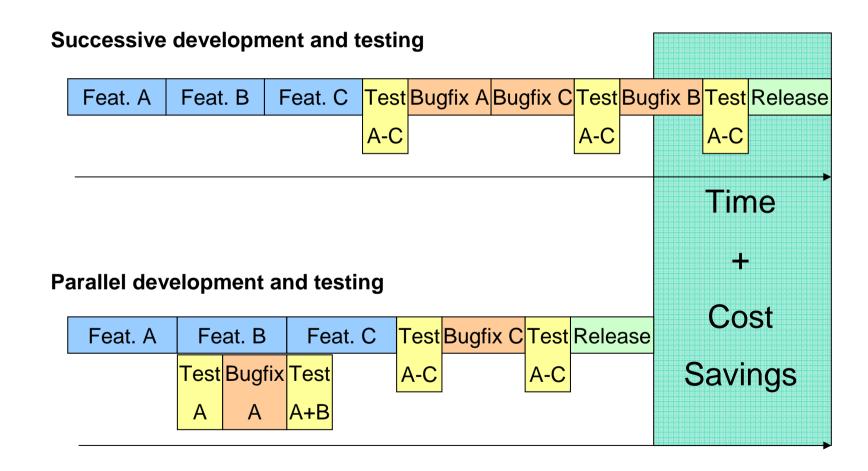
- Most tests are depending on test hardware
- Lack of test hardware
- Incomplete ECU test networks
- Issue analysis requires the reconstruction of specific error scenarios



#### 6. Customer solution – Test automation



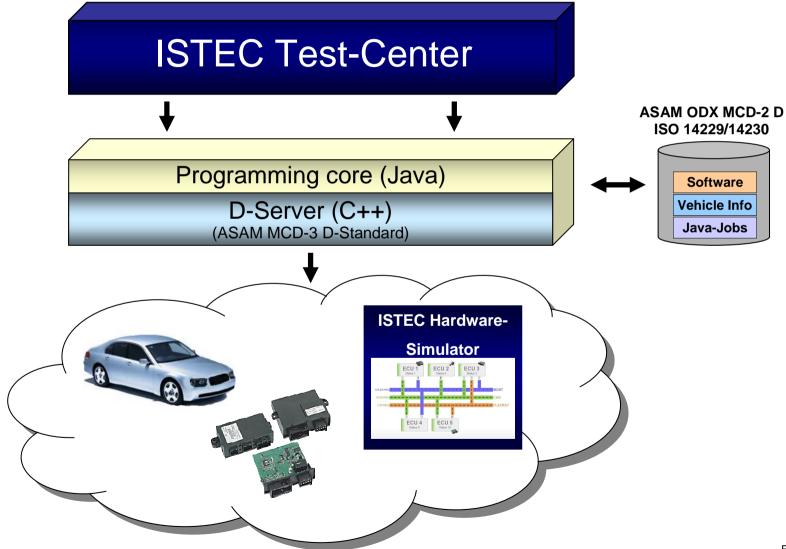
### Building and running automated tests at an early state





# 7. Customer solution – Vehicle simulation Technology and test environment







#### 8. Conclusion

# testing BXDD 2010 europe

### Savings & benefits we achieved with this project

#### **Test hardware**

➤ Up to 60% savings on hardware costs

# **Testing effort**

➤ Up to 40% savings on test capacity

# **Development time**

➤ Up to 20% shorter release cycles

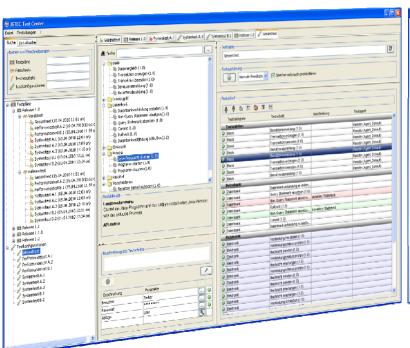


#### 9. Announcement

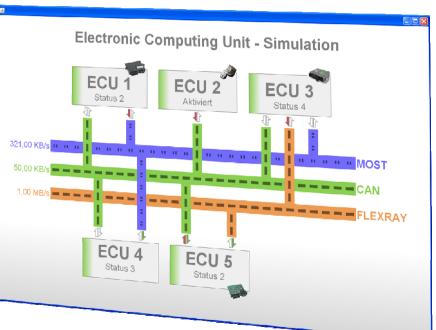


### Live demo at the automotive testing expo on stand 1145

#### **ISTEC Test-Center**



#### **ISTEC Hardware-Simulator**





#### 10. Questions





#### Contact

ISTEC GmbH

Michel Loubaresse

Max-Lang-Str 56/2
70771 Leinfelden-Echterdingen
Phone +49 711 160 570
michel.loubaresse@istec.de
http://www.istec.de

automotive

2010 europe

**Hall 1 Stand 1145** 

