

Table of Contents

Introduction.....	1
Chapter I Terminology and Definitions.....	1
1 What is a “project”	7
1.1 Objective	8
1.2 Activities or Tasks	8
1.3 Unique	9
1.4 Time	10
1.5 Budget.....	12
1.6 Service or product.....	13
1.7 Specifications	13
2 What is a “program”	14
3 What is “project management”	15
3.1 Managers and Leaders	16
3.2 Project Management	18
4 Defining the Project Managers role	20
5 Pros and Cons of Project Management.....	22
5.1 Advantages	23
Easy communication	23
Team organization.....	24
Time saving	24
Work is done in a structured way	24
Clear task description	24
Better control over resources	24
Increased quality.....	25
Increased visibility.....	25
5.2 Disadvantages	25
Too much focus on tools and techniques.....	25
Ramp up time	26
No authority over resources	26
Complexity	26
Overhead	27
Resources change regularly	27
Time	27
6 Benefits of project management	27
6.1 Benefits relative to management and the project client	28
6.2 Benefits relative to the project	29
6.3 Benefits to people.....	30
7 The scope triangle or triple constraint.....	31

8	Types of “Creep”	32
9	The pain curve	35
10	Risk	37
11	Quality	38
12	Organizational Structures	39
	12.1 Functional	39
	12.2 Matrix	40
	12.3 Project Driven	41

Chapter II Project Management Process and Life Cycle 43

13	The Project Management Process	45
	13.1 Initiation and definition	46
	13.2 Planning	47
	13.3 Execution	50
	13.4 Control	51
	13.5 Close-out	52
14	Rolling wave approach	53
15	Project Management Life Cycle	55

Chapter III Define the Project 59

16	Project Definition	61
	16.1 Description	61
	16.2 Selecting the project	63
	16.3 Problems related to input	65
	Old Projects	66
	No Input	66
	Value of Input	67
	Conditions of Satisfaction	68
	Language	69
	As Soon As Possible or Immediately	71
17	Project Definition Process	73
	17.1 Overview	73
	17.2 Step 1 – Preparation	74
	Determine the real need	74
	Define the end product	76
	Determine priorities for the project	77
	17.3 Step 2 – Project set up	78
	Project objective	79
	Change control	82
	Infrastructure	83

68	Discounted Cash Flow (DCF)	355
69	Net Present Value (NPV).....	356
70	Internal Rate of Return (IRR)	357
 <i>Annex 6 – Exercise Crashing</i>		 <i>361</i>
<i>Index</i>		<i>367</i>
<i>Bibliography</i>		<i>371</i>

17.4 Step 3 – Project Definition Document.....	84
Project definition document	84

Chapter IV Create WBS and generate tasks..... 87

18 Work Breakdown Structure (WBS)	89
18.1 Defining the WBS	89
18.2 The process of decomposition	90
18.3 Uses for the WBS	92
Thought process.....	92
Architectural Tool.....	92
Planning Tool.....	92
Estimating Tool.....	93
Budgeting Tool	93
Reporting Tool.....	94
19 Creating the Work Breakdown Structure	95
19.1 Top-down approach	96
19.2 Bottom-up approach.....	96
20 Testing the completeness of the Work Breakdown Structure	97
21 Different approaches to build the Work Breakdown Structure	98
21.1 Using Nouns.....	98
21.2 Using Verbs	98
21.3 Other possibilities	99
22 Representations of the Work Breakdown Structure	99
22.1 Tree format	99
22.2 Table format.....	99
23 Task Description Worksheet	102

Chapter V Resources, Roles, Responsibilities and Estimates105

24 Staffing the Project – Human Resources	107
24.1 Skills summary	107
24.2 Cost of People	108
24.3 Training, Hiring and Firing	109
24.4 External or Subject Matter Experts (SME).....	110
24.5 Performance Standards.....	111
24.6 The Superstar Team	112
24.7 I like you – I don't like you.....	113
25 Allocate Human Resources to Tasks.....	114

25.1	Skills Inventory Matrix	114
25.2	Assigning People to specific Tasks.....	116
25.3	Obtaining commitment.....	117
25.4	Estimate individual skill levels.....	118
25.5	Check Validity of Responsibility Assignment Matrix ...	119
26	Estimate Activity Duration	121
26.1	Effort, Duration and Elapsed Time	121
26.2	Three Step Duration Forecasting Model	124
	First Step – Estimate Base Effort	124
	Second Step – Estimate Effort for the project.....	125
	Third Step – Determine Duration.....	125
26.3	Methods for estimating duration.....	125
	Compare with similar tasks.....	125
	Historic data.....	126
	Experts.....	126
	Brainstorming	127
	Delphi and Wide Band Delphi Technique.....	127
26.4	Influencing Activity Duration	128
	Fixed Duration Tasks	128
	Resource Driven Task	129
	Communication problem.....	129
26.5	PERT or three-point estimation	132

Chapter VI Determine Task Interdependencies, Critical Path and Slack 137

27	Define task interdependencies	139
28	Different methods of presenting	140
	Gantt.....	140
	Network diagrams	141
29	The Precedence diagramming method	144
30	Creating the network schedule in 3 steps	148
	Drawing network schedule	148
	Forward Pass.....	149
	Backward pass	151
31	Slack and Critical Path	153
	Slack.....	155
	Near-critical Path	155
32	Analyzing the network diagram	156
	Project duration is too long	156
	More than one critical path	156
	Near-critical path	157
	Tasks with a lot of slack.....	157

33 Solutions for problems	157
Fast tracking = work in parallel	160
Move resources from non-critical tasks to critical tasks	161
Use different solutions or technologies	162
Further decompose tasks.....	162
Change dependencies	162
Change scope	162

Chapter VII Develop Project Schedule, Gantt or Harmonogram165

34 Translating the PDM in a schedule.....	167
34.1 Symbols used to indicate start, finish, slack and relationships	168
34.2 Drawing the project schedule	169

Chapter VIII Perform Resource Loading and Leveling173

35 Allocating Human Resources to a Project	175
35.1 Staffing the project	175
35.2 Resources and simultaneous tasks or projects	175
35.3 Uneven allocation of resources over tasks.....	176
35.4 Overtime	177
36 Loading Human Resources	178
36.1 Completing the RAM.....	178
36.2 Three step process of resource loading	179
37 Team Resource histogram.....	183

Chapter IX Generate Project Time Phased and Cumulative Budget.....185

38 Different types of costs	187
39 Estimating the costs	188
39.1 Estimation errors	190
39.2 Top-down estimation approach	191
39.3 Bottom-up estimation approach	191
40 Budget loading	191
41 Final results and project budget baseline	193

**Chapter X Managing Uncertainty and developing
the Risk Management Plan..... 197**

42	What is uncertainty?	199
43	Uncertainty or Risks in Projects.....	200
44	What is risk management?	203
45	Risk Management Plan.....	204
45.1	Risk Management Process	205
	Step 1 – Plan the Risk Management	205
	Step 2 – Identify the risks	206
	Step 3 – Qualify the risks	206
	Step 4 – Quantify the risks	207
	Step 5 – Set up risk response planning	207
	Step 6 – Monitor and Control	207
45.2	Project Clients, Stakeholders and Risks.....	207
45.3	Risks and Project Life Cycle Phases	208
46	Risk Management Planning.....	210
46.1	Risk Breakdown Schedule	211
46.2	Severity scales for threats and opportunities	212
47	Identification of Risks.....	213
47.1	ABC process	213
47.2	Risks and assumptions	214
	Example 1 - Bicycle:	214
	Example 2 – Price of Barrel Crude Oil:	214
47.3	Risks and the constraints	215
	Schedule	215
	People	217
	Budget	219
	Scope	220
47.4	Risk and Cause Identification Techniques	223
	Brainstorming and affinity diagram	224
	Delphi and Wide Band Delphi Technique.....	225
	Interviewing	225
	Root Cause Analysis	226
	Strength-Weakness-Opportunity-Threat Analysis	227
	Cause-and-Effect diagram	228
	Risk Identification Checklist	230
	Flowcharts	230
47.5	Output of the risk identification	230
48	Qualitative Risk Analysis	231
48.1	Definition	231
48.2	Threats and Opportunities.....	231
48.3	Probability and Impact Matrix	232

	Neglect or accept	234
	Watch triggers.....	234
	Threats that require actions.....	235
	Opportunities to trigger	235
48.4	Ranking Risks	235
49	Quantitative Risk Analysis	237
49.1	Definition	237
49.2	Determining the monetary value of risks.....	237
	Step 1	237
	Step 2	237
49.3	Expected Value.....	238
49.4	Expected Monetary Value	238
49.5	Decision Tree.....	239
	Example – Ski Lift:	241
49.6	Statistical parameters	242
	Statistical parameters	243
	Normal Distribution	244
	Beta- and Triangular-distribution.....	246
	Monte Carlo Analysis	247
	Total Value of risk	248
50	Risk Response Planning	249
50.1	Definition	249
50.2	Strategies for threats	249
	Avoid	249
	Transfer	250
	Mitigate.....	250
50.3	Strategies for Opportunities	250
	Exploit	250
	Share	251
	Enhance	251
50.4	Common strategies	251
	Acceptance	251
50.5	Contingency plans.....	251
51	Complete the Risk Register.....	252
52	Monitoring and Control.....	252
52.1	Risk response control.....	252
52.2	Role of risk owner	253
52.3	Unplanned risk events	253
52.4	Responsibility of the project manager	253

Chapter XI Project Execution, Follow Up and Reporting 255

53 Moving from Planning to Execution	257
53.1 Project Sign Off	257
53.2 Project Kick-off Meeting	258
53.3 The Project Manager and his/her new tasks	259
Monitor and Control	260
Importance of control	260
Some analogy with stability of systems	261
Communication with the project stakeholders	263
The Project Manager as a Problem Solver	264
The project manager as a negotiator	265
The Project Manager in charge of Change Management	265
54 Documents available for the Project Manager during execution	267
54.1 Documents prepared during the planning phase	267
54.2 Status reports	267
54.3 Change requests	268
55 Follow-up, control and manage the project.....	268
55.1 The process	268
55.2 Collecting actual and forecasts	270
How do we gather information?	270
Status worksheet	271
How to collect the actual data?	271
Data and their relevance	272
Don't forget the soft data	273
Percentage complete	274
Details versus workload	275
55.3 Report Status of key control factors.....	275
Cost	275
People	277
Schedule	278
Quality	278
Deliverables	278
Milestones	278
55.4 Compare actual to plan.....	279
Positive variance	279
Negative variance	280
Reporting variances	280
55.5 Identifying causes for variances - impact analyses	281
Causes for variances	281
Analyzing the impact	282

55.6	Corrective actions	283
	Behind schedule.....	284
	Over Budget	285
	Adding People	286
	Adding technology	286
	Reducing quality	286
	Reducing scope	287
55.7	Revised project plan.....	288
55.8	Reporting	289
55.9	Comments on project reporting	290
	Team members:	290
	Intermediate management:	290
	Top management, Project Client Executive and Executive Sponsor	291
56	Graphical Reporting Tools.....	291
56.1	Gantt chart.....	292
56.2	Milestone chart.....	294
56.3	People loading	295
56.4	Cost or S-curve.....	295
	Planned Value or time phased budget	296
	Earned Value	296
	Actual Cost	296
	However, the schedule delay shown in the graph means that some tasks are taking more time than originally planned and that may lead to critical path convergence or even the creation of a new critical path after time.....	298
56.5	Work Breakdown Structure.....	298
57	Change Management	298
57.1	Change control.....	299
57.2	The change control process	300
	The process.....	300
	Detect a possible change	300
	Verify authority	302
	Document, Log and Submit.....	302
	Review and evaluate	302
	Determine impact on the project	303
	Accept, Reject or Rework.....	304
	Log, Notify and Integrate in the Plan	304

Chapter XII Project close-out and lessons learned305

58	Completing the Project	307
58.1	NEXT Step - Project Close-out.....	308
	Tasks to complete during the Close-Out Phase.....	308
	Transferring responsibility	308
	Complete Project Records.....	309
	Document results – “As Built”	310
	Client Acceptance	310
	Releasing Project Resources	311
	Preparing for payments	311
	Rewards/Punishment/Party.....	311
	Close Project Office.....	312
59	Lessons Learned Session	313
60	Post Review Meeting	315
60.1	Goal	315
60.2	Questions to answer during meeting.....	316
	Scope:	316
	Schedule:	317
	Cost and Budget:.....	317
	Execution and Control:	317
	Managing Teams:	317
	Managing relationships:	318
	Other questions:	318
61	Document and Archive Project History.....	319
Annexes.....		321
Annex 1 – Abbreviations		323
Annex 2 – Definitions.....		325
Annex 3 – Symbols and Formulas		333
Annex 4 – Elements of Decision Making.....		337
62	Break Even Analyses.....	338
63	Decision or Preference Matrix.....	341
64	Decision Theory	343
Annex 5 – Financial Parameters		351
65	Return on Investment	351
66	Pay Back Time (PBT).....	351
67	Compounded Interest, Future Value (FV) and Present Value (PV)	352