



A Power to be Reckoned With: Project Management for Software Testers

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WELCOME



Agenda



- Project management concepts
- PM in action
- Implementation strategies



Project management concepts

Terminology



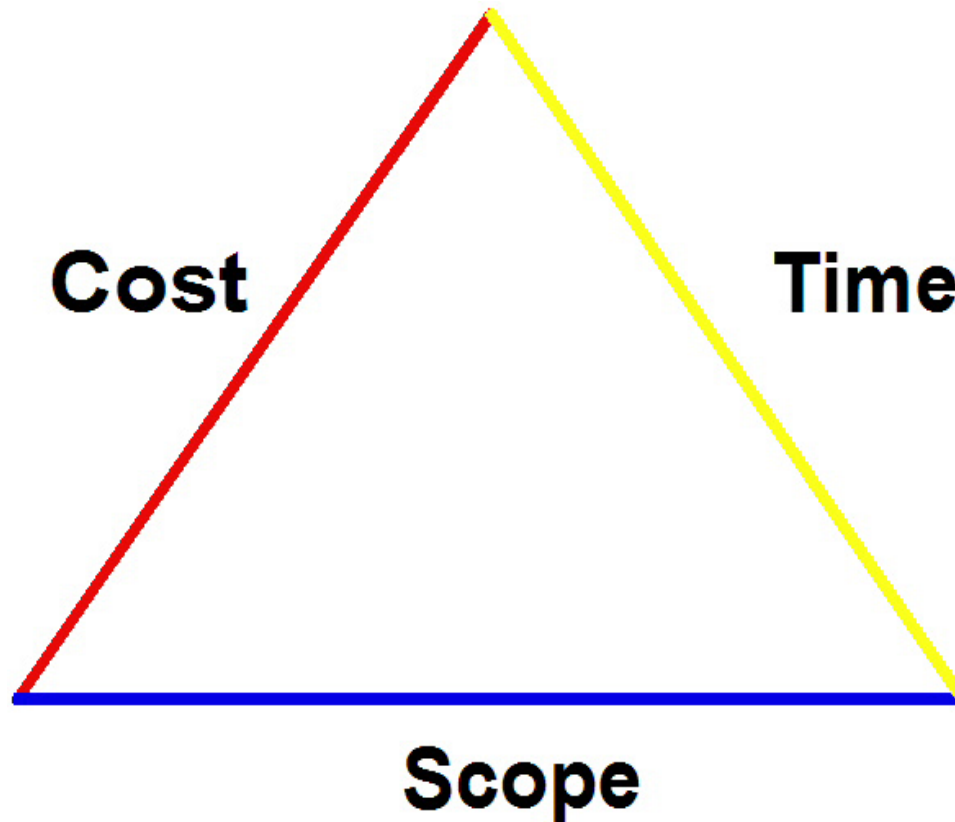
- Project
- Project triangle
- Project processes
- Project team
- PM knowledge areas

Definition: Project



- Temporary
- Ad-hoc
- Specific goal

Project triangle



Project processes



- Initiation
- Planning
- Execution
- Closing
- Controlling

Project team



- Project Manager
- Sponsor
- Client
- Stakeholder
- Subject matter expert
- Functional managers
- Resources

PM knowledge areas



- Scope
- Time
- Cost
- Human Resources
- Procurement
- Communication
- Risk
- Quality
- Integration



Project management in action

Initiation phase



- Project charter
 - Goal
 - Sponsor
 - Project manager

Planning phase: Project definition



- Scope document
- Requirements document
- Graphical WBS
- Outline WBS
- Functional RAM
- Task List WBS
- Dependency analysis
- Network diagram
- Task estimates
- PERT chart
- Critical path analysis
- Gantt chart

Scope document



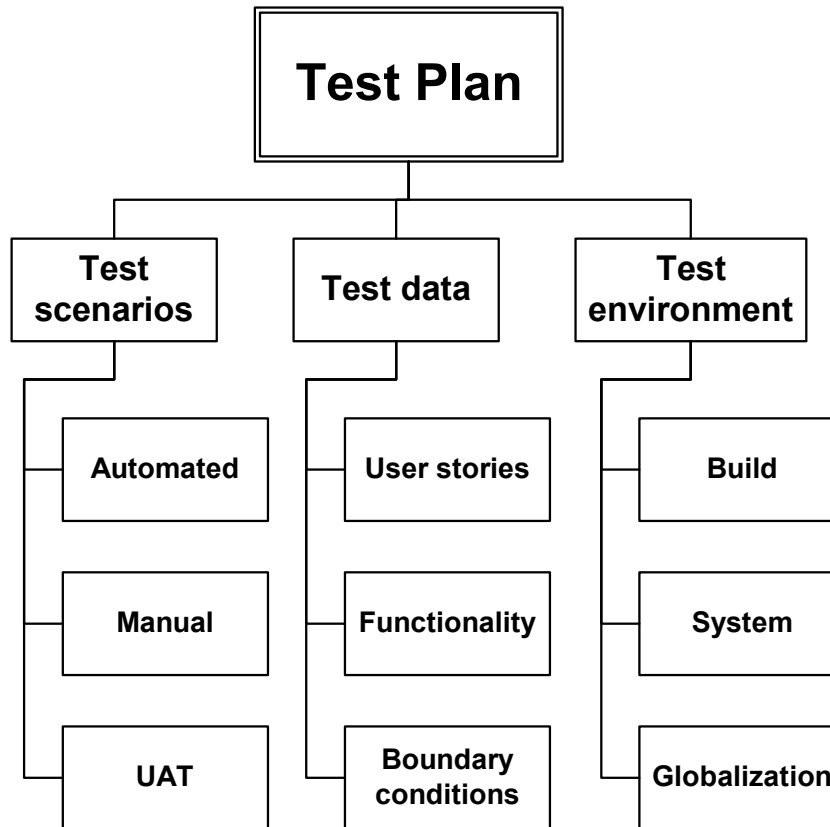
- Critical Success Factors
- Critical Success Measures
- Deliverables
- Constraints
- Assumptions
- Risks
- Exclusions

Requirements document



- One statement/story per requirement
- Traceability matrix
- Documented sources
- Links to design specs and test documents
- Change control
- Shared and managed repository

Graphical WBS



Outline WBS



- I. Test scenarios
 - A. Automated tests
 - 1. Build verification tests
 - 2. System tests
 - 3. Performance tests
 - B. Manual tests
 - 1. New features
 - 2. Defect repairs
 - 3. Regression
 - C. UAT tests
 - 1. Daily operations
 - 2. Month-end activities
 - 3. Annual reports

Functional RAM for task analysis



	<u>Developers</u>	<u>Testers</u>	<u>DBA</u>	<u>Operations</u>	<u>Security</u>	<u>Configuration</u>	<u>Marketing SME</u>	<u>Finance SME</u>
Automated tests - build	Create tests	Review test specifications and coverage						
Automated tests - system	Approve design	Create baseline database					Approve test data	Approve test data
Automated tests - system	Review test specifications and coverage	Create tests	Determine environment requirements	Determine remote office scheduling requirements	Review test specifications and coverage	Review test specifications and coverage	Review test specifications and coverage	Review test specifications and coverage
UAT tests	Review test specifications and coverage	Approve tests					Create tests	

Task List WBS



WBS	Task Name
2	Create a test plan
2.1	Develop test scenarios
2.1.1	Develop automated tests
2.1.1.1	Develop build tests
2.1.1.1.1	Create tests
2.1.1.1.2	Review test specs and coverage
2.1.1.2	Develop system tests
2.1.1.2.1	Create tests
2.1.1.2.1.1	Design test cases
2.1.1.2.1.2	Review test case design
2.1.1.2.1.3	Review marketing specs and coverage
2.1.1.2.1.4	Review finance specs and coverage
2.1.1.2.1.5	Review security specs and coverage
2.1.1.2.1.6	Review configuration specs and coverage
2.1.1.2.1.7	Determine test environment requirements
2.1.1.2.1.8	Determine remote office scheduling requirements
2.1.1.2.1.9	Test cases approved
2.1.1.2.2	Develop baseline database
2.1.1.2.2.1	Create database
2.1.1.2.2.2	Review baseline database marketing info
2.1.1.2.2.3	Review baseline database finance info
2.1.1.2.2.4	Review baseline database design
2.1.1.2.2.5	Baseline database approved

Dependency analysis



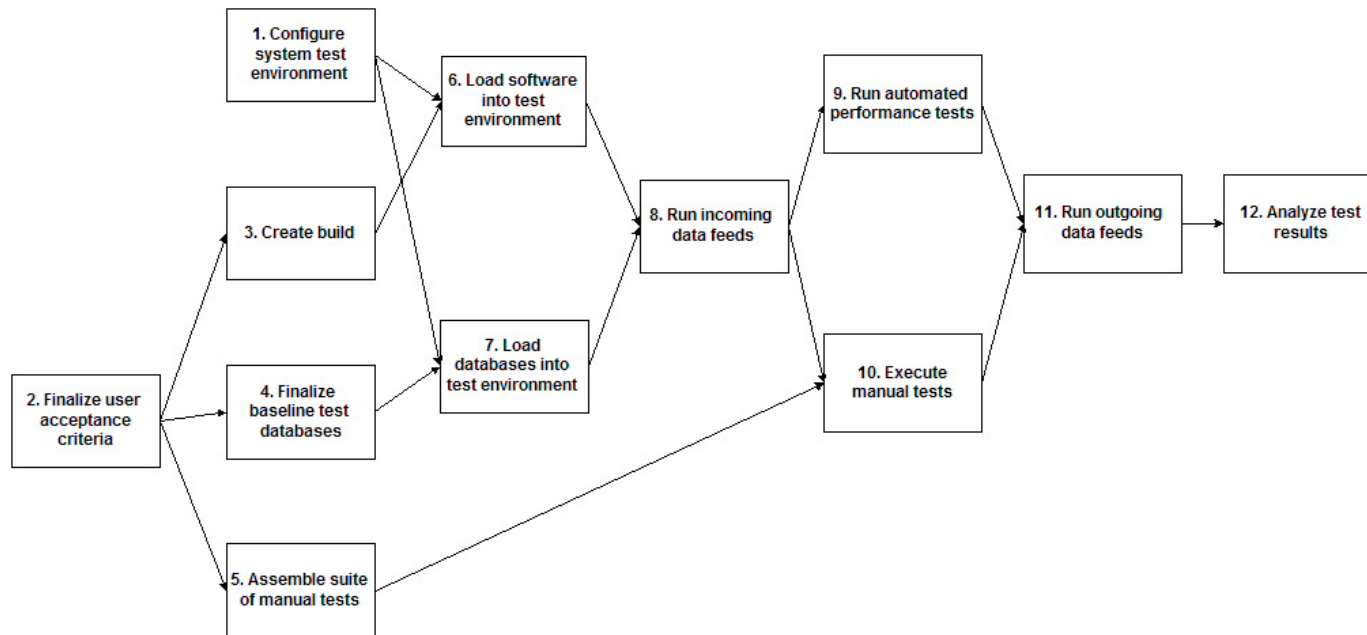
- Finish-to-start
- Start-to-start
- Finish-to-finish
- Start-to-finish
- Mandatory
- Discretionary
- External

Tasks for network diagram



3.3.2	<input type="checkbox"/> Perform system tests
3.3.2.1	Configure system test environment
3.3.2.2	Finalize user acceptance criteria
3.3.2.3	Create build
3.3.2.4	Finalize baseline test databases
3.3.2.5	Assemble suite of manual test cases and data
3.3.2.6	Load software into test environment
3.3.2.7	Load databases into test environment
3.3.2.8	Run incoming data feeds
3.3.2.9	Run automated performance tests
3.3.2.10	Execute manual tests
3.3.2.11	Run outgoing data feeds
3.3.2.12	Analyze test results
3.3.2.13	System tests complete

Network diagram



Task estimates



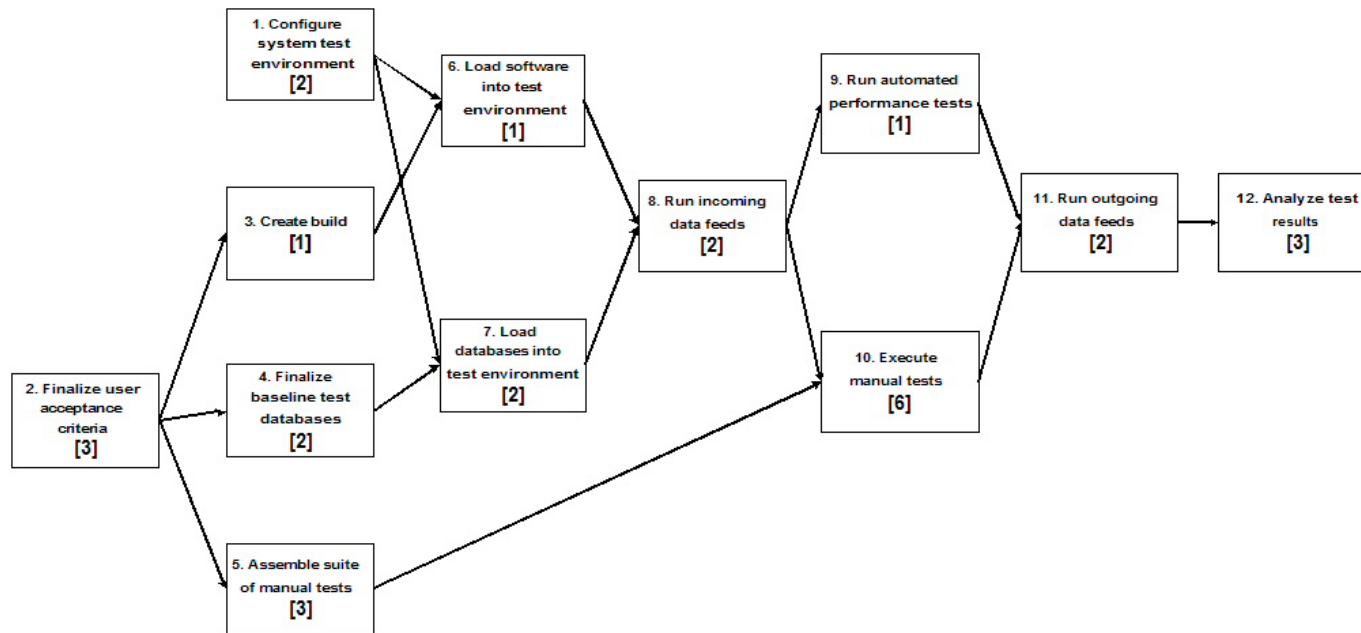
- Level of detail
- Ownership of estimate
- Effort vs. duration
- Loss and rework
- Human productivity
- Training factors
- Communication complexity

Tasks with estimates



3.3.2	☐ Perform system tests	20 days
3.3.2.1	Configure system test environment	2 days
3.3.2.2	Finalize user acceptance criteria	3 days
3.3.2.3	Create build	1 day
3.3.2.4	Finalize baseline test databases	2 days
3.3.2.5	Assemble suite of manual test cases and data	3 days
3.3.2.6	Load software into test environment	1 day
3.3.2.7	Load databases into test environment	2 days
3.3.2.8	Run incoming data feeds	2 days
3.3.2.9	Run automated performance tests	1 day
3.3.2.10	Execute manual tests	6 days
3.3.2.11	Run outgoing data feeds	2 days
3.3.2.12	Analyze test results	3 days
3.3.2.13	System tests complete	0 days

Network diagram with estimates



Critical Path analysis



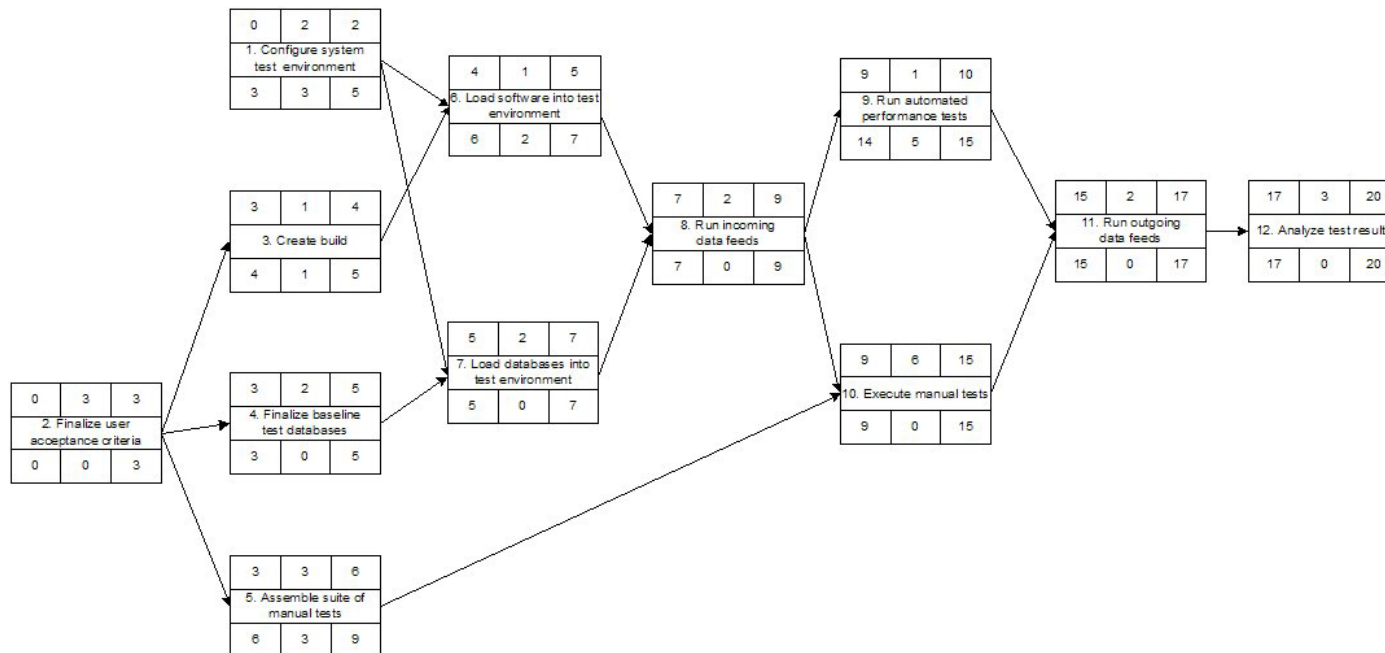
1-6-8-9-11-12	11
1-6-8-10-11-12	16
1-7-8-9-11-12	12
1-7-8-10-11-12	17
2-3-6-8-9-11-12	13
2-3-6-8-10-11-12	18
2-4-7-8-9-11-12	15
2-4-7-8-10-11-12	20
2-5-10-11-12	17

PERT legend

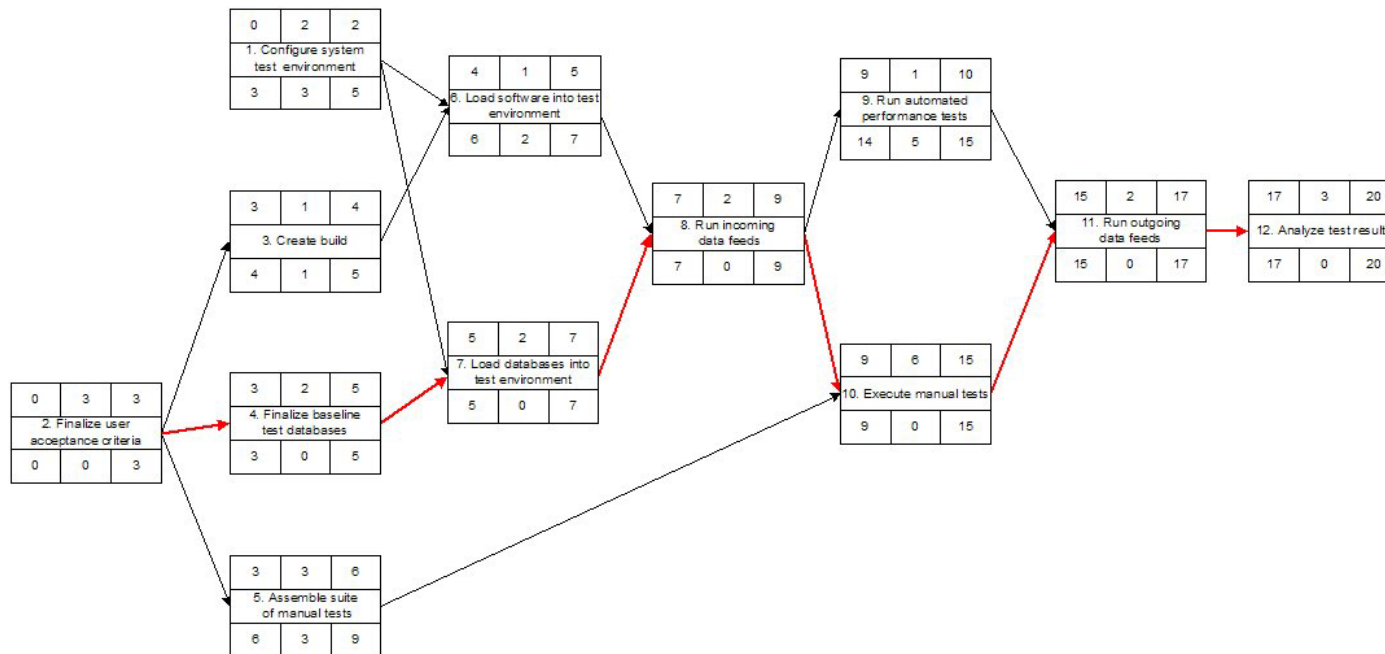


Early Start	Duration	Early Finish
Task Name		
Late Start	Slack	Late Finish

PERT chart



Critical path

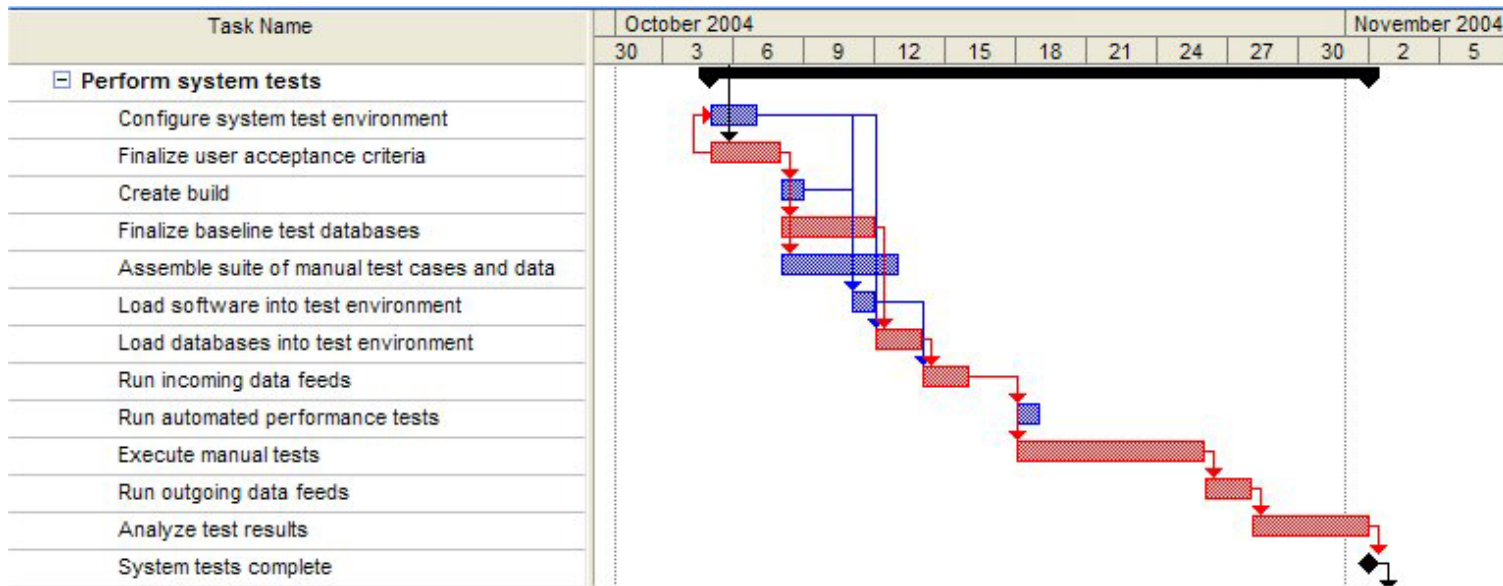


Slack by task



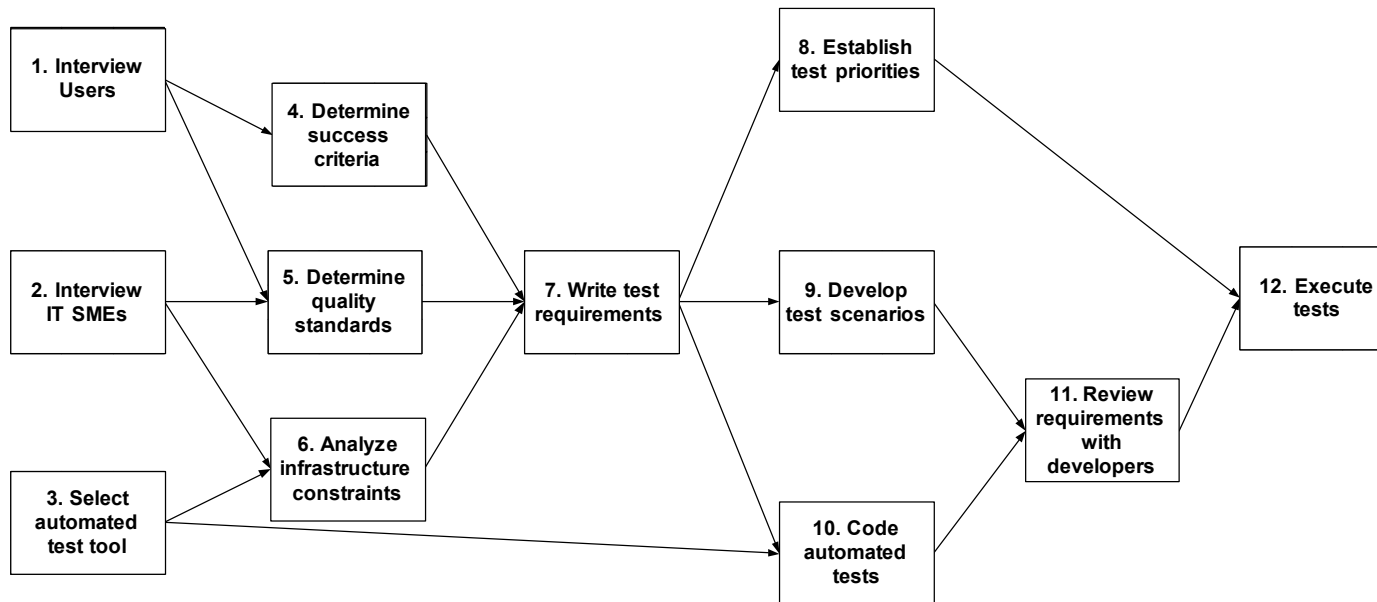
Task Name	Duration	Start	Finish	Predecessors	Total Slack
<input type="checkbox"/> Perform system tests	20 days	Fri 9/24/04	Thu 10/21/04		0 days
Configure system test environment	2 days	Fri 9/24/04	Mon 9/27/04	78SS	4 days
Finalize user acceptance criteria	3 days	Fri 9/24/04	Tue 9/28/04	70	0 days
Create build	1 day	Wed 9/29/04	Wed 9/29/04	78	1 day
Finalize baseline test databases	2 days	Wed 9/29/04	Thu 9/30/04	78	0 days
Assemble suite of manual test cases and data	3 days	Wed 9/29/04	Fri 10/1/04	78	3 days
Load software into test environment	1 day	Thu 9/30/04	Thu 9/30/04	77,79	2 days
Load databases into test environment	2 days	Fri 10/1/04	Mon 10/4/04	80,79	0 days
Run incoming data feeds	2 days	Tue 10/5/04	Wed 10/6/04	82,83	0 days
Run automated performance tests	1 day	Thu 10/7/04	Thu 10/7/04	84	5 days
Execute manual tests	6 days	Thu 10/7/04	Thu 10/14/04	84,81	0 days
Run outgoing data feeds	2 days	Fri 10/15/04	Mon 10/18/04	86,85	0 days
Analyze test results	3 days	Tue 10/19/04	Thu 10/21/04	87	0 days

Gantt chart



Exercise

Network Diagram



Planning phase: Project Plan



1. Scope document
2. Requirements document
3. WBS
4. Schedule – Gantt, calendar, milestones
5. Budget
6. Resource plan
7. Task RAM
8. HR plan
9. Quality plan
10. Communications plan
11. Procurement plan
12. Risk plan

Schedule: Milestones



Start project	09/06/04
Build test environment design complete	09/08/04
System functionality documentation complete	09/09/04
User stories documentation complete	09/10/04
Boundary conditions documentation complete	09/11/04
System test environment design complete	09/13/04
UAT test development complete	09/15/04
Globalization test environment design complete	09/16/04
Automated test development complete	09/17/04
Manual test development complete	09/23/04
Test plan creation complete	09/23/04

Budget



<u>WBS</u>	<u>Task Name</u>	<u>Sep-04</u>	<u>Oct-04</u>	<u>Nov-04</u>	<u>Dec-04</u>
4.3.2.1	Configure test environment				
	Staff Labor				
	Contractor Labor				
	Materials				
	Charge-backs				

Resource Plan: Task view



Task Name	Resource Names
<input type="checkbox"/> Develop automated tests	
<input type="checkbox"/> Develop build tests	
Create tests	Fong
Review test specs and coverage	Sandy
<input type="checkbox"/> Develop system tests	
<input type="checkbox"/> Create tests	
Design test cases	Juan
Review test case design	Barbara
Review marketing specs and coverage	Leah
Review finance specs and coverage	Ian
Review security specs and coverage	Peter
Review configuration specs and coverage	Sven
Determine test environment requirements	Klaus
Determine remote office scheduling requirements	Helene
<input type="checkbox"/> Develop baseline database	
Create database	
Review baseline database marketing info	Leah
Review baseline database finance info	Ian
Review baseline database design	Barbara
Develop performance tests	Juan
Automated test development complete	Charles

Resource Plan: Allocation view



Resource Name		Work	Details Sep 12, '04					
			S	M	T	W	T	F
⊕	Sandy	144 hrs		40h	24h	16h	16h	8h
	Review test specs and coverage	48 hrs						
	Develop defect repair tests	40 hrs		8h	8h	8h	8h	8h
	Determine incoming data feed specs	24 hrs		8h	8h	8h	8h	
	Determine outgoing data feed specs	16 hrs		8h	8h			
	Determine replication specs	8 hrs		8h				
	Design system test environment	8 hrs		8h				
⊕	Natasha	168 hrs		16h	16h	16h	16h	16h
	Analyze user requirements	48 hrs		8h	8h	8h	8h	8h
	Develop new feature tests	80 hrs		8h	8h	8h	8h	8h
	Provide system specs	40 hrs						
⊕	Arjun	120 hrs		40h	32h	24h	16h	
	Analyze system requirements	32 hrs		8h	8h	8h	8h	
	Develop regression tests	40 hrs		8h	8h	8h	8h	
	Develop daily operations tests	24 hrs		8h	8h	8h		
	Develop month-end activities tests	16 hrs		8h	8h			
	Develop annual report tests	8 hrs		8h				
⊕	Juan	136 hrs		16h	16h	16h	16h	16h
	Design test cases	64 hrs		8h	8h	8h	8h	8h
	Develop performance tests	40 hrs		8h	8h	8h	8h	8h
	Analyze performance requirements	16 hrs						
	Design unit testing environment	8 hrs						
	Design integration testing environment	8 hrs						

Task RAM



Task		Charles	Arjun	Sandy	Juan	Natasha	Fong	Barbara	Leah	Ian
2.1.2	Develop manual tests									
2.1.2.1	Gather requirements									
2.1.2.1.1	Analyze user requirements	F		B		A			C	C
2.1.2.1.2	Analyze system requirements	F	A		B			D		
2.1.2.1.3	Analyze performance requirements	F			A		D			
2.1.2.2	Develop new feature tests	F	B			A		D		
2.1.2.3	Develop defect repair tests	F		A		B				
2.1.2.4	Develop regression tests	F	A		B		E	E		
2.1.3	Develop UAT tests									
2.1.3.1	Develop daily operations tests	F	A	B					C	C
2.1.3.2	Develop month-end activities tests	F	A			B			C	C
2.1.3.3	Develop annual report tests	F	A		B				C	C
	A	Directly performs the work and is answerable for the quality								
	B	Reviews work to determine adherence to quality standards								
	C	Approves the work								
	D	Must be consulted								
	E	May be consulted								
	F	Must be notified after the task is complete								

HR Plan



- Resource analysis
- Staffing plan
 - Recruitment
 - Training
 - Evaluation
- Team building

Quality Plan



- Quality Assurance
 - Quality criteria definitions
 - Quality assessment methods
- Quality Control
 - Change management
 - Testing methodologies
 - Defect tracking
 - Standards
 - Environment
 - Tools
 - Auditing

Communication Plan



- **Protocols**

- Meetings
- Status reports
- Procedures
- Etiquette
- Conflict resolution

- **Tools**

- Workflow
- Messaging
- Discussion
- Documentation
- Archive

Procurement Plan



- Make-or-buy analysis
- Solicitation planning
- Vendor selection
- Contract administration

Risk Plan



- Description
- Owner
- Probability
- Impact
- Potential Cost
- Trigger
- Mitigation Strategy

Execution phase



- Status monitoring
- Status reporting
- Product vs. project changes
- Change management
- Revisions to the project plan

Closing phase



- Product delivery
- Acceptance criteria
- Maintenance plan
- Administrative tasks
- Lessons Learned
- Final reports
- Performance evaluations



Implementation Strategies

PM methodologies



- Waterfall
- Spiral
- Agile

Organizational structures



- Functional
- Weak matrix
- Balanced matrix
- Strong matrix
- Projectized

PM roles



- Executive
- Managerial
- Administrative

Conclusion



- Negotiate like a contractor
- Keep the triangle in balance
- Right-size the methodology
- Close every project
- Educate your developers
- Obtain PM credentials
- Associate with other PMs

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House of Testing

