

# Contents

<b>Foreword</b> .....	VII
<b>Acknowledgements</b> .....	IX
<b>Preface</b> .....	XI
<b>How to Customize this Book</b> .....	XIII
<b>A Graphical Index of Chapters</b> .....	XIX
<b>Introduction, with Focus on the Customer</b> .....	1
<b>1 Mass Customization, Components and Customer Intimacy</b> .....	9
1.1 The Lego Generation Grows Modular, with Grown-up Products and Configurators .....	9
1.2 The Causes: Why Custom-tailored, and why Industrial <i>Mass</i> Customization .....	10
1.3 From Mass Production of the Past to a Modern, Component-based Economy .....	11
1.4 The Road to Customer Intimacy .....	13
1.5 The Benefits of Focus on Both the Customer <i>and</i> the Process ..	16
1.6 Knowledge Sharing Related to Components .....	18
<b>2 Selling Customized While Producing Industrialized</b> .....	21
2.1 Modularization Related to Product Upgrades and Life-cycle .....	21
2.2 From “Assemble to Order” or “Engineer to Order” – to Configure-to-Order .....	23
2.3 Configure-to-Order Trends .....	26
2.4 Marketing to Demanding yet Cost-conscious Customers and Segments .....	27
2.5 The Ubiquitous Nature of Configure-to-Order .....	31
2.5.1 Compose-to-Configure: Configurable Classical Music ..	31
2.5.2 The Ever Growing List of Customized, Complex, System Products and Services .....	34

2.6	Timing the Transition .....	36
2.7	Pine's Matrix Helps to Reduce Uncertainty on Market Turbulence .....	36
	a) Factors of Demand .....	37
	b) Structural Industry Factors .....	37
	c) Our Add-ons for High-tech Enterprises .....	38
2.8	Implementation: A Leap or Several Small Steps .....	39
<b>3</b>	<b>Mass Customization of Services .....</b>	<b>41</b>
3.1	Service Customization .....	41
3.2	The Relationship Between Services and Software .....	41
3.3	Examples of Using Service Automation to Treat Different Customers Differently .....	43
3.4	Customizing Public Administration .....	45
<b>4</b>	<b>Mass Customization of Software Products .....</b>	<b>51</b>
4.1	The Multiple Roles of the Software Industry .....	52
4.2	Software Components Viewed as Service-Providers .....	52
4.3	Customizing Software Support and Training .....	54
4.4	Buy <i>and</i> Build Rather than Buy <i>or</i> Build .....	57
4.5	Five Basic Concepts of Software Customization .....	58
4.6	Collaborative and Adaptive Customization – Intermixed in Complex Products .....	64
4.7	Parameterization in Software Products .....	65
	4.7.1 An Example of Software Parameters .....	66
	a) The Traditional Static Solution .....	67
	b) The Parameterized, Dynamic Solution .....	69
4.8	Other Adaptive-Software Techniques .....	71
<b>5</b>	<b>Streamlining the Product and the Processes .....</b>	<b>73</b>
5.1	A <i>Targeted</i> Process Thinking .....	73
5.2	Component-based Products, Bids, After Sales – and Design-to-Configure .....	75
5.3	Long-lived Product Generations, Few Components, Many Possible Combinations .....	76
5.4	Co-modularization to Double and Re-double the Dividend .....	77
5.5	Product Families vs. Components .....	82
5.6	Modularity Types .....	84
5.7	Corporate Driving Forces of Modularity .....	88
5.8	IT and Knowledge Technology in Achieving the Conflicting Objectives .....	89
5.9	The Benefits of Dynamic Product Structures .....	90

5.10	Managing Change in Customer Requirements	92
5.11	A Brief yet Amazing Calculation Exercise	92
5.12	Propagating Parameterization Throughout the Process	94
<b>6</b>	<b>The Importance of Data, and the Ability to Capitalize on It</b>	<b>97</b>
6.1	IT in Sales and Marketing	97
6.2	CRM in Brief: Ask for More	98
6.3	Automating to Sell	100
	a) Components	100
	b) Functional Configuration	101
6.4	Architecting the Configurability as a Product Tree or a Component Pool	103
6.5	Configurators	106
6.6	Evaluation of Configurators – the Extended Checklist	110
	6.6.1 Six Key Internal Questions	111
	6.6.2 Configurator Functional Capabilities	115
	6.6.3 Configurator Maintenance Environment	116
	6.6.4 Configurator Technical Capabilities	117
	6.6.5 Configurator Evaluation Summary	118
<b>7</b>	<b>Trends in the Order Process for Complex Products and Services</b>	<b>119</b>
7.1	Extreme Engineer-to-Order Industries (a Few Facts from a British Survey)	119
	7.1.1 1030 Hours per Bid – Harvesting Just 38%	119
	7.1.2 Thousands of Hours, yet Bidding Is the Tip of the Iceberg	121
7.2	Mainstream Configure-to-Order Industries (a Few Facts From a Car-dealer Study)	122
7.3	Globalization – <i>The Opportunity to Grow</i>	123
7.4	An Ego-neutral Aid in Workplace Conflicts	124
7.5	Customer Relationship Management and Learning More from Customer Data	125
7.6	Trends in Information Technology	127
7.7	The Web as a Technology Driver	130
	7.7.1 Bringing Customers and Offerings Together (the “Web for Humans”)	130
	7.7.2 Bringing Software Components Together (the “Web for Software Systems”)	131

<b>8 Concluding Remarks</b> .....	135
<b>9 Afterword: the Virtual Future ...</b> .....	137
<b>Supplements:</b>	
<b>S1. Industry Cases</b> .....	145
S1.1 American Power Conversion (APC) .....	145
S1.2 Scania .....	149
S1.3 Dayton Progress Corporation .....	154
S1.4 Rackline Aims High .....	160
S1.5 Air Products & Chemicals Inc. ....	163
<b>S 2. List of Reference Literature</b> .....	167
S2.1 Books .....	167
S2.2 Articles .....	169
S2.3 Reports and Papers .....	169
<b>About the Authors</b> .....	171



<http://www.springer.com/978-3-540-23959-8>

Growing Modular

Mass Customization of Complex Products, Services and  
Software

Kratochvíl, M.; Carson, C.

2005, XX, 172 p., Hardcover

ISBN: 978-3-540-23959-8