



PLM Interest Group

Compendium of PLM Ideas

For more almost 15 years, the PLMIG published thought-provoking material for its members in the *PLM Journal* and the *2PLMe-zine*.

This Compendium is a compilation of the best, structured into sections for an easy read. It is an ideal document for expanding and challenging your ideas about PLM.

Roger Tempest, PLMIG Co-Founder

Executive Summary

For almost 15 years, the PLMIG published thought-provoking material for its members and for the wider PLM industry in the *PLM Journal* and the *2PLM* e-zine.

When the PLMIG was formed in 2004, nothing existed that might be thought of as a Body of Knowledge about PLM. "PLM" was a relatively new acronym, and a relatively new subject. When PLM practitioners met, they found that they shared some common experiences and problems, but these had never been written down or formalised.

The PLMIG changed this. Formed as "a proactive organisation that should aim to have an impact on PLM", it published articles, ran initiatives and developed tools that have become the largest body of neutral PLM working material.

Much of this has been published in the form of Handbooks and Manuals for specific areas or tasks of PLM, but sometimes you just need ideas rather than instructions.

This Compendium is a compilation of the best articles in the PLMIG's long history. It brings together an enormous amount of structured, well-directed PLM material, all of which was written to enthuse PLM practitioners of the time with the most advanced thinking. In many cases, these articles were the first in which the new ideas were expressed.

Bringing it together allows a structure to form, and with 27 Sections (plus Appendix) it is easy to follow and expand a train of thought.

Ranging from pure theory (why are there 3 different ways to define PLM?) through to where PLM could go in the long-term future (Level 6 and the 2022 Vision) the articles cover the whole scope of PLM.

How has PLM evolved? How do you adopt it effectively? How do you involve stakeholders, and what are the pitfalls? There is information here. How do you create a Vision and understand Best Practice? What is the scope for standardisation and Reference Models? There is information here. How do you approach the technicalities of PDM, PLM-ERP and the Digital Wave? How do you establish Governance and Metrics? How do you quantify the Financial Value, and get what you pay for? There is information here.

The PLMIG has run initiatives to form User Communities; to move the industry towards a PLM Profession; and to enable academia to carry out the most advanced research. The story is here, in over 500 pages of structured thought.

Whether you are new to PLM, and need some good background reading to expand your understanding; or have been working in the same company or field for years, and need something to refresh your thinking; this document is an invaluable reference.

This is not an instruction book - it's a vast collection of ideas. First, read what you want to read; then browse around the subjects; then dip into it again and again. An email address is provided for questions, feedback, or even disagreement. The ideas are presented for you to think about, and where that takes you is up to you.

About This Document

Introduction

PLM practitioners tend to be thirsty for ideas on the subject. Pundits have catered for this for many years, discussing the issues of the moment. But blogs lead only to more blogs - sometimes to insights, but usually to more confusion.

In the first decade of its existence, the PLMIG produced the *PLM Journal* for its members. Initially it was published monthly, and then quarterly as the articles gained more depth. It ran for 52 issues, containing over 300 articles on developing themes.

Over a similar period, the PLMIG produced published shorter, 'sound-bite' articles in John Stark's *2PLM* e-zine.

This amounts to an enormous amount of structured, well-directed PLM material, all of which was written to enthuse PLM practitioners of the time with the most advanced thinking.

Not all of it is still useful. Some of it was promotional, such as setting up workshops: and some of it is just out of date. But most of it isn't. The vast majority of the articles, survey results and white papers are still as relevant now as when they were written. The underlying logic, and the principles and aims, are still accurate.

For PLM practitioners, thirsty for ideas on the subject, this represents a wealth of neutral reference material that is available nowhere else. That large body of informed PLM thinking has been brought together in this *Compendium*. Bringing it all into one place reveals a hidden structure, as articles fall naturally into Sections that can be read as miniature 'stories'.

Document Purpose

This document is for practitioners from all parts of the industry. It is for the person who is told "you are now the PLM Manager", and is desperately hunting for information to get up to speed. It is for experienced practitioners looking for stimulating ideas, or wider views on PLM to refresh or challenge their thinking. It is for vendors who want to know how to expand the industry; integrators who may want to cross-check the latest theory; and academics who want to do truly advanced research.

In fact, anyone who is genuinely interested in PLM.

How To Use This Document

This is not an instruction book. Its contents are intended to give you ideas, which you can then think about in the context of your own PLM environment and decide whether they are useful.

You can browse, read up on a particular subject, or go straight to a specific issue that is currently live for you. Every article has a unique Reference Number in [square brackets]. If you then have further questions, use the Q&A link below.

PLMIG Q&A

If you have any comment, questions or feedback about any of the articles you can send them in via compendium@plmig.com, quoting the Reference Number(s).

Start Here

About This Document	3		
Start Here	5		
Find Your Idea....	6		
Defining PLM	15	PLM Governance	217
Three Definitions of PLM	25	Metrics	227
How PLM Has Evolved	29	Project Management	241
Adopting PLM	45	Financial Management	261
Awareness and Justification	51	PLM Delivery	281
High-Level PLM	67	User Communities	289
PLM Concept Set	93	Professional PLM	311
PLM Vision	99	Professional PLM Round Table	329
PLM Best Practice	119	Syllabus and Qualifications	345
PLM Standardisation	129	The Professional PLM Initiative	365
PLM Reference Models	143	PLM Research	395
PDM	161	Research to Transform PLM	423
PLM - ERP	181	Future of the PLM Industry	491
Digital Transformation	189		
Appendix: Random Ideas	511		

Find Your Idea....

Executive Summary	1
About This Document	3
Introduction.....	4
Document Purpose	4
How To Use This Document	4
PLMIG Q&A	4
Start Here	5
Find Your Idea....	6
Defining PLM	15
Defining PLM - The Starting Point.....	16
More Thoughts on the Definition	18
Shall I Compare PLM to a Summer's Day?.....	20
The Standard Working PLM Definition.....	23
Three Definitions of PLM	25
3 Types of PLM and ERP.....	26
'Pure PLM'	26
'Pure ERP'	26
'True PLM' and 'True ERP'	27
'Nominal PLM' and 'Nominal ERP'	27
Differentiation.....	28
Analysis and Use.....	28
How PLM Has Evolved	29
PLM "State of the Union" 2005.....	30
PLM: A New Paradigm.....	34
The Future of PLM, from Amsterdam	37
PLM: The 'Nearly Man' of Business Improvement	40
Next Year's PLM News.....	41
PLM Prediction for 2010.....	42
10 Years of the PLMIG - How the Future Has Changed	43

Adopting PLM	45
3 Routes to PLM.....	46
Path to PLM.....	48
PLM Terminology: 'Lights-On' PLM.....	50
Awareness and Justification	51
Clarion Call.....	52
Wax On, Wax Off.....	54
PLM Needs Assessment.....	55
The PLM Feasibility Study.....	58
Executive PLM: A New Point of View.....	60
Assessing Your Own PLM.....	64
High-Level PLM	67
PLM Pitfalls: Why Implementations Fail.....	68
The Role of Technology.....	71
Problems of the Long-Lifecycle Product.....	73
PLM Pitfalls: 10 Things to Avoid.....	75
PLM Lifecycle.....	78
The Goal of PLM: Full PLM Maturity.....	84
The CEO, the Board and the Steering Group.....	88
PLM Concept Set	93
Overview: PLM Concept Set.....	94
'Enterprise-Down' Concept.....	95
PLM Permeation Concept.....	96
PLM Traction Concept.....	97
PLM Maturity Definition.....	98
PLM Vision	99
PLM Vision: Where You Want To Be.....	100
Thinking Through the PLM Vision.....	103
Building the PLM Vision.....	105
PLM Vision: The Process of Communication.....	106
PLM Vision and Strategy.....	109
Implementing a PLM Strategy.....	115

PLM Best Practice	119
Best Practice: Where Do We Start?	120
PLM Best Practice Overview	123
Understanding PLM Best Practice	124
PLM Best Practice: Who'll Bell the Cat?	125
PLM Best Practice Definition.....	128
PLM Standardisation	129
PLM Industry Standards.....	130
What Standards Do We Need?	132
Global PLM Standards	135
PLM Standards Launch Workshop	136
Standardisation vs Standards	137
PLM Standardisation.....	139
PLM Reference Models	143
The PLM Benefits Reference Model	144
PLM Benefits Reference Model: The Workshops.....	147
PLM Benefits Reference Model: Structure	149
PLM 8-Layer Model	154
Reference Models: Benefits, Maturity, Best Practice	156
PLM Metrics and Reference Models	158
PDM	161
The PDM Misconception	162
PDM: The Forgotten Discipline.....	164
PLM vs PDM Definition	165
PDM Fundamentals.....	166
15 Change Drivers for PDM Managers.....	172
PDM and Document Management.....	175
Let's Work on PDM	178
PLM - ERP	181
PLM Defines ERP.....	182
What is ERP?.....	182
Working Definition	182
PLM = ERP	183
The Union of PLM and ERP	184
Why PLMuERP is Free	185
Product Structure Standard.....	186

Digital Transformation	189
The Digital Transformation Question	190
PLM vs Digital: User Views.....	192
Digital Transformation - What's New For PLM?	194
Establishing the Basics	196
Towards a Digital Future: White Paper.....	197
PLM and the Digital Future: Industry Survey	202
PLM and the Digital Future: Position Paper	212
The Integrated Future	215
PLM Governance	217
The Need for Good Governance	218
A Standard for PLM Governance	219
Governance Benchmarking	221
Metrics	227
Principles of Metrics for PLM and PDM	228
Generating Metrics for PLM	232
Generating Metrics for PDM.....	237
Project Management	241
The PLM Battlefield and Minimum Entropy	242
PLM and Agile.....	243
Generative Project Planning for PLM.....	245
Full PLM Maturity - The Guiding Star	247
PLM Project Management.....	248
'Ski Jump' Project Planning for PDM	252
PDM Project Management	253
PLM Planning and Company Strategy.....	258

Financial Management	261
Financial Literacy for PLM Managers	262
The Issue of Headcount	263
Why Vendors Can't Quantify the Financial Value of PLM	264
Why Users Can't Quantify the Financial Value of PLM.....	265
Why No-One Can Quantify PLM Value	266
Commercial Value of PLM	267
The One-Page PLM Metrics Algorithm.....	273
Business Transformation - Shooting Too Low.....	274
Restructuring PLM for Business Transformation.....	275
Making PLM Pay	277
PLM Delivery	281
PLM Delivery - How Much Does It Cost?.....	282
Groundwork for PLM Delivery	283
Vendor View of PLM Delivery	284
Delivering Results from the Beauty Parade	285
Everyone Needs to Up Their Game	286
Should Your Vendor Be Committed?	287
The PLM Delivery Paradigm.....	288
User Communities	289
The Power of Many Minds.....	290
Dealing with PLM Complexity.....	292
User Initiative	294
Reducing the PLM Workload.....	296
PLM: What We Need To Know	298
The Birth of User Communities.....	299
Pathfinder Meeting Belgium.....	301
Formats for the Future.....	308

Professional PLM	311
PLM Professionalism	312
The Disappearing PLM Manager.....	313
PLM Manager: Shrewd Career Move?	314
Who Manages the Future of PLM?.....	315
PLM as a Profession.....	316
Professional PLM - The Premise	317
Professional PLM - Is PLM Special?.....	318
Professional PLM - How It Can Be Done	319
Professional PLM - The Benefits.....	320
Professional PLM - Statement of Intent	321
Advancing Your Career.....	322
Pride in PLM.....	323
PLM - No More Offshore.....	324
PLM - One Professional World	325
PLM - The Leading Question	327
Professional PLM Round Table	329
Forming the Round Table.....	330
PLM Premise 1: What is Professionalism?	331
PLM Premise 2: PLM Development and Evolution	333
PLM Premise 3: Needs of the PLM Industry	335
PLM Premise 4: Roles, Grades and Career Progression	338
PLM Premise 5: Standards, Assessment and Certification	340
PLM Premise 6: Governance and Effective Management	342
PLM Premise 7: Using Professionalism for Advanced PLM.....	343
Syllabus and Qualifications	345
Learning About PLM	346
Defining a PLM Syllabus	348
Defining Qualifications	350
PLM Roles and Progression	352
The Neutral PLM Syllabus.....	357
The Professional PLM Initiative	365
Professional PLM Round Table Meets in Wolfsburg	366
Findings from Wolfsburg	367
Findings from Berlin	372
Networking Day UK	377
Steering Group.....	379
Towards a Profession	388

PLM Research	395
PLM Research SIG Concept.....	396
PLM Research SIG Formation	398
White Paper: The Importance of PLM to Industry	400
White Paper: The Goals of PLM Research	404
PLM Research: Barriers and Opportunities.....	407
PLM Research: The Global Challenge.....	411
Lausanne 2007: Common Research Strategy	415
How PLM Research Might Be Developed.....	416
PLM Research: Where Is It?.....	419
Industry Roadmap and the Role of Research	421
Research to Transform PLM	423
PLM International Research Foundation	424
PLM-IRF: Overview	425
PLM-IRF: The Proposal.....	430
PLM-IRF: The Message to Industry	433
Global Survey into the Needs and Opportunities for Advanced PLM Research ...	438
PLM-IRF Launch Meeting Brussels	444
Meeting of Minds opens up the Future of PLM	449
Global Industry Survey into Industrial Expectations for the Future of PLM....	452
PLM Research - an Industry fails its Users	489
Future of the PLM Industry	491
PLM Industry Vision.....	492
Future in Focus	493
Forward Thinking	495
Extrapolating from the Past	498
What We Need.....	502
Focus on Level 5	502
Research for Level 6	502
What We May Not Need	503
Fundamental Constants	505
5-Year and 10-Year Targets	507
Drive for Improvement.....	507
5-Year Target.....	507
10-Year Target.....	507
Level 6 PLM.....	508
Industry Vision 2022	509

Appendix: Random Ideas	511
What PLM Looks Like.....	512
PLM in the Popular Press	513
Why PLM Needs 5 Rudyard Kiplings	515
Active PLM Management	516
PLM Dashboarding	519
Roadmapping	523
SMEs: Origins of PLM Understanding	528
SMEs: Why PLM is Different	529
SMEs: How To Adopt PLM.....	531
Quality and PLM: Where the Synergy Lies	533
The Travelling PLM Manager	537
Transatlantic PLM.....	538
Voice of the User	542
User Community Voice.....	544
PLM Industry Development	548