

# Index

**Note to the reader:** Throughout this index **boldfaced** page numbers indicate primary discussions of a topic. *Italicized* page numbers indicate illustrations.

---

## Numbers

80/20 rule, 359

---

## A

- acceptance of risk, 256
- acceptance reports, in Contract Closure process, 400
- accommodating strategy, for conflict management, 307, 309
- accuracy of metrics, 73
- Acquire Program Team process,
  - 276, 313
  - input, 284
  - input and output, 284
  - output, 285–286
  - tools and techniques, 284–285
- acquisition, 115
  - vs. procurement, of team member, 285
- action items log, 369
- activity definition, 17
- activity resource estimating, 17
- activity sequencing, 17
- actual cost (AC), 217, 352, 378
- advertising, 295
- agenda
  - for kickoff meeting, 102
  - for meetings, 120
- algebraic equations, 34
- alternative identification, 150, 155, 168
- analogous estimation, 184, 198, 208, 221
- appeal, 374
- appraisal cost, 243
- approval
  - of program management plan, 139
  - by senior management, 109–110
- archives, 395–396, 399
- arrow diagramming method (ADM), 183, 189–190, 190, 221
- assessment method, 98
- assumptions, 118, 124
  - as process output, 121
  - of program, 157
- assumptions analysis, 248
- asynchronous communication, 303, 313
- ATM approach to risks, 254–255
- attributes, linking projects in program, 51
- audits, in Program Contract Administration process, 374
- authority
  - in functional organization, 26
  - of team member, 204
- Authorize Projects process, 92, 111–112, 112, 124, 304
  - governance, 305
- avoiding strategy
  - for conflict management, 307, 309
  - for risks, 254–255

**B**

backward pass method, 193  
 balanced matrix, 28  
 balanced scorecard, 60, 74  
 baseline, 34, 378  
   cost, 139, 221  
 benchmarking, 75, 264  
   in Quality Planning process, 242  
 benefit-contribution models, for project selection, 116  
 benefit-cost ratio (BCR), 105, 124  
 benefit measurement methods, for project selection, 116  
 benefits, 48, 79  
   relationship with project management, and program management, 53  
 benefits analysis, 106  
 benefits management, 45, 49, 51, 79  
   in program, 58–61, 60  
 benefits/product analysis, 156  
 benefits realization plan, 107, 124, 155  
   as input to PWBS, 158  
   for program, 59  
 benefits statement, program, 108  
 bidder conferences, 295  
 bids, 216  
 bottom-up estimating, 198, 199  
 boundaries  
   of program, 107  
   in program scope statement, 157  
 brainstorming, 124, 168, 264  
   in pre-program setup phase, 102  
   in PWBS creation, 162  
   in Resource Control process, 335  
   for risk identification, 249  
   in scope definition process, 155  
   in transition planning, 152

budget, 221  
   vs. cost, 196  
 budget at completion (BAC), 351, 378  
 budgeted cost for the work schedule (BCWS), 353, 379  
 budgeted cost of work performed (BCWP), 353, 378  
 business analysis, in selection process, 95  
 business case  
   as input to Initiate Program process, 104  
   for program, 156

**C**

calendars, for resources, 181  
 capability, collective, 51  
 career opportunities, in matrix team, 32  
 cash flow (CF), 105, 124  
 cause-and-effect diagram, 249  
   for quality control, 358, 362, 362–363  
 certificate  
   of program completion, 395  
   from Component Closure process, 399  
 certification  
   to assess competence, 206  
   of contract completion, 401  
 change  
   management by program manager, 65  
   in program benefits delivery, 327  
   in projects vs. programs, 55  
   sources of, 328  
 change control system, 143–144, 330, 378  
 change register, 331

- change requests, 13, 335, 378
  - approved, in Communication Control process, 368
  - in Contract Administration, 375
  - in Cost Control process, 349
  - in Integrated Change Control process, 329
  - in Issue Management and Control process, 341
  - in Monitor and Control Program Work process, 338
  - in Risk Monitoring and Control process, 366–367
  - in Schedule Control process, 346
- charter
  - for constituent projects, 304–306
  - program, 108, 125, 155
  - project, 10, 304–305
- checklists analysis, 248
- claims administration system, in
  - Program Contract Administration process, 374
- Closing process group, 14, 46, 388–391, 404
  - Component Closure process, 397–399
  - Contract Closure process, 399–401
  - input, 393–394
  - input and output, 393
  - output, 395–396
  - processes, 391
  - purpose of, 390–391
  - tools and techniques, 394
- Closing program phase, 71
- closure report, 395, 404
- co-location technique, in team development, 289
- coding structure, 186
- collaborating strategy, for conflict management, 308, 309
- collective capability, 51
- combined probability, 33
- common knowledge, 117
- communication, 234, 264, 313
  - management, 239–240
    - interaction among processes, 240
  - in Monitor and Control Program Work process, 338
  - planning for, 235–236
  - in program benefits delivery, 327
  - during program execution, 300–304
    - Information Distribution process, 300, 300–301
  - by project manager, 24
  - skills, 302
  - with stakeholders, 62
  - strategy in stakeholder management plan, 65
- Communication Control process, 240, 264, 367–369, 378
- communication management plan, 145, 259–260, 300, 368
  - in Monitor and Control Program Work process, 337
- communication messages
  - from Component Closure process, 399
  - from Contract Administration, 374
- Communication Planning process, 239, 257–260, 265
  - input, 257–258
  - input and output, 257
  - output, 259–260
  - tools and techniques, 258–259
- communication technology
  - needs, 259
  - requirements plan, 260
- competency
  - assessment, 206–207
  - of team member, 204
- competing strategy, for conflict management, 308, 309

**430** completion – cost baseline

- completion, vs. estimates, in Cost Control process, 349
- complexity, of communication, 258
- compliance strategies, in staff management plan, 205
- Component Closure process, 397–399, 404
- compromising strategy, for conflict management, 308, 310
- concept, 7
- conditional diagramming methods (CDM), 184, 221
- configuration management system, 143, 330, 343
- conflict management, 307–310
  - in Resource Control process, 334
  - for team development, 288
- conflict resolution, 306
  - real world scenario, 308–309
- confusion, in matrix management, 32
- constituent projects, 396
  - charter for, 304–306
- constrained optimization methods, for project selection, 116–117
- constraints, 118, 124
  - of program, 157
- consultation, 61
- contested change, 374
- contingency planning, in Risk Monitoring and Control process, 366
- contingency reserve, 184, 198, 247
- contingent response to risk, 256
- continuous process improvement, 313
- Contract Administration process, 372–375
- contract change control system, 374
- Contract Closure process, 210, 399–401, 404
- contract, documentation requirements of, 107
- contract management plan, 215, 221, 373
- contract performance records, in Contract Closure process, 400
- contract statement of work (SOW), 61, 213, 214, 221
- contractor conferences, 295
- contractor initial response, 216
- contracts, 61, 221, 299, 313, 373
  - forms in transition planning, 152
  - legal requirements, 214
  - negotiation, 298
  - standard forms, 215
  - termination documentation, 401
  - types, 212, 214, 217–218
- control, 49, 79
- control accounts, 186
- control chart, for quality control, 358, 360–361, 361
- controlling, 323
  - big picture, 323–326
- conversation, in Resource Control process, 334
- coordination, in program benefits delivery, 327
- core program team assignments, 113, 202
- core team, assembling, 114
- corporate governance, 66
- corrective action, 378
  - recommendations in Integrated Change Control process, 329
- correlation, 359
- cost, 221
  - vs. budget, 196
  - of quality, 242
  - in triple constraint, 341
- cost aggregation, 199
- cost baseline, 139, 221, 350

cost-benefit analysis, in Quality Planning process, 242

cost budgeting, 17

cost change control system, 348

Cost Control process, 17, 347–349, 378, 398

- performance measurement analysis for, 350–356
  - cost performance, 351–353
  - forecasting, 355–356
  - schedule performance in terms of cost, 353–354

Cost Estimating and Budgeting process, 17, 196, 221

- input, 197–198
- input and output, 197
- output, 200–201
- tools and techniques, 198–200

Cost Management knowledge area, 179

cost management plan, 200, 221

- in Integrated Change Control process, 330

cost overrun, 218

cost performance, 351–353

cost performance index (CPI), 352–353, 378

cost-performance reports, 348

cost plus (CPF), 217

cost plus fixed fee (CPFF), 218

cost plus incentive fee (CPIF), 218

cost plus percentage of cost (CPPC), 217

cost-reimbursable contracts, 217

cost reporting system, in Performance Reporting process, 371

cost variance (CV), 352, 378

crashing, 185, 209, 221

Create Program Work Breakdown Structure (PWBS) process, 135, 158

- input, 158
- input and output, 159

- output, 158–161
- tools and techniques, 161–162

critical chain method, 194

critical path, 192–193, 222

cross-charges, 335

customer/user, as stakeholder, 23

---

## D

data, 313

database, 303, 313

database management system (DBMS), 303, 313

decision tree analysis, 252, 265

- real world scenario, 253

decomposition, 161, 183

- for developing high-level program milestones, 99

defect repair review, for quality control, 363

deliverables, 9, 236

- in Closing process group, 393
- of program planning, 139–140
- of program, subdividing, 161
- quality of, 237

Delivering benefits phase, 71

delivery notices, in Contract Closure process, 400

Delphi technique, 124, 265

- for estimating resource requirements, 208
- in pre-program setup phase, 103
- for risk identification, 249

dependencies

- among projects in program, 54
- as Schedule Development input, 181
- types, 187–188

## 432 Develop Program Management Plan process – exam’s-eye view

- Develop Program Management Plan
    - process, 135, 142
    - input, 142–143
    - input and output, 142
    - output, 144
    - tools and techniques, 143–144
  - Develop Program Team process, 276, 286–290, 313
    - input, 287–288
    - input and output, 287
    - output, 290
    - tools and techniques, 288–289
  - diagramming techniques, for risk identification, 249
  - Direct and Manage Program Execution process, 276, 280–283, 313
    - input, 281
    - input and output, 281
    - output, 283
    - tools and techniques, 282
  - discounted cash flow (DCF), 105
  - discretionary dependencies, 181–182
  - dispute, 374
  - documentation
    - of assumptions, 118
    - in Closing process group, 392
    - on lessons learned, 119
    - requirements for contract or statement of work (SOW), 107
    - in Select Sellers process, 299
  - documentation reviews, 248
  - duration buffers, 194
- 
- E**
- earned value (EV), 351–352, 378
    - in Monitor and Control Program Work process, 338
  - earned value management, 348–349
    - earned value performance, 348
      - in Schedule Control process, 345
    - earned value technique (EVT), 351
    - earnings before interest and taxes (EBIT), 73
    - economic models, for project selection, 116
    - 80/20 rule, 359
    - enhancing positive risk, 256
    - enterprise environmental factors, 62
      - in scope definition process, 156
      - in transition planning, 152
    - entity, 73
    - environmental factors, in Quality Planning process, 242
    - equipment reclamation, requests for change, 335
    - equipment transfer agreements, 335
    - Establishing infrastructure phase, 71
    - estimate at completion (EAC), 349, 355–356, 379
    - estimate to complete (ETC), 349, 355, 379
    - estimates
      - basis of, 180
      - in cost estimating process, 197
      - vs. completion, in Cost Control process, 349
      - independent, 297
    - evaluation criteria, 216–217
    - exam’s-eye view
      - on closing program, 401–402
      - for Initiate Program process, 122
      - on program execution, 311–312
      - on program monitoring and control, 376–377
      - on program schedule and resource planning, 219
      - on programs, 77–78
      - on project planning, 166–167

- on projects, portfolios, and programs, 36–37
- on quality management, 263

exams, to assess competence, 206

Executing process group, 274

- big picture, 274–280
  - exam roadmap, 274–275
- processes, 275–278, 277
- in program management, 46
- in project management, 12–13

executive sponsor, 68, 79, 278, 279

expected monetary value (EMV)

- analysis, 251, 265
- real world scenario, 252

expected value, 34

experimental design, in Quality Planning process, 242

expert judgment, 119

- in Closing process group, 394
- in Component Closure process, 398
- for developing high-level program milestones, 99
- for estimating resource requirements, 151
- in Initiate Program process, 106
- in Integrated Change Control process, 331
- in Monitor and Control Program Work process, 338
- in program management plan development, 144
- for project selection, 117
- in purchase planning, 212
- in PWBS creation, 162
- in scope definition process, 156
- for seller evaluation, 297
- in transition planning, 153

exploiting opportunities, 255–256

external dependencies, 181

external resources, 176

- human resources, for staff assignments, 286

external stakeholders, 64

---

## F

failure cost, 243

fast-tracking, 185, 222

feasibility analysis, 97

fee, 217

final performance review, 395

financial feasibility, 97

finish-to-finish dependency, 188

finish-to-start dependency, 188

firm fixed-price contract, 217

fishbone diagrams, 362, 362

fixed-price contract, 217

float time, 193, 222

flowcharting

- for quality control, 358–359
- in Quality Planning process, 242
- for risk identification, 249

forcing strategy, for conflict management, 308, 310

forecasts, 355–356

- in Cost Control process, 348, 349
- in Monitor and Control Program Work process, 338
- in Performance Reporting process, 372
- in Schedule Control process, 345

formal communication, 303

formalization, 58, 79

forward pass method, 193

free float (FF), 193, 222

functional gap, in matrix management, 32

## 434 functional organization – information

functional organization, 26–27, 27

funding

availability, 197

as input to Initiate Program  
process, 104

funding-limit reconciliation, 199

---

**G**

gap analysis, 91, 99

performing, 100

real world scenario, 100–101

gate review, 71, 79

in program life cycle, 91

governance, 66

in Authorize Projects process, 305

program-specific guidelines, 279

ground-rules, in team development,

288–289

guest speakers, for kickoff meeting, 102

*A Guide to the Project Management*

*Body of Knowledge (PMBOK*  
*Guide)*, 3

on order of magnitude, 108

---

**H**

hierarchical organization chart, 205

high-level program milestones, 98–99

histogram

for quality control, 358, 359

for resources, 150–151

historical information, 119

for estimating resource requirements,  
151, 208

horizontal communication, 302

Human Resource Planning process,

179, 222

competence assessment, 206–207

goals, 201

input, 202

input and output, 201

output, 203–206

recognition and rewards, 289

tools and techniques, 202–203

---

**I**

implementation cost, 243

independent estimates, 297

influence diagram, for risk

identification, 249

influencers, as stakeholder, 23

influencing by project manager, 25

informal communication, 303

Information Distribution process, 240,

265, 276, 300–301, 313

input and output, 300

methods, 303

output, 303–304

in Performance Reporting

process, 371

tools and techniques, 302–303

information gathering

in pre-program setup phase, 102–103

for risk identification, 249

information requests, as process

output, 121

information sharing, in matrix team, 32

information storage and retrieval

systems, 302

information, urgency of need, and

delivery format, 259

- Initiate Program process, 103–110, 124
  - input, 104–106
  - input and output, 104
  - output, 107–108
  - project management framework, 110–111
  - purpose, 103
  - tools and techniques, 106
- Initiate Team process, 92, 112–115, 125
  - input and output, 113
- Initiating process group, 89
  - big picture, 89–93
    - exam roadmap, 90–92
  - mapping processes to process groups and knowledge areas, 93
  - in program management, 46
  - in project management, 10
  - processes in, 11
- initiation, of constituent project, 304
- input to process, 9
  - common items, 117–119
- inspection
  - in Program Contract Administration process, 374
  - for quality control, 363
- intangible benefits, 58, 79
- Integrated Change Control process, 323, 328–332, 379
  - input, 329–330
  - input and output, 329
  - output, 331
  - tools and techniques, 330–331
- Integration Management knowledge area, 134, 141–154
- Interface management plan, 144–147
  - program management plan development, 142–144
- Resource Planning process, 149–151
- Transition Planning process, 151–154
- integration plans, 141
- intellectual property, 261
- interface management plan, 144–147, 168
  - real world scenario, 147–148
- Interface Planning process, 144, 168
  - input and output, 145
  - input to process, 145–146
  - output, 147
  - purpose of, 145
  - tools and techniques, 146
- internal dependencies, 181
- internal human resources, for staff assignments, 285
- internal return rate (IRR), 105, 125
- internal stakeholders, 64
- interviews, 206
  - in pre-program setup phase information gathering, 103
  - in risk analysis, 253
  - for risk identification, 249
- investment analysis, as input to Initiate Program process, 105
- invitation for bid, 216
- Ishikawa, Kaoru, 362
- Ishikawa diagrams, 362, 362
- issue log, in Resource Control process, 334
- Issue Management and Control process, 338–341, 339, 379
- issue register
  - in Issue Management and Control process, 339
  - updates to, 341
- issues, vs. risks, 340
- iterative processes, 141

**K**

Kaplan, Robert, 60  
 key performance indicators (KPIs), 72, 74–76  
 key stakeholders, 62  
 kickoff meetings, 101–102  
 knowledge areas, 2, 3, 37  
   Program Initiating Process group  
     mapped to, 93  
   in program management, 16–22  
   Program Management processes  
     mapped to process groups and,  
     47–48  
   Program Planning Process group  
     mapped to, 136–137  
   project management processes  
     mapped to, 20–21  
 knowledge competence, 206  
 knowledge management, PMIS for, 261  
 known unknowns, 199

**L**

lag, applying to dependencies, 190  
 lateral thinking, 155, 168  
 lead, applying to dependencies, 190  
 leadership  
   by project manager, 25  
   in projects vs. programs, 55  
   for team development, 288  
 learning, in Closing process group, 392  
 lease agreements, 299, 333  
   termination requests, 335  
 lessons learned, 119, 120, 392, 396  
   in Closing process group, 394  
   in Component Closure process, 398  
   as process output, 121  
   real world scenario, 396–397

life cycle  
   for benefits management, 59, 60  
   of project, 9–15  
     stages, 10  
     summary, 15  
 load balancing, 150  
 log, of issue resolution, 334  
 lump-sum contract, 217

**M**

make-or-buy analysis, 211–212  
   and decisions, 213  
 Manage Stakeholders process, 367  
 management, 3  
 management directives, in Communi-  
   cation Control process, 368  
 management information system, 143,  
   151, 330  
   in Closing process group, 394  
   in Component Closure process, 398  
   for developing high-level program  
   milestones, 99  
   for directing and managing  
   program, 282  
   in Issue Management and Control  
   process, 340  
   in Monitor and Control Program  
   Work process, 338  
 management infrastructure, 278  
 management skills  
   for directing and managing  
   program, 282  
   in Issue Management and Control  
   process, 340  
   in projects vs. programs, 55  
   for team development, 288  
 management style, 30  
 mandatory dependencies, 181

market share, 73  
 market trends, and program viability, 97  
 mathematical analysis, 185  
 matrix management, 31–33, 37  
 matrix organization, 28–30, 29  
 matrix organization chart, 205  
 measurable business objective, 75  
     real world scenario, 75–76  
 measurement controls, 72  
 measurement frequency, 72  
 measurement procedure, 72  
 measurement tools, PMIS support  
     for, 261  
 measurement units, 201  
 meetings, 119–120  
     in Component Closure process, 398  
     kickoff, 101–102  
     performance review, 371  
     post-review, 394, 404  
     status-review, 282, 340, 371  
 metrics, 61, 71–76  
     examples, 73–74  
     key performance indicators, 74–76  
 milestones, 125, 180, 222  
     high-level program, 98–99  
     in program, 186  
     in program scope statement, 157  
 mission  
     in high-level business plan, 96  
     of organization, 66  
 mitigate strategies for risks, 254–255  
 mitigation, 265  
 modeling, 252  
 Monitor and Control Program Work  
     process, 336–338, 379  
 monitoring, 323  
     big picture, 323–326  
     in projects vs. programs, 55

Monitoring and Controlling process  
     group  
         in program management, 46  
         in project management, 13–14  
 Monte Carlo simulations, 185, 252  
 motivation, for team development, 288

---

## N

negative risks, strategies for, 254  
 negative stakeholders, 22–23, 62, 63  
 negotiation  
     on contracts, 298  
     for developing high-level program  
         milestones, 99  
     in Initiate Team process, 115  
     by project manager, 24  
     for staff assignments, 285  
     for team development, 288  
 net present value (NPV), 105–106, 125  
 network diagram, 188, 222  
     path duration calculated from, 191  
 networking, 203  
 non-project-based organizations, 26  
 nonconformance cost, 243  
 Norton, David, 60

---

## O

objectives  
     in matrix management, 32  
     in program scope statement, 157  
 observation, in Resource Control  
     process, 334  
 operating income, 73  
 operational definition, 244, 265  
     and quality assurance, 292

**438** operational feasibility – performance competence

operational feasibility, 97  
operations, 5  
    vs. projects, 6–7  
opportunities  
    response strategies for, 255–257  
    in schedule, 344  
    underrun, 348  
opportunity cost, 106, 125  
optimization  
    vs. resource leveling, 209  
    in resource planning, 150  
order agreements, 299  
order-of-magnitude estimate, 108  
organization, 3, 37  
    mission of, 66  
    strategic and tactical plans, 106  
    vision of, 66  
organizational benefits, relationship  
    between programs, projects and, 57  
organizational breakdown structure  
    (OBS), 205  
organizational chart, 205  
organizational culture, influence of, 30–  
    31  
organizational process assets, 62, 114,  
    118–119  
    for developing high-level program  
    milestones, 99  
    for directing and managing  
    program, 282  
    in PWBS creation, 162  
    in scope definition process, 156  
    in transition planning, 153  
organizational structures  
    functional, 26–27, 27  
    influence on program, 31  
    influences on projects, 25–30  
    matrix, 28–30, 29  
    projectized, 27–28, 28  
organizational theory, 146, 203

output  
    common items, 121  
    of process, 9  
outsourcing, 18

---

**P**

parametric estimation, 184, 199,  
    208, 222  
Pareto diagram, 379  
    for quality control, 358, 359–  
    360, 361  
Pareto, Vilfredo, 359  
passive acceptance of risk, 256  
payment requests, approved, in Contract  
    Administration, 374  
payment system, in Program Contract  
    Administration process, 374  
peer reviews, 206  
people management, in projects vs. pro-  
    grams, 55  
Perform Quality Assurance process, 237,  
    265, 276, 314  
    input, 292  
    input and output, 291  
    output, 293–294  
    tools and techniques, 292–293  
Perform Quality Control process, 356–  
    364, 379  
    input, 357–358  
    input and output, 357  
    output, 363–364  
    tools and techniques, 358–363  
performance analysis  
    in Performance Reporting  
    process, 371  
    in Scope Control process, 343  
performance appraisals, 206, 334  
performance competence, 206

- performance measurements, 330, 350–356
  - analysis for Cost Control process, 350–356
  - cost performance, 351–353
  - forecasting, 355–356
  - schedule performance in terms of cost, 353–354
  - in program benefits delivery, 327
  - in Schedule Control process, 346
  - in Scope Control process, 343
- performance reporting, 265, 333, 379
  - in Closing process group, 394
  - in Communication Control process, 368
  - in Integrated Change Control process, 330
  - in Issue Management and Control process, 339
  - in Monitor and Control Program Work process, 337
  - in Perform Quality Control process, 357
  - in Program Contract Administration process, 373
  - in Risk Monitoring and Control process, 364
  - in Schedule Control process, 345
  - in Scope Control process, 343
- Performance Reporting process, 240, 369–372
  - tools and techniques, 371
- performance review meetings, in Performance Reporting process, 371
- performing organization, 3, 25, 37
  - as stakeholder, 23
- personal competence, 206
- personnel records, updates to, 395
- phase gate reviews, 99, 137
- Plan Program Contracting process, 210, 213–217, 222
  - input, 214
  - input and output, 214
  - output, 215–217
  - tools and techniques, 215
- Plan Program Purchases and Acquisitions process, 210, 222
- planned value (PV), 353, 379
- planning, in projects vs. programs, 55
- Planning process group
  - in program management, 46
  - in project management, 11–12
  - processes, 11–12
- Planning Program Purchases and Acquisitions process, 210–213
- PMBOK Guide (A Guide to the Project Management Body of Knowledge)*, 3
- PMI (Project Management Institute), 3
  - standard, and product-oriented view of project life cycle, 10
- policies of organization, 30, 120
- portfolios, 3, 56
  - management, 4
  - vs. program management, 56–58
  - relationship with programs and projects, 4, 5
- position descriptions, 205
- positive net present value, 106
- positive risks, strategies for, 254
- positive stakeholders, 22, 62, 63
- post-review meeting, 404
  - in Closing process group, 394
- pre-assignment, of staff members, 285
- pre-bide conferences, 295
- pre-program setup phase, 71, 90, 94–103
  - gap analysis, 100–101
  - high-level program milestones, 98–99
  - information gathering, 102–103
  - kickoff meetings, 101–102
  - possible results, 98
  - selection process, 95–98

## 440 precedence dependency relationships – program budget

- precedence dependency relationships, 188
- precedence diagramming method (PDM), 183, 189, 189, 222
  - real world scenario, 195–196
- precision level, of cost estimates, 200
- precision of metrics, 73
- predecessor dependency relationships, 187–188
- preliminary program scope statement, 108, 125, 155
- preliminary project scope statement, 10
- present value (PV), 105–106, 125
- presentation, to approval authority, 110
- preventive action, 379
  - recommendations in Integrated Change Control process, 329
- priorities, of project, 331
- prioritized risks, 247
- proactive approach to cost control, 347
- probability
  - in risk analysis, 250–251
  - theory of, 33–34
- problem solving, by project manager, 25
- procedures, 120
- process, 3, 37
- process analysis, 293
- process groups, 10–11, 19
  - mapping project management processes to, 20–21
  - in program management, 15
  - in project life cycle, 15
- processes, 89
  - in Closing process group, 14
  - common input items, 117–119
  - common output items, 121
  - common tools and techniques, 119–120
  - in Executing process group in project management, 12–13
  - in Initiating process group in project management, 11
  - in Monitoring and Controlling process group in project management, 13–14
  - in Planning process group in project management, 11–12
  - in project management, 8–9, 9
- procurement, 18, 176, 222
  - vs. acquisition, of team member, 285
  - implementation of, 294–300
    - Request Seller Responses process, 294–295
    - planning, 209–218
- procurement audits, in Contract Closure process, 400
- procurement documents, 61, 215–216, 222
- procurement management, 222
- Procurement Management knowledge area, 179
- procurement management plan, 212–213, 214, 222
  - updates to, 299
- procurement management processes, relationship among, 299
- procurement performance reviews, 374
- product description, 241
  - in Closing process group, 394
- product skills and knowledge, 282
- program archives, 395–396, 399
- program artifacts, 121, 125
- program benefits, delivery, 326–328
- program benefits statement, 108
  - in Monitor and Control Program Work process, 337
  - updates to, 144
- program board, 68, 79, 278
- program budget, 200, 333
  - and Acquire Program Team process, 284

- in Cost Control process, 348
  - as input to risk management
    - planning, 246
  - in Performance Reporting
    - process, 370
  - updates to, 349, 372
- program charter, 108, 125, 155, 211, 258
- Program Contract Administration
  - process, 210, 372–375, 379
- program cost
  - planning, 196–201
  - of quality, 243, 244, 265
- program director, 68, 278, 279
- program environment, and communication technology choices, 259
- program facilities, 279
- program governance, 51, 66–69, 67, 79
  - framework and structure, 69
- program interfaces, 147, 202, 280
- program life cycle, 48, 70, 70–71
  - program phases, 70–71
- program management, 4, 37, 49, 50–54, 79
  - basic concepts, 48–49
  - basic definitions, 3–4
  - big picture, 44–48
    - exam roadmap, 44–45
  - establishing, 278–280
  - knowledge areas, 16–22
  - main responsibilities, 54
  - vs. portfolio management, 56–58
  - process groups, 15, 19
  - processes, 46–48
    - mapping to process groups and knowledge areas, 47–48
  - vs. project management, 50–51, 54–56
  - relationship with project management, and benefits, 53
  - software for, 186
  - standard definition, 51
  - themes, 58
    - benefits management, 58–61, 60
    - program governance, 66–69, 67
    - stakeholder management, 61–65
- Program Management Information System (PMIS), 334
- program management office (PMO), 4, 49, 69, 80, 278
- program management plan, 134, 140, 168
  - in Closing process group, 393
  - development, 142–144
  - and Executing process group, 277
  - implementation of, 281
  - in Integrated Change Control
    - process, 329
  - in Issue Management and Control
    - process, 339
  - in Monitor and Control Program Work
    - process, 337
  - in Performance Reporting
    - process, 371
  - in Program Contract Administration
    - process, 373
    - and program team development, 287
    - updates to, 161
- program manager, 108, 278
  - assignment, 113
- Program Monitoring and Controlling
  - process group
    - Integrated Change Control process, 328–332
      - input, 329–330
      - input and output, 329
      - output, 331
      - tools and techniques, 330–331
    - Issue Management Control process, 338–341
    - Monitor and Control Program Work
      - process, 336–338
      - input and output, 337

## 442 program office (PO) – programs

- processes, 325, 326
- Resource Control process, 332–336
  - input, 333
  - input and output, 332
  - tools and techniques, 333–335
- program office (PO), 49, 80, 278
- program, overview in kickoff meeting, 102
- program package, 168
  - in PWBS, 159
- program performance reports, 372
- Program Planning process group, 139–141
  - big picture, 134–137
  - developing integration plans for, 141–154
  - processes mapped to knowledge areas, 136–137
- program preferred vendor list, 295
- program quality, 236
  - planning, 240–244
- program reports, from Contract Administration, 374
- program requirements, in program scope statement, 157
- program risk reviews, in Risk Monitoring and Control process, 366
- program roles, 201
- program schedule, 145, 150, 176, 223, 281
  - and Acquire Program Team process, 284
  - as input to risk management planning, 245
  - as input to transition planning, 152
  - in Performance Reporting process, 370
  - updates to, 147
- program scope management, 134
- program scope management plan, 157, 168
- program scope statement, 112, 150, 151, 156, 168, 211
  - in Closing process group, 393
  - as input to PWBS, 158
  - in Integrated Change Control process, 330
  - and PWBS, 257
  - for Quality Planning process, 241
  - in Scope Control process, 343
- program setup phase, 71, 137, 168
  - main tasks, 137–138
  - results, 138–139
- program sponsor, 108
- program staff assignments, 285
- program stakeholders, 44, 45, 80
  - identifying, 63–64
  - managing, 64–65, 80
- program team, 278, 280
  - acquiring, 283–286
  - developing, 286–290
  - training methods, real world scenario, 290–291
- program team directory, 113, 125
- program tools, 279
- program work breakdown structure (PWBS), 134, 145, 150, 168
  - in cost estimating process, 197
  - creating, 158–163, 159
  - documents before and after, 164, 164
  - as input to risk management planning, 246
  - linking to WBS, 163
  - real world scenario, 162–163
  - in Risk Monitoring and Control process, 364
  - as Schedule Development input, 180
  - in Scope Control process, 343
  - and scope statement, 257
- programs, 4, 37, 44, 48, 79
  - basics, 49–50
  - evaluating viability, 97

- grand origin, 93–94
- high-level business plan for, 96–97
- matrix management in, 33
- obtaining approval, 109–110
- organizational structure influence on, 31
- vs. projects, 55–56
  - determining need, 96
- relationship between projects, benefits and, 57
- relationship with portfolios and projects, 4, 5
- progress reporting, 346
- progressive elaboration, 7–8, 37
  - assumptions in, 118
- project activity, 182
- project archives, 399
- project-based organizations, 26
- project charter, 10, 304–305, 314
- Project Communication Management knowledge area, 19
- Project Cost Management knowledge area, 17
- Project Human Resource Management knowledge area, 17–18
- Project Integration Management knowledge area, 19
- project life cycle, 2, 9–15
  - stages, 10
  - summary, 15
- project management, 3, 5–15, 37
  - basic definitions, 3–4
  - importance of, 2
  - processes in, 8–9, 9
  - vs. program management, 54–56
  - progressive elaboration, 7–8
  - project life cycle, 9–15
  - projects vs. operations, 6–7
  - relationship with program management, and benefits, 53
- project management framework, 110–111
- project management information system (PMIS), 261–262, 265
- Project Management Institute (PMI), 3
- project management office (PMO), 4, 37
  - as stakeholder, 23
- project management team
  - vs. project team, 34
  - as stakeholder, 23
- project managers, 22–23
  - in functional organization, 26
  - in projectized organization, 27
  - as stakeholder, 23, 24–25
- project oversight, 327
- project phase, vs. project stages, 15
- project portfolio, 38
- Project Procurement Management knowledge area, 18
- Project Quality Management knowledge area, 18–19
- Project Risk management knowledge area, 18
- project schedule network diagrams, 188
- project schedules, 187–194
  - dependency determination, 187–190
- Project Scope Management knowledge area, 16
- project scope statement, 11
- project sponsor, as stakeholder, 23
- project stages, vs. project phase, 15
- project stakeholders, 3, 22–25, 38
  - identifying, 22–24
- project team members, as stakeholder, 23
- project team, vs. project management team, 34
- Project Time Management knowledge area, 17
- projectized organization, 27–28, 28

## 444 projects – request for proposal (RFP)

projects, 3, 37  
   identifying relationships, real world  
     scenario, 52–53  
   vs. operations, 6–7  
   vs. programs, 55–56  
     determining need, 96  
   relationship between programs, ben-  
     efits and, 57  
   relationship with portfolios and pro-  
     grams, 4, 5  
   selection, 115–116  
     benefit measurement methods, 116  
     constrained optimization methods,  
       116–117  
     expert judgment, 117  
     starting in program, 306  
     what it is, 5–6  
 proposal, 216  
   evaluation techniques, 297  
 PWBS dictionary, 160, 168

**Q**

qualitative risk analysis, 244  
 quality, 234, 265  
   controlling, 356–364  
   planning for, 235–236  
 quality assurance, 291–294, 314  
 quality audits, 292, 314  
 quality checklists, 244  
   in Perform Quality Control  
     process, 358  
 quality control, 265, 356–364  
   input, 357–358  
   input and output, 357  
   output, 363–364  
   tools and techniques, 358–363  
 quality improvement plan, 243  
 Quality Management, 236–238  
   interaction with other processes, 237

quality management plan, 243, 292  
   in Perform Quality Control  
     process, 358  
 quality metrics, 244, 265, 292  
 Quality Planning process, 237, 240–  
   244, 265  
   input, 241–242  
   input and output, 241  
   output, 243–244  
   tools and techniques, 242–243  
 quantitative analysis, 185  
 quantitative estimation of costs, 199  
 quantitative risk analysis, 245  
 quotation, 216

**R**

RACI chart, 114, 125  
 random variable, 34  
 ranking, 209  
 reactive approach, to cost control, 347  
 receiver in communication line, 302  
 recognition  
   in staff management plan, 205  
   in team development, 289  
 records management system, in Contract  
   Closure process, 401  
 recruitment practices, 113  
 regulations, in program scope  
   statement, 157  
 reliability of metrics, 73  
 reporting systems, in Performance  
   Reporting process, 371  
 reports, in Performance Reporting  
   process, 370  
 request for information (RFI), 294  
 request for proposal (RFP), 61, 216, 294

- request for quotation (RFQ), 61, 216, 294
- Request Seller Responses process, 210, 277, 294–295, 314
- requests. *See also* change requests when directing and managing program, 283
- reserve analysis, 199
  - in Risk Monitoring and Control process, 365
  - in schedule development, 184
- residual risk, 265
- resolutions, proposed, in Issue Management and Control process, 340
- Resource Control process, 379
  - output, 335
  - real world scenario, 336
- resource leveling, 150, 185, 194, 208–209, 223, 334
  - vs. optimization, 209
- resource management, 208
- resource management plan, 168, 198, 202, 211
- Resource Planning process, 149–151, 169
  - input, 149–150
  - input and output, 149
  - tools and techniques, 150–151
- resource pool description, 150
- resources, 176
  - accounting adjustments, 375
  - for constituent projects, 305–306
  - estimating and managing, 207–209
  - histogram, 150–151
  - optimization in matrix, 32
  - planning, big picture, 176–179
  - program management plan on, 140
  - requirements, 149
    - updates to, 186
  - scarcity, and opportunity cost, 106
  - as Schedule Development input, 181
    - updates to availability, 399
- responsibilities forms, 205
- responsibility assignment matrix (RAM), 114, 125, 205
- responsibility, of team member, 204
- result of project, 6
- return on investment (ROI), 74, 106, 125
- reviews, 120
  - in Closing process group, 392
- rewards
  - in staff management plan, 205
  - in team development, 289
- rework cost, 243
- risk, 234, 266
  - vs. issues, 340
  - planning for, 235–236
  - reassessment and analysis, 365
- risk audits, 365
- risk breakdown structure (RBS), 246
- risk categories, 246
- risk identification, 244
- Risk Management Planning and Analysis process, 238, 244–254, 266
  - input, 245–246
  - input and output, 245
  - interaction with other processes, 239
  - output, 247–248
  - techniques and strategies, 248–254
    - risk analysis, 250–254
    - risk identification, 248–250
  - tools and techniques, 246
- risk mitigation, 80
- Risk Monitoring and Control process, 238, 266, 364–366, 365, 379
- risk probability and impact assessment, 250
- risk register, 146, 247, 364
- risk response plan, 247
- risk-response planning, 245

risk response techniques, 254–257  
 role, of team member, 203  
 role-responsibility-authority forms, 205  
 roles and responsibilities assignments,  
 and program team  
 development, 288  
 root-cause identification, for risk identi-  
 fication, 249  
 run chart, for quality control, 358, 359

---

## S

safety strategies, in staff management  
 plan, 205  
 scatter diagram, for quality control,  
 358, 359  
 schedule. *See also* program schedule  
 for project, 187–194  
 dependency determination, 187–  
 190  
 in triple constraint, 341  
 schedule activity, 182, 183  
 Schedule and Planning Resource Man-  
 agement, processes, 178, 178  
 schedule baseline, 350  
 schedule change control system, 346  
 schedule comparison bar charts, 346  
 schedule-compression techniques, 185  
 Schedule Control process, 17, 344–  
 347, 379  
 Schedule Development process, 17, 179–  
 187, 223  
 input, 180–182  
 input and output, 180  
 output, 186–187  
 tools and techniques, 182–186  
 schedule dilation, 209  
 schedule management plan, 186, 223  
 schedule model, 192  
 schedule network analysis, 185, 190–  
 194  
 schedule performance, in terms of cost,  
 353–354  
 schedule performance index (SPI),  
 354, 379  
 schedule planning, big picture, 176–179  
 schedule variance (SV), 353–354, 379  
 scope, 342–344  
 of program, 107, 142  
 in program management plan, 140  
 in projects vs. programs, 56  
 of transition plan, 153  
 in triple constraint, 341  
 scope baseline, 350  
 scope change control system, 343  
 Scope Control process, 342–344, 379  
 scope creep, 8, 13, 38  
 Scope Definition process, 135, 150, 154–  
 158, 169  
 input, 155  
 input and output, 154  
 output, 156–157  
 tools and techniques, 155–156  
 scope management plan  
 as input to PWBS, 158  
 in Scope Control process, 343  
 scope statement  
 preliminary program, 108, 125, 155  
 program, 112, 150, 151, 156, 168  
 for project, 11  
 scoring models, for project selection, 116  
 screening system, for seller  
 evaluation, 298  
 secondary risk, 266  
 Select Seller process, 296–300  
 input, 296  
 input and output, 296  
 output, 298–299  
 tools and techniques, 297–298  
 Select Seller Responses process, 277

- Select Sellers process, 210
- selection criteria, in Initiate Program process, 108
- selection methods, in Initiate Program process, 106
- seller, 18
- seller invoices, in Program Contract Administration process, 373
- seller rating system, 297
- sender in communication line, 302
- senior management, program approval, 109–110
- sensitivity analysis, for risks, 251
- service, as product of project, 6
- sharing positive risk, 256
- should-cost estimates, 297
- shutdown, in Closing process group, 392
- simulation, 252
- slippage, in schedule, 344
- SMART qualities, of key performance indicators, 75
- SMARTA qualities, of key performance indicators, 75
- smoothing strategy, for conflict management, 307, 309
- social map, 61, 80
  - in pre-program setup phase information gathering, 103
- sponsor
  - program, 108
  - project, 23
- staffing management plan, 145, 204–205, 223, 284
  - and program team development, 287
  - updates to, 286
- staffing pool description, 113
- staffing requirements, 202
- stakeholder analysis, 61–63, 80, 146, 155
  - stakeholder analysis chart, 146, 152, 202, 211
    - in Communication Control process, 368
    - for communication planning, 258
    - in Information Distribution process, 301
  - stakeholder management, 51
    - in program, 61–65
  - stakeholder management plan, 65
  - stakeholders
    - in change process, 65
    - communication requirements analysis for, 258
    - identifying in selection process, 96
    - program, 44, 45, 80
      - identifying, 63–64
      - managing, 64–65
    - project, 3, 22–25, 38
      - identifying, 22–24
    - risk tolerance and threshold, 246
    - skills and knowledge, 144
  - standard deviation, 34, 360
  - The Standard for Program Management*, 3
  - standards, in program scope statement, 157
  - start-to-finish dependency, 188
  - start-to-start dependency, 188
  - starting projects, in program, 306
  - statement of work (SOW), 213
    - contract, 61, 213, 214, 221
    - documentation requirements of, 107
  - statistical sampling, for quality control, 363
  - status reports, in Closing process group, 394
  - status-review meetings, 282
    - in Issue Management and Control process, 340
    - in Performance Reporting process, 371

## 448 strategic analysis – trend analysis

- strategic analysis, and program viability, 97
- strategic business plan, 93  
relationship to programs, 94
- strategy, 66–67
- strong matrix, 28
- success, in projects vs. programs, 56
- successor dependency relationships, 187–188
- supporting details, 121
- surveys, in pre-program setup phase  
information gathering, 103
- SWOT (strengths, weaknesses, opportunities, and threats) analysis, 125, 266  
in pre-program setup phase, 103  
for risk identification, 249–250
- synchronous communication, 314
- synchronous information distribution, 303
- synergy, in matrix team, 32
- 
- T**
- tangible benefits, 58, 80
- target value, 72
- team-building activities, 289
- team members, acquisition, vs. procurement, 285
- team performance assessment, 290
- technical feasibility, 97
- technical infrastructure, 279
- technical performance measurements, in Risk Monitoring and Control process, 366
- techniques in process, 9
- templates  
for document team members' roles and responsibilities, 203
- in interface planning, 146  
for schedule development, 183
- temporary nature of projects, 5–6
- tender, 216
- tender notice, 216
- termination notice, in Contract Closure process, 400
- termination requests, 398
- threats, response strategies for, 256–257
- 360-degree feedback, 206, 334
- threshold  
for cost management, 200  
vs. tolerance, 246  
value, 72
- time-and-material (T&M)  
contracts, 218
- time buffer, 184
- Time Management knowledge area, 179
- time reporting system, in Performance Reporting process, 371
- time reserve, 184
- to-complete performance index (TCPI), 356
- tolerance, vs. threshold, 246
- tools in process, 9
- top-down estimating, 198
- total float (TF), 193, 223
- training, in team development, 289
- transfer strategies for risks, 254–255
- transition agreement, 154
- transition, in Closing process group, 392
- Transition Planning process, 136, 151–154, 169  
input and output, 152  
input to process, 151–152  
output, 153–154  
tools and techniques, 152–153
- trend analysis, 379  
in Risk Monitoring and Control process, 365

triple constraint, 341–349  
triplet relationship, 4–5

---

## U

uncertainty, and risk, 238  
underrun opportunities, 348  
uniqueness, of project product, 6  
units, 72  
units of measurement, 201

---

## V

value realization, 59, 74  
values  
    in high-level business plan, 97  
    in organizational culture, 30  
variables, random, 34  
variance, 34, 350  
    acceptable limits for, 360  
    analysis, 346  
    in Risk Monitoring and Control  
    process, 365  
variance reports, 349  
vendor conferences, 295  
vendors, list of qualified, 213

vertical communication, 302  
virtual team, 115, 125  
vision  
    in high-level business plan, 96  
    of organization, 66

---

## W

weak matrix, 28  
weighting system, for seller  
    evaluation, 297  
what-if scenario analysis, 194  
withdrawal strategy, for conflict man-  
    agement, 307, 309  
work authorization system, 282, 314  
work breakdown structure (WBS), 16,  
    161, 169  
    linking PWBS to, 163  
work environment, 30  
work package, 161, 169  
work results, 283  
    in Issue Management and Control  
    process, 339  
    in Performance Reporting  
    process, 370  
    in Program Contract Administration  
    process, 373  
    and quality assurance, 292