



Automotive Electric & Electronics Systems Report

Report Background

As the penetration of electronics continues to increase across the automobile's systems, including powertrain, chassis, safety, infotainment and interiors, the industry faces a major challenge with reliability, cost and weight. As importance of software grows, the industry is migrating towards open source platforms while the hardware suppliers are increasing the amount of functionality to individual processors and systems. The Automotive Electric & Electronics Systems Report provides detailed coverage of the market drivers along with in-depth analysis of the latest technologies. Electronics offer the single largest growth area for suppliers in the future with increasing focus on safety, emissions and alternative fuel vehicles. This report looks at the vehicle architecture and how it is being developed to cater to the industry's future demands. The report also provides a stock of detailed profiles of suppliers in the sector including those with platform alliances such as Autosar, CAN, Flexray, Genivi, Jasper and LIN.

The field of electronics has gained a predominant position in the automotive industry. It has risen to become a key differentiator between vehicles in terms of comfort features, safety, performance and efficiency. At the same time, the proliferation of electronics poses the biggest challenge to the industry – how to manage the complexity of the electronics architecture. Electronics has penetrated most physical areas and functions of a vehicle. Increasingly, electronics are substituting mechanical systems and managing more and more functions in a vehicle. This exponential growth has exerted its load on the wiring system beyond its capacity to manage data transfer, and has added to vehicle weight.

With the OEMs' increasing demands on suppliers for components and systems development around electronics, and as more mechatronics replace mechanical parts, the industry will see the emergence of new first and second tier suppliers. Those suppliers which best understand electronics and software will have an edge in winning future business.

Table of Contents

INTRODUCTION

- Current Market Scenario
- Growth in Electronics
- Multiplexing
- Software as Solution
- Examples
- Validation

Case studies
Market Potential

HARDWARE

ECU
Bus and Communication Standards
FlexRay
MOST
CAN
LIN
Ethernet
Sensors
Resistive sensors
Voltage generating sensors
Switch Type sensors
Actuators
Other sensors

SOFTWARE

Complexity stands to grow
Solution
AUTOSAR
Genivi Alliance
AutoLinQ
Microsoft Auto
JasPar

DOMAIN ARCHITECTURE

Powertrain
Engine Control Module
Powertrain control module
Hybrid vehicle ECU
HEV architecture
Chassis
Electronic Brake control module
Suspension control ECU
Drive-by-wire
Market Potential
Telematics
Body
Vehicle control module
Body control module
Headlamp levelling ECU
Active safety & driver assistance systems

OUTLOOK

COMPANY PROFILES

Alpine Electronics
Altran Technologies
ARM
austriamicrosystems
Autoliv
B2i Automotive engineering
Bosch
Continental
C&S Group
Delphi
Denso
dSpace
Eberspächer
Elektrobit
ELMOS Semiconductor
Esterel Technologies
ETAS
FEV
Freescale Semiconductor
Fujitsu
Harman
Hella
IAV
IBM
Infineon
Infosys
Intecs
Johnson Controls
Lear
Magna
Magneti Marelli
MBTech
Mentor Graphics
Mitsubishi Electric
NEC Tokin
Nokia
STMicroelectronics
Texas Instruments
TRW
Valeo

Table of Figures

Figure 1: Number of components and number of possible connections

Figure 2: Complexity Drives Costs
Figure 3: Active Safety 2012-2015 Market Trends
Figure 4: Occurrence of Electronics Defects, percentage
Figure 5: Productivity reduces software development time
Figure 6: Automotive Electric/Electronics Architecture Diagram
Figure 7: MOST Technology
Figure 8: MOST links consumer world to in-vehicle platform
Figure 9: USB and Ethernet to connect with MOST network
Figure 10: CAN Network Diagram And Comparison
Figure 11: LIN Introduction and Comparison
Figure 12: Automotive Software Development Approach
Figure 13: AUTOSAR
Figure 14: Genivi Software Solution
Figure 15: Genivi's Open Source Code
Figure 16: Increasing development costs denting Japan's auto industry
Figure 17: JasPar collaborates with FlexRay, AUTOSAR
Figure 18: Engine Management System: Continuous Improvement In Performance
Figure 19: Delphi Engine Management Systems Capability and Portfolio
Figure 20: Flexray Backbone for Powertrain and Drive-By-Wire
Figure 21: Onstar Monthly Interactions
Figure 22: LIN Applications

List of Tables

Table 1: Features continue to increase
Table 2: Cost Targets Continue to Decrease
Table 3: Bus and Communication Standards Comparison