Software-Hardware Integration in Automotive Product Development

Description:

Software-Hardware Integration in Automotive Product Development brings together a must-read set of technical papers on one of the most talked-about subjects among industry experts. The carefully selected content of this book demonstrates how leading companies, universities, and organizations have developed methodologies, tools, and technologies to integrate, verify, and validate hardware and software systems. The automotive industry is no different, with the future of its product development lying in the timely integration of these chiefly electronic and mechanical systems.

The integration activities cross both product type and engineering discipline boundaries to include chip-, embedded board-, and network/vehicle-level systems. Integration, verification, and validation of each of these three domains are examined in depth, attesting to the difficulties of this phase of the automotive hardware and software system life cycle.

The current state of the art is to integrate, verify, validate, and test automotive hardware and software with a complement of physical hardware and virtual software prototyping tools.

The growth of sophisticated software tools, sometimes combined with hardware-in-the-loop devices, has allowed the automotive industry to meet shrinking time-to-market, decreasing costs, and increasing safety demands.

It is also why most of the papers in this book focus on virtual systems, prototypes, and models to emulate and simulate both hardware and software. Further, such tools and techniques are the way that hardware and software systems can be "co-verified" and tested in a concurrent fashion. The goal of this compilation of expert articles is to reveal the similarities and differences between the integration, verification, and validation (IVV) of hardware and software at the chip, board, and network levels. This comparative study will reveal the common IVV thread among the different, but ultimately related, implementations of hardware and software systems. In so doing, it supports the larger systems engineering approach for the vertically integrated automobile—namely, that of model-driven development.

Contents:

Introduction

Papers:

  Chandrashekar, M. S., Manjunath, B. C., Lumpkin, E. R., and Winters, F. J.
- Verification and Validation According to IEC 61508: A Workflow to Facilitate the Development of High-Integrity Applications (2009-01-2929)
  Conrad, M., Friedman, J., and Sandmann, G.
- Hardware/Software Design and Development Process (2006-01-0170)
  Lumpkin, E., and Gabrick, M.
  Egel, T. R., and Elias, N. J.
- Virtual Prototypes as Part of the Design Flow of Highly Complex ECUs (2005-01-1342)
  Krech, J., Mayer, A., and Raab, G.
- To Test the Need and the Need to Test-Testing the Smart Controller Network for the Chassis of Tomorrow (2008-21-0041)
  Deiss, H., Krimmel, H., and Maschmann, O.
- A Systems Engineering Approach to Verification of Distributed Body Control Applications Development (2010-01-2328)
  Yang, J., Bauman, J., and Beydoun, A.
- Highly Scalable and Cost Effective Hardware/Software Architecture for Car Entertainment and/or Infotainment Systems (2004-21-0071)
  Troemel Jr., H. A., and Burk, M.
- Analysis of Interfaces and Interface Management of Automobile Systems (2008-01-0279)
  Fritzsche, R.
- Advancements in Hardware-in-the-Loop Technology in Support of Complex Integration Testing of
  Embedded System Software (2011-01-0443)
  Himmler, A., Waeltermann, P., and Khoee-Fard, M.

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