The Competisoft project provides the Latin American software industry with a reference framework for improvement and certification of its software processes. The project is based on proven solutions, including the MoProSoft model that four Mexican software companies applied to increase their processes’ capacity level.

To date, Competisoft has resulted in the development of a common methodological framework suitable for small Latin American organizations and oriented toward continual software process improvement. The project has introduced the Latin American software industry to a process-improvement culture and has introduced standardization and certification organizations to methodological principles. Currently, six small companies are applying the Competisoft model, with the goal of increasing by one the process capability and measuring the effort required to conduct the improvement.

The Discipline of Embedded Systems Design
pp. 32-40
Thomas A. Henzinger and Joseph Sifakis

Advances in hardware component technology are creating an enormous potential for the widespread application of embedded systems in all economic sectors, but without well-grounded design paradigms, society cannot fully benefit from this potential. Unfortunately, many groups and the public at large fail to grasp the importance of embedded software.

Unlike many innovations, such as the Web, that are tangible and thus well known and appreciated, embedded systems are visible only through the improved function and performance of devices and products. Indeed, the more seamlessly embedded computers and software are integrated into the products and the less often they fail, the less visible they are. It is thus important to raise awareness about how vital embedded computing is to society.

Embedded System Design for Automotive Applications
pp. 42-51
Alberto Sangiovanni-Vincentelli and Marco Di Natale

Today, though still relatively stable, the roles of carmakers and their suppliers are undergoing a period of stress caused by the increased importance of electronics and its added value. The standard approach for OEMs is to develop systems by assembling components that have been completely or partly designed and developed by Tier 1 suppliers. However, these suppliers increasingly are shifting toward outsourcing their manufacturing.

The supply process traditionally has been targeted at simple, black-box integrated subsystems in which requirements capture and OEM-issued specifications consisted of the message interface’s periods and general performance requirements. However, there is no detailed definition of timing and synchronization properties and the communication protocols’ requirements. As a result, the integration of subsystems is done routinely, albeit in a heuristic and ad hoc way. The resulting lack of an overall understanding of the subsystems’ interplay, and the difficulties encountered in integrating very complex parts, make system integration a challenging job.

Using DaVinci Technology for Digital Video Devices
pp. 53-61
Deepu Talla and Jeremiah Golston

Developing innovative and cost-efficient digital video products requires systems that encompass open and flexible system-on-chip (SoC) processors, software, and development tools. Manufacturers ship billions of DV products each year, including portable media players, digital media adaptors, IPTV set-top boxes, digital cameras, solid-state video recorders, multimedia camera phones, digital TVs, automotive infotainment, video security equipment, IP network cameras, and network video for emerging applications.

The performance, power, features, and cost points for DV equipment vary, preventing the use of one SoC solution for all devices. The bar has been raised for SoC manufacturers to provide a more complete system solution beyond silicon. Software and collateral around the SoC is increasingly important. System solutions that can hit the right level of optimization across different metrics will separate themselves in the market.

Software-Defined Radio Prospects for Multistandard Mobile Phones
pp. 62-69
Ulrich Ramacher

Multiple standards have become the norm in the high-end mobile phone market. Cellular networking, wireless Internet, and mobile TV standards are among many now in use. By 2010 to 2012, high-end cell phones must be able to meet the additional demands of a multitude of existing and evolving standards.

Software-defined radio (SDR) baseband processors constitute a multiprocessor class of their own: providing very high processing power per second. SDR modem solutions represent a new stage in complexity. Semiconductor vendors, software houses, and major handset manufacturers must cooperate closely to support the various use cases, with the required levels of flexibility, while simultaneously achieving high enough volumes to justify the return on the huge investment needed. Given today’s half-dozen main baseband chip manufacturers for cell phones and the high engineering costs for an SDR modem, three to four SDR modem platforms can be expected to survive through 2015.