

1. Record Nr.	UNINA9910377818203321
Autore	Milisavljevic-Syed Jelena
Titolo	Architecting Networked Engineered Systems : Manufacturing Systems Design for Industry 4.0 // by Jelena Milisavljevic-Syed, Janet K. Allen, Sesh Commuri, Farrokh Mistree
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-38610-4
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (XXV, 301 p. 139 illus., 82 illus. in color.)
Disciplina	670
Soggetti	Manufactures Production management Engineering design Automotive engineering Engineering economics Engineering economy Manufacturing, Machines, Tools, Processes Production Engineering Design Automotive Engineering Engineering Economics, Organization, Logistics, Marketing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Chapter 1 - What is this Monograph About? -- Chapter 2 - Decision-Based Design of Networked Manufacturing Systems (NMS) -- Chapter 3 - Adaptable Concurrent Realization of Networked Manufacturing Systems (ACRONES).-Chapter 4 - Steady-State Operability Analysis -- Chapter 5 - Dynamic Operability Analysis -- Chapter 6 - Realization of Dynamic Management in Reconfigurable Manufacturing System -- Chapter 7 - Closure.
Sommario/riassunto	In this monograph, the authors demonstrate how the integration of adaptability, operability, and re-configurability in the design of complex systems is indispensable for the further digitization of

engineering systems in smart manufacturing. Globalization of the customer base has resulted in distributed and networked manufacturing systems. However, current design methods are not suitable to address variations in product design, changes in production scale, or variations in product quality necessitated by dynamic changes in the market. Adaptability, operability, and re-configurability are key characteristics that are necessary to address the limitations of the current methods used to design networked manufacturing systems. In recent years, the digital transformation driving Industry 4.0 has had an enormous impact on globally distributed manufacturing. Digitalisation, the integration of digital technology into networked engineered systems, is increasingly being adopted to respond to changes in the market. This is achieved by means of (a) the concurrent design of adaptable systems, (b) addressing flexibility in design parameters, (c) conducting an operability analysis, and (d) employing a reconfiguration strategy to address faults and variances in product quality and re-establish connectivity among the elements in the system. The design of manufacturing systems in the age of Industry 4.0 is addressed in this monograph. The authors introduce the concept of a 'smart platform' and a computational framework for the digitalization of networked manufacturing systems. They also suggest how the framework and techniques in this monograph are applicable beyond the manufacturing domain for architecting networked engineered systems in other industries such as chemical processes and health care, that are being transformed through the adoption of the Industry 4.0 construct.

---