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	Nota di contenuto	Methodology -- Theories of programming: Top-Down and Bottom-up and Meeting in the Middle -- A Triptych Software Development Paradigm: Domain, Requirements and Software Towards a Nodel Development of a Decision Support System for Sustainable Development -- A Triptych Software Development Paradigm: Domain, Requirements and Software Towards a Nodel Development of a Decision Support System for Sustainable Development -- Real-Time Constraints Through the ProCoS Layers -- Real-Time Constraints Through the ProCoS Layers -- Monotonicity in Calculational Proofs -- Monotonicity in Calculational Proofs -- Programming -- The Alma Project, or How First-Order Logic Can Help us in Imperative Programming -- Type and Effect Systems -- Automation -- Proving Theorems About Java-Like Byte Code -- Multiple State and Single State Tableaux for Combining Local and Global Nodel Checking -- On the Existence of Network Invariants for Verifying Parameterized Systems -- Compilation -- Verification of Compilers -- Translation Validation: From SIGNAL to C -- Compilation and Synthesis for Real-Time Embedded Controllers -- Optimization Under the Perspective of Soundness, Completeness, and Reusability -- Application -- Verification of Automotive Control Units -- Correct Real-Time Software for Programmable Logic Controllers -- Formal Methods for the International Space Station ISS -- METAFrame in Practice: Design of

Intelligent Network Services.

| Sommario/riassunto | Computers are gaining more and more control over systems that we use or rely on in our daily lives, privately as well as professionally. In safety-critical applications, as well as in others, it is of paramount importance that systems controlled by a computer or computing systems themselves reliably behave in accordance with the specification and requirements, in other words: here correctness of the system, of its software and hardware is crucial. In order to cope with this challenge, software engineers and computer scientists need to understand the foundations of programming, how different formal theories are linked together, how compilers correctly translate high-level programs into machine code, and why transformations performed are justifiable. On the occasion of Hans Langmaack's retirement from his professorship and in order to honor his fundamental contributions to the field, the volume editors invited 17 internationally well known researchers to evaluate the state of the art in the area of correct system design. This book presents 17 mutually reviewed invited papers organized in sections on methodology, programming, automation, compilation, and application. It is a unique outline of what has been achieved in the area which dates back to a pioneering paper by Alan Turing in 1949. |