Software Radio Architecture. Object-Oriented Approaches to Wireless Systems Engineering

Description: An engineer's guide to systems engineering of software-radio architectures

As a crucial element of wireless technology, software radio is fast becoming a hot topic in the telecommunications field. This new book provides complete, up-to-date coverage of software radio architecture, discussing in detail functions, components, design procedures for complex radio systems, and large-scale software engineering methods such as UML and CORBA. The author bridges the inter-disciplinary gap in the field, covering what software engineers need to know about how radio “waveforms” are defined in software. Plus, he provides tutorial material on how the Unified Modeling Language–UML—is used for specifying radio architecture. The architecture tradeoffs—how to deliver predictably robust performance without unnecessarily expensive hardware, economic principles, cost considerations, and marketplace trends—are also addressed. Coverage includes:

* Market-oriented technology trends on how software radio fits in with the larger telecommunications marketplace
* Complexity drivers and their influence on hardware and software components
* System integration, emphasizing the management of processing capacity available on heterogeneous ASIC, FPGA, and DSP hardware
* Subsystem material and the unique requirements that software radio brings to the hardware and software segments—antennas, RF conversion, ADC/DAC, pooled DSP, real-time operating systems, CORBA middleware, and radio software objects
* Relevant areas of systems engineering, including design tools, cost–benefit analysis, and an extended case study, "Mobile Infrastructure for Joint Military–Civilian Disaster Relief"
* Hundreds of graphs, case studies, and Internet access to software design tools (email: jmitola@compuserve.com)

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Introduction and Overview.

Architecture Evolution.

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