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Autore	Lau Kung-Kiu
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1.5 Discussion and ConclusionsReferences; 2. Describing Specifications and Architectural Requirements of COTS Components; 2.1 Introduction; 2.2 Definition of Commercial Components; 2.2.1 Component Interfaces; 2.2.2 Semantic and Protocol Levels; 2.2.3 Interface Notation; 2.2.4 COTS Documents; 2.3 A COTS-based Application Example; 2.4 Software Architecture; 2.5 UML Real-Time; 2.6 Composing the Software Architecture; 2.6.1 The GTS Software Architecture; 2.6.2 Mapping the UML-RT GTS Example to UML Standard; 2.6.3 Including Information into Capsules
2.7 Integrating the Architecture into other CBD Methodologies2.8 Concluding Remarks; References; 3. Definition of COTS Software Component Acquisition Process - The Case of a Telecommunication Company; 3.1 Introduction; 3.2 Overview of the Case; 3.3 Towards the CSCA Process - Analysis of Existing Models; 3.3.1 Overview of the Reference Models; 3.3.2 Acquisition Process Framework based on the Existing Models; 1. Planning; 2. Contracting; 3. Delivery and Use of the Component; 3.4 Requirements for the CSCA Process - the Purchaser's Perspective; 3.4.1 Main concerns Revealed by the Interviews Contracting and negotiationEvaluation of components and suppliers; Management of components and supplier relationships; 3.5 Illustration of the Defined CSCA Process Framework; 3.6 Evaluation of the Process Model - The Server Project; 3.6.1 Feedback from the Evaluation; 3.6.2 Conclusions - General Implications; References; 4. The Library Systems Product Line: A Case Study Demonstrating the Kobra Method; 4.1 Introduction; 4.2 Kobra Components; 4.2.1 Modeling Dimensions; 4.2.2 Containment; 4.2.2.1 Component Specification versus Realization; 4.2.2.2 Containment Trees; 4.2.3 Genericity 4.2.3.1 Generic Components

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Damage Model with Crack Closure Effect; 2.4.2.1 Constitutive Model; 2.4.2.2 Numerical Implementation

2.5 Nonlocal Formulations 2.5.1 Aspects of Nonlocal Averaging; 2.5.1.1 The Averaging Operator; 2.5.1.2 Weight Functions; 2.5.2 Classical Nonlocal Models of Integral Type; 2.5.2.1 Nonlocal Formulations for Lemaitre's Simplified Model; 2.5.3 Numerical Implementation of Nonlocal Integral Models; 2.5.3.1 Numerical Evaluation of the Averaging Integral; 2.5.3.2 Global Version of the Elastic Predictor/Return Mapping Algorithm; 2.6 Numerical Analysis; 2.6.1 Axisymmetric Analysis of a Notched Specimen; 2.6.2 Flat Grooved Plate in Plane Strain; 2.6.3 Upsetting of a Tapered Specimen

2.6.3.1 Damage Prediction Using the Lemaitre's Simplified Model 2.6.3.2 Damage Prediction Using the Lemaitre's Model with Crack Closure Effect; 2.7 Concluding Remarks; Acknowledgments; References; 3 Recent Advances in the Prediction of the Thermal Properties of Metallic Hollow Sphere Structures; 3.1 Introduction; 3.2 Methodology; 3.2.1 Lattice Monte Carlo Method; 3.2.2 Finite Element Method; 3.2.2.1 Basics of Heat Transfer; 3.2.2.2 Weighted Residual Method; 3.2.2.3 Discretization and Principal Finite Element Equation; 3.2.3 Numerical Calculation Models

3.3 Finite Element Analysis on Regular Structures 3.4 Finite Element Analysis on Cubic-Symmetric Models; 3.5 LMC Analysis of Models of Cross Sections; 3.5.1 Modeling; 3.5.2 Results; 3.6 Computed Tomography Reconstructions; 3.6.1 Computed Tomography; 3.6.2 Numerical Analysis; 3.6.2.1 Microstructure; 3.6.2.2 Mesostructure; 3.6.3 Results; 3.7 Conclusions; References; 4 Computational Homogenization for Localization and Damage; 4.1 Introduction; 4.1.1 Mechanics Across the Scales; 4.1.2 Some Historical Notes on Homogenization; 4.1.3 Separation of Scales

4.1.4 Computational Homogenization and Its Application to Damage and Fracture

Sommario/riassunto

With its discussion of strategies for modeling complex materials using new numerical techniques, mainly those based on the finite element method, this monograph covers a range of topics including computational plasticity, multi-scale formulations, optimization and parameter identification, damage mechanics and nonlinear finite elements.
