

Table of Contents

Preface v

Chapter 1 – Introduction 1

 What is a product? 1

 PLM: What is it? 1

 Product Lifecycle Management: background 3

 Corporate challenges 5

Chapter 2 – Fundamentals 7

 Product data or Product information 7

 Product Lifecycle Management (PLM) 9

 Product lifecycle management concept 11

 Items 11

 Product lifecycle management systems 13

 System architecture 17

 Information models and product structures 21

 Information model 21

 The product information (data) model 22

 The product model 22

 Reasons for the deployment of PLM systems 24

 Summary 25

Chapter 3 – Product lifecycle management systems 27

 Functionality of the systems 27

 Use of product lifecycle management systems in different organization verticals 36

 Product development and engineering 38

 Production 39

 After sales 40

 Sales and marketing 40

 Sub-contracting 41

 Sourcing and procurement 43

 Summary 44

Chapter 4 – Product structures	45
Example 1: Product structure of a ship.	47
Example 2: Product structure of a cellular telephone.	48
Example 3: Product structure of a customizable product.	50
Example 4: Product structure of a configurable service product	51
Summary	52
Chapter 5 – Integration of the PLM system with other applications	53
Different ways to integrate PLM systems	53
Transfer file	55
Database integration	57
System roles.	58
ERP	58
CAD.	60
Configurators	61
EAI.	63
Summary	65
Chapter 6 – Deployment of the PLM system	67
Different stages of deployment	67
Leading a PLM project	68
Understanding the need for change	68
Study of present and objective processes (AS IS and TO BE)	69
PLM maturity model	70
Choosing a system.	70
Realization stage of the project	75
Start up.	77
Steering group	79
Project group	80
Project manager.	82
Problems	83
Accomplishing change in the organization	85
Summary	89
Chapter 7 – Business benefits of a PLM system.	91
Factors leading to product lifecycle management.	91
Benefits of the PLM system in product lifecycle management.	93
Measuring the business benefits in daily operations	97
Material costs: reducing inventory tied capital	97
Improving the productivity of labor	99
Costs of quality	101
PLM and data warehousing as a tool to support decision-making	103
Analyzing the cost of acquisition and the deployment of a PLM system	107

PLM software licenses.	109
Database licenses.	110
Hardware acquisitions.	110
Maintenance of equipment, licenses and software.	110
Summary.	110

Chapter 8 – Challenges of product management in manufacturing industry.	111
Challenges of product management in the engineering and manufacturing industry.	111
Life cycle thinking, value added services and after sales.	111
Traceability.	115
Special challenges of product management in the high tech industry. ...	121
Case 1: Electronics manufacturer.	122
Efficiency as a goal.	122
The management of the company set the following primary objectives for the PLM project.	123
Starting the project.	125
Execution of the project.	126
In the next stage partners came along.	127
Case 2: An engineering product.	129
Situation at the beginning of the project.	129
Management of items.	130
Approval of documents.	131
Management of the product structure.	131
Information system environment in use.	131
Integration of information processing systems.	132
Standard design solutions.	132
Frame of reference for product management.	133
Problem sections of the product management.	134
Developing product lifecycle management in project workshop Plc.	135
Management of documents.	135
Management of the product structure.	137
Change management and workflows.	137
The advantages and development potential brought by the product lifecycle management system.	139
Pilot.	140
Experiences of the pilot.	141
What next?.	143
Case 3: Capital goods manufacturer and customer-specifically variable product.	143
Breakthroughs on subprojects.	145
Controlled entry of documentation into the system.	145

The business processes determine	146
Rome was not built in a day either	146
Guidelines for the future	147
Summary	147
Chapter 9 – Service industry and PLM	149
Introduction	149
What is a service?	150
Categorizing services.	154
Why should services be made more like tangible products?	156
Rational for building service products.	156
When is further productization of services useful?	158
How to make a service more like a tangible product?	160
PLM in service business	164
PLM challenges in service business	164
How can be services modularized?	166
Making items out of product functions	168
Case 4: An IT-service (managed services) provider and a customer-specifically variable product	169
Stage number one	171
The second stage	172
The third and final stage of the implementation	173
The aftermath.	175
What next?	176
Summary	176
Chapter 10 – The role of product information management in collaborative business development	177
CIM: Computer integrated manufacturing	177
CE: Concurrent engineering	180
Product lifecycle management as an enabler of cooperation between companies	183
Contents of collaboration.	185
Successful cooperation	186
Tools of collaboration	187
International standardization organizations.	187
CPC	188
cPDm	189
Summary	190
Chapter 11 – Understanding the product lifecycle	191
The basic behavior of products and lifecycles.	192
Using metrics to steer your business performance in various phases of the product lifecycle	193

Other aspects of product lifecycle	196
Product lifecycle: data (information) management view	196
Building a product business case	198
Summary	205
Chapter 12 – Product and product management strategy	
as a part of business strategy	207
Product lifecycle management as a business strategy tool	207
From changes in the business environment to product strategy	208
Making a product strategy	210
Product management strategy	212
Time to market: the time required to bring a new product to market ..	214
Time to react: the time required to carry out the changes demanded by the market and customers	216
Time to volume: the time required for ramping up the mass production of the product	217
Time to service: the response time to a service order from the customer	219
Summary	220
Chapter 13 – e-Business: electronic business and PLM	221
Preconditions for electric business from the viewpoint of the individual company	224
Significance of product management, collaboration and electronic business for the manufacturing industry	227
Summary	227
Chapter 14 – Digest	229
Epilogue	233
Appendix 1 – Tools and standards of PLM	235
A. CALS	235
B. STEP	236
C. DXF	238
D. IGES	239
E. SGML	239
F. XML	240
G. UML	240
Appendix 2 – Companies and products in the PLM field	243
Appendix 3 – PLM terminology	245
Literature and articles	251