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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Invited Papers -- Experience with Holonic and Agent-Based Control Systems and Their Adoption by Industry -- Fundamental Insights into Holonic Systems Design -- A 3D Visualization and Simulation Framework for Intelligent Physical Agents -- Theoretical and Methodological Issues -- MAS Methodology for HMS -- Probabilistic Holons for Efficient Agent-Based Data Mining and Simulation -- An Information-Based Agent -- Algorithms and Technologies -- Designing Communication Protocols for Holonic Control Devices Using Elementary Nets -- A Proposal of Multi-agent Negotiation Mechanism Based on Dynamic Market Concept for Pareto Optimal Solution -- Integrating Transportation Ontologies Using Semantic Web Languages -- Implementation and Validation Aspects -- A Strategy to Implement and Validate Industrial Applications of Holonic Systems -- Experimental Validation of ADACOR Holonic Control System -- A Proxy Design Pattern to Support Real-Time Distributed Control System Benchmarking -- Applications -- Information Access and Control Operations in Multi-

agent System Based Process Automation -- An Initial Automation Object Repository for OOONEIDA -- Towards Engineering Methods for Reconfiguration of Distributed Real-Time Control Systems Based on the Reference Model of IEC 61499 -- Using Radio Frequency Identification in Agent-Based Manufacturing Control Systems -- Resolving Scheduling Issues of the London Underground Using a Multi-agent System -- KARMEN: Multi-agent Monitoring and Notification for Complex Processes -- Simulation of Underwater Surveillance by a Team of Autonomous Robots -- Supply Chain Management -- A Reference-Model for Holonic Supply Chain Management -- Polymorphic Agent Clusters – The Concept to Design Multi-agent Environments Supporting Business Activities -- Configuration of Dynamic SME Supply Chains Based on Ontologies -- Experiments Toward a Practical Implementation of an Intelligent Kanban System.

Sommario/riassunto

The challenge faced in today’s manufacturing and business environments is the question of how to satisfy increasingly stringent customer requirements while managing growing system complexity. For example, customers expect high-quality, customizable, low-cost products that can be delivered quickly. The systems that deliver these expectations are by nature distributed, concurrent, and stochastic, and, as a result, increasingly difficult to manage. Unfortunately, the traditional hierarchical, strictly centralized approach to control used in these domains is characteristically inflexible, fragile, and difficult to maintain. These shortcomings have led to the development of a new class of manufacturing and supply-chain decision-making approaches in recent years. Solutions based on these approaches usually explore a set of highly distributed decision-making units that are capable of autonomous operations while cooperating interactively to resolve larger problems. The units, referred to as agents in classical computer science and software engineering, or holons if physically integrated with the manufacturing hardware, interact by exchanging information. These units are motivated by arriving at local solutions as well as collaborating and sharing resources and goals in solving the overall problem in question collectively.