



# **SNS COLLEGE OF TECHNOLOGY COIMBATORE**

**AN AUTONOMOUS INSTITUTION**

Accredited by NBA – AICTE and Accredited by NAAC – UGC with ‘A’ Grade

Approved by AICTE New Delhi & affiliated to the Anna University, Chennai

## **DEPARTMENT OF MCA**

**Course Name : 19CAE709 - SOFTWARE TESTING AND QUALITY ASSURANCE**

**Class : II Year / III Semester**

**Unit I - Introduction**

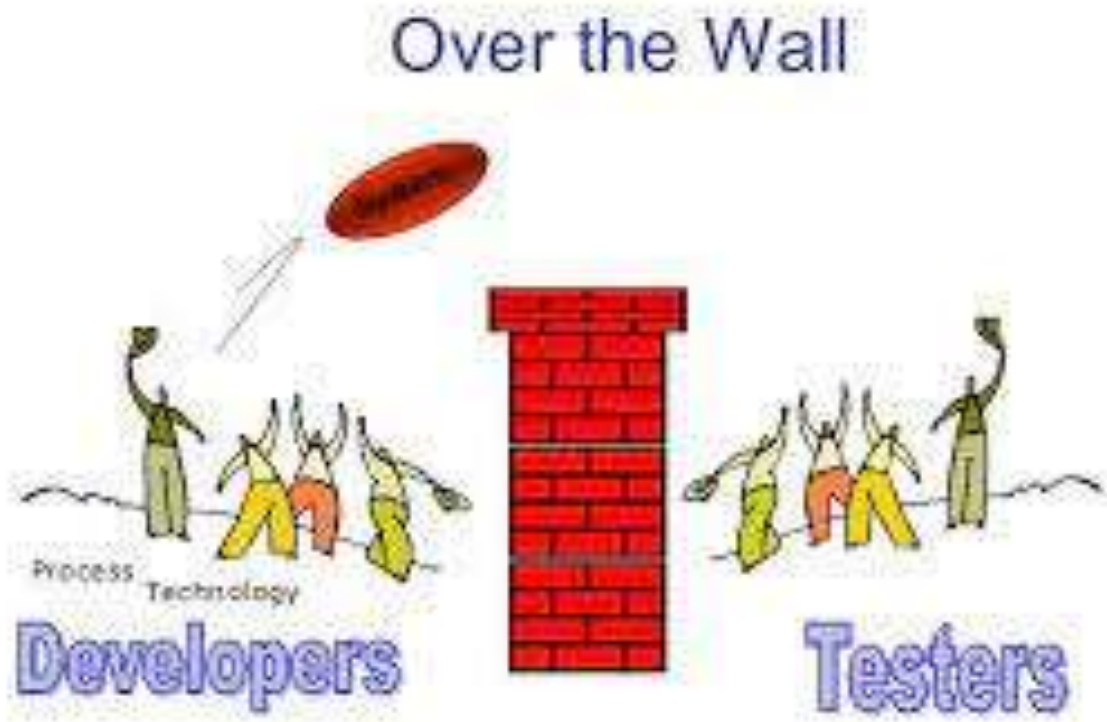
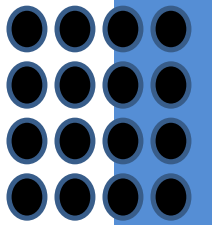
**Topic III – Organizing for Testing**



# Organizing for Testing



## Organizing for Testing

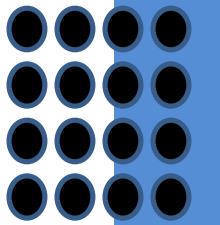




# What should do before perform Testing



- Define the scope of testing
- Ensure adequate time and resources are available for testing





# Organizing for Testing



Five tasks

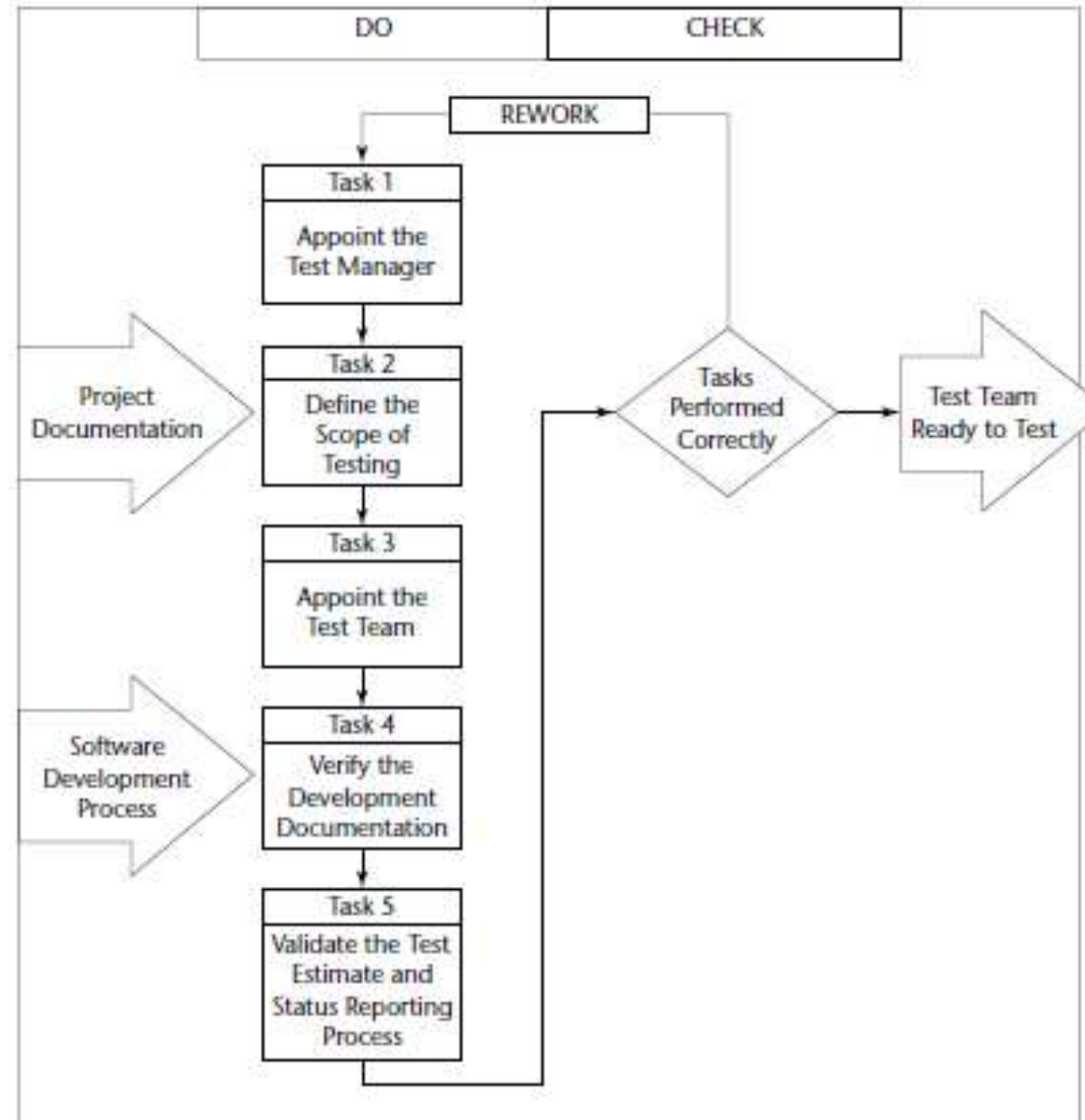


Figure 7-1 Workbench for organizing testing.



# Organizing for Testing

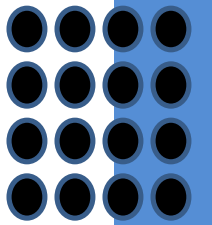


## Input

- Project documentation
- Software development process

## Do Procedures

1. Appoint the test manager
2. Define the scope of testing.
3. Appoint the test team.
4. Verify the development documentation
5. Validate the test estimate and project status process.

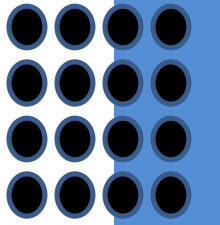




# Task 1: Appoint the Test Manager



- Define the scope of testing
- Appoint the test team
- Define the testing process and the deliverables produced
- Write/oversee the test plan
- Analyze test results and write the test report(s)





# Task 2: Define the Scope of Testing



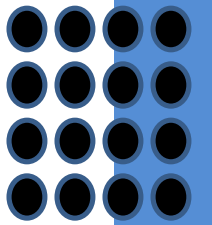
User needs are met

Project implementation effective and efficient

Quality factors

System internal Control

Test manager should define that scope of testing

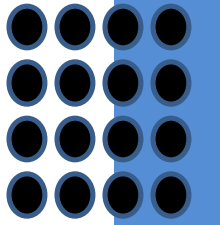




# Task 3: Appoint the Test Team



- The test team is an integral part of the testing process. The disadvantages of a person checking his or her own work include the following:
  - Misunderstandings
  - Improper use of the development process
  - Accepting erroneous test results
  - Underestimate the need for extensive testing
  - Formal division between software development and software testing







# Four approaches to appointing a test team



TEST TEAM APPROACH	COMPOSITION OF TEST TEAM MEMBERS	ADVANTAGES	DISADVANTAGES
Internal	Project team	<ul style="list-style-type: none"><li>• Minimize cost</li><li>• Training</li><li>• Knowledge of project</li></ul>	<ul style="list-style-type: none"><li>• Time allocation</li><li>• Lack of independence</li><li>• Lack of objectivity</li></ul>
External	Quality assurance Professional testers	<ul style="list-style-type: none"><li>• Independent view</li><li>• IT professionals</li><li>• Multiple project testing experience</li></ul>	<ul style="list-style-type: none"><li>• Cost</li><li>• Overreliance</li><li>• Competition</li></ul>
Non-IT	Users Auditors Consultants	<ul style="list-style-type: none"><li>• Independent view</li><li>• Independence in assessment</li><li>• Ability to act</li></ul>	<ul style="list-style-type: none"><li>• Cost</li><li>• Lack of IT knowledge</li><li>• Lack of project knowledge</li></ul>
Combination	Any or all of the above	<ul style="list-style-type: none"><li>• Multiple skills</li><li>• Education</li><li>• Clout</li></ul>	<ul style="list-style-type: none"><li>• Cost</li><li>• Scheduling reviews</li><li>• Diverse backgrounds</li></ul>

**Figure 7-2** Test team composition.



# Task 4: Verify the Development Documentation



INITIATION PHASE	DEVELOPMENT PHASE				OPERATION PHASE
	Definition Stage	Design Stage	Programming Stage	Test Stage	
SOFTWARE SUMMARY					
Project Request Document	Functional Requirements Document	System/ Subsystem Specification	User Manual		(Uses and updates many of the initiation and development phase documents.)
Feasibility Study Document		Program Specification	Operations Manual		
Cost/Benefit Analysis Document	Data Requirements Document	Database Specification	Program Maintenance Manual		
TEST PLAN					
				Test Analysis Report	

**Figure 7-3** Documentation within the software life cycle.



# Task 4: Verify the Development Documentation

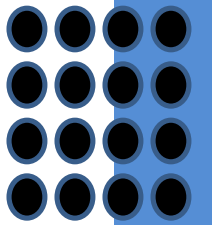


CRITERIA	WEIGHTS				
	1	2	3	4	5
1. Originality required	None—reprogram on different equipment	Minimum—more stringent requirements	Limited—new interfaces	Considerable—apply existing state of the art to environment	Extensive—requires advance in state of the art
2. Degree of generality	Highly restricted—single purpose	Restricted—parameterized for a range of capacities	Limited flexibility—allows some change in format	Multipurpose—flexible format, range of subjects	Very flexible—able to handle a broad range of subject matter on different equipment
3. Span of operation	Local or utility	Small group	Department	Division	Entire corporation
4. Change in scope and objective	None	Infrequent	Occasional	Frequent	Continuous
5. Equipment complexity	Single machine—routine processing	Single machine—routine processing, extended peripheral system	Multicomputer—standard peripheral system	Multicomputer—advanced programming, complex peripheral system	Master control system—multicomputer, auto input/output, and display equipment
6. Personnel assigned	1 to 2	3 to 5	6 to 10	11 to 18	More than 18
7. Developmental cost (\$)	1K to 10K	10K to 50K	50K to 200K	200K to 500K	More than 500K
8. Criticality	Limited to data processing	Routine corporate operations	Important corporate operations	Area/product survival	Corporate survival
9. Average response time to program change	2 or more weeks	1 to 2 weeks	3 to 7 days	1 to 3 days	1 to 24 hours
10. Average response time to data input	2 or more weeks	1 to 2 weeks	1 to 7 days	1 to 24 hours	0 to 60 minutes
11. Programming languages	High-level language	High-level and limited assembly language	High-level and extensive assembly language	Assembly language	Machine language
12. Concurrent software development	None	Limited	Moderate	Extensive	Exhaustive

Figure 7-4 Example of weighting criteria.



# Task 4: Verify the Development Documentation



TOTAL WEIGHTED CRITERIA	SOFTWARE SUMMARY	USER MANUAL	OPERATIONS MANUAL	PROGRAM MAINTENANCE MANUAL	TEST PLAN	FEASIBILITY STUDY DOCUMENT	FUNCTIONAL REQUIREMENTS DOCUMENT	SYSTEM/SUBSYSTEM SPECIFICATION	TEST ANALYSIS REPORT	PROGRAM SPECIFICATION	DATA REQUIREMENTS DOCUMENT	DATABASE SPECIFICATION	PROJECT REQUEST DOCUMENT	COST/BENEFIT ANALYSIS DOCUMENT
0 to 12*	X													
12 to 15*	X	X												
16 to 26	X	X	X	X	X	X			**		***	***	***	***
24 to 38	X	X	X	X	X	X	X		**		***	***	***	***
36 to 50	X	X	X	X	X	X	X	X	X		***	***	***	***
48 to 60	X	X	X	X	X	X	X	X	X	X	***	***	***	***

Notes:  
 \*Additional document types may be required at lower-weighted criteria totals to satisfy local requirements.  
 \*\*The test analysis report logically should be prepared, but may be informal.  
 \*\*\*Preparation of the project request document, cost/benefit analysis document, data requirements document, and database specification is situationally dependent.

**Figure 7-5** Total weighted documentation criteria versus required document types.



# Task 4: Verify the Development Documentation



LEVEL	USE	DOCUMENTATION ELEMENTS	EXTENT OF EFFORT
1	Minimal	Software summary plus any incidentally produced documentation.	No special effort, general good practice.
2	Internal	Level 1 plus user manual and operations manual.	Minimal documentation effort spent on informal documentation. No formal documentation effort.
3	Working Document	Level 2 plus functional requirements document, program specification, program maintenance manual, test plan, test analysis report, system/subsystem specification, and feasibility study document.*	All basic elements of documentation should be typewritten, but need not be prepared in finished format for publication or require external edit or review.
4	Formal Publication	Level 3 produced in a form suitable for publication.*	At a minimum, all basic elements prepared for formal publication, including external review and edit.

\*In addition, the following documents should be prepared, depending on the situation: data requirements, database specification, project report, and cost/benefit analysis.

**Figure 7-6** Alternate method for determining documentation.



# Task 5: Validate the Test Estimate and Project Status Reporting Process

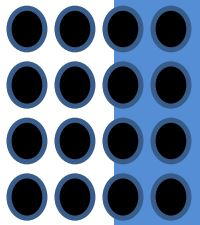


SOFTWARE STATUS REPORT					
	DESIGN	CODE	TEST	RELEASE	POINTS EARNED
Module A	1	1			2
Module B	1				1
Module C	1				1
Module D	1	1	1		3
Module E	1	1			2
Module F	1				1
Module G	1	1			2
Module H	1	1	1	1	4
Module I	1				1
Module J	1	1			2
TOTALS	10	6	2	1	19
PERCENT COMPLETE = $19/40 = 48\%$					

**Figure 7-7** Simple status report.



# Task 5: Validate the Test Estimate and Project Status Reporting Process



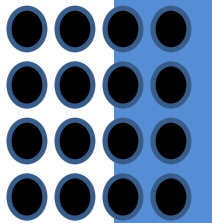
FILENAME	ID	RA	CLASS	DESCRIPTION	DESIGN	CODE	TEST	RELEASE
F.UDHEAD	DF-U150	MKM	U	PRINT HEADING FOR DELTA LISTING (CONFIG)	--/--/-- 01/27/00	--/--/-- 02/08/00	--/--/-- 03/15/00	04/15/00 04/21/00
F.UDLIST	DF-U151	MKM	U	PRINT DELTA LISTING (CONFIG)	--/--/-- 01/31/00	--/--/-- 02/10/00	--/--/-- 03/15/00	04/15/00 04/21/00
F.UDLTST	DF-U152	MKM	U	START UDELTA SUBTASKING (CONFIG)	--/--/-- 01/31/00	--/--/-- 02/15/00	--/--/--	04/15/00
F.UDMAT	DF-U153	MKM	U	CHECK BUFFERS FOR MATCH (CONFIG)	--/--/-- 01/14/00	--/--/--	--/--/--	04/15/00
F.UDMOVE	DF-U154	MKM	U	MOVE DATA INTO MEMORY (CONFIG)	--/--/-- 02/02/00	--/--/-- 03/01/00	--/--/-- 04/04/00	04/15/00 04/11/00
F.UDOPT	DF-U155	MKM	U	SET OPTIONS IN DELTA (CONFIG)	--/--/-- 02/01/00	--/--/-- 02/28/00	--/--/-- 04/14/00	04/15/00 04/11/00

**Detail Interdependency Listing**

**Figure 7-8** Detail interdependency listing.



# Task 5: Validate the Test Estimate and Project Status Reporting Process



FILENAME	ID	RA	CLASS	DESCRIPTION	DESIGN	CODE	TEST	RELEASE
F.UDHEAD	DF-U150	MKM	U	PRINT HEADING FOR DELTA LISTING (CONFIG)	--/--/-- 01/27/00	--/--/-- 02/08/00	--/--/-- 03/15/00	04/15/00 04/21/00
F.UDLIST	DF-U151	MKM	U	PRINT DELTA LISTING (CONFIG)	--/--/-- 01/31/00	--/--/-- 02/10/00	--/--/-- 03/15/00	04/15/00 04/21/00
F.UDLTST	DF-U152	MKM	U	START UDELTA SUBTASKING (CONFIG)	--/--/-- 01/31/00	--/--/-- 02/15/00	--/--/--	04/15/00
F.UDMAT	DF-U153	MKM	U	CHECK BUFFERS FOR MATCH (CONFIG)	--/--/-- 01/14/00	--/--/--	--/--/--	04/15/00
F.UDMOVE	DF-U154	MKM	U	MOVE DATA INTO MEMORY (CONFIG)	--/--/-- 02/02/00	--/--/-- 03/01/00	--/--/-- 04/04/00	04/15/00 04/11/00
F.UDOPT	DF-U155	MKM	U	SET OPTIONS IN DELTA (CONFIG)	--/--/-- 02/01/00	--/--/-- 02/28/00	--/--/-- 04/14/00	04/15/00 04/11/00

**Detail Interdependency Listing**

**Figure 7-8** Detail interdependency listing.





# Task 5: Validate the Test Estimate and Project Status Reporting Process



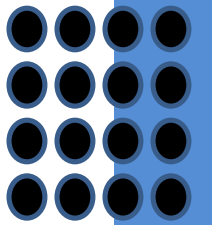
WP: TACTICS LIBRARY SOFTWARE  
MANAGER: NFB

WORK PACKAGE	FILENAME	-----MILESTONES-----					-----MODULE STATUS-----		
		WEIGHT	DESIGN	CODE	TEST	RELE-ASE	STATUS CODE	SCORE	% COMPLETE
173F	F.LEDCPY	8	2	2	2	2	3	4	50
173F	F.LEDEL	8	2	2	2	2	3	4	50
173F	F.LEDFIL	44	11	11	11	11	1	11	25
173F	F.LEDINF	20	5	5	5	5	1	5	25
173F	F.LEDPRT	12	3	3	3	3	7	12	75
173F	F.LIBEDT	16	4	4	4	4	3	8	75
173F	F.LIBGEN	28	7	7	7	7	15	28	100
173F	F.LTACGN	16	4	4	4	4	3	8	50
173F	F.LTACID	8	2	2	2	2	15	8	100
173F	F.LTASTA	32	16	0	0	16	7	16	50
173F	F.LTCMPR	16	8	0	0	8	15	16	100
173F	F.LTCMST	56	28	14	14	0	0	0	0
173F	F.LTCVRT	12	3	0	0	3	0	0	0
173F	F.LTGNUM	12	3	3	3	3	0	0	0
173F	F.LTINIT	12	3	3	3	3	0	0	0
173F	F.LTMDID	16	4	4	4	4	0	0	0
173F	F.LTREC	32	8	8	8	8	0	0	0
173F	F.LTSSTM	48	24	6	12	6	1	24	50
173F	F.LTUCHK	8	4	1	2	1	3	5	63
173F	F.LTUCVT	12	6	2	3	1	7	11	92
173F	F.LTVALU	8	4	1	2	1	15	8	100
TOTALS:	21	424	106	106	106	106		168	40

Figure 7-9 Detail status listing.



# Task 5: Validate the Test Estimate and Project Status Reporting Process

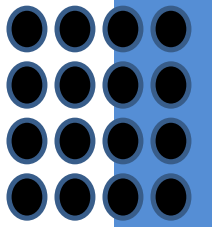


WORK PACKAGE: 1234										
	DESIGN		CODE		TEST		RELEASE		TOTAL	
TOTAL ITEMS	24		24		24		24		96	
TARGET COMPLETE	10	42%	7	29%	3	13%	0	0%	20	21%
ACTUAL COMPLETE	9	38%	5	21%	1	4%	0	0%	15	16%
LATE	1	4%	2	8%	2	8%	0	0%	5	5%
LESS THAN 1 WEEK LATE		0		1		0		0		
1-2 WEEKS LATE		1		0		2		0		
2-4 WEEKS LATE		0		1		0		0		
4-8 WEEKS LATE		0		0		0		0		
MORE THAN 8 WEEKS LATE		0		0		0		0		

Figure 7-10 Summary report.



# Task 5: Validate the Test Estimate and Project Status Reporting Process

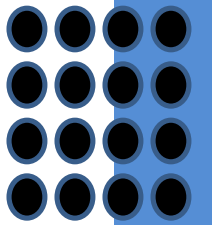


WORK PACKAGE: 1234										
	DESIGN		CODE		TEST		RELEASE		TOTAL	
TOTAL ITEMS	24		24		24		24		96	
TARGET COMPLETE	10	42%	7	29%	3	13%	0	0%	20	21%
ACTUAL COMPLETE	9	38%	5	21%	1	4%	0	0%	15	16%
LATE	1	4%	2	8%	2	8%	0	0%	5	5%
LESS THAN 1 WEEK LATE	0		1		0		0			
1-2 WEEKS LATE	1		0		2		0			
2-4 WEEKS LATE	0		1		0		0			
4-8 WEEKS LATE	0		0		0		0			
MORE THAN 8 WEEKS LATE	0		0		0		0			

Figure 7-10 Summary report.



# Task 5: Validate the Test Estimate and Project Status Reporting Process



WORK PACKAGE	DESCRIPTION	MGR	WEIGHT	-----MILESTONES-----				-----WP STATUS-----	
				DESIGN	CODE	TEST	RELEASE	SCORE	% COMPLETE
173G	SCAN LIBRARY SOFTWARE	NFB	480	120	120	120	120	150	31
173H	PPG LIBRARY SOFTWARE	NFB	296	74	74	74	74	74	25
173K	EMITTER SCRIPTING: EMTR 1-50	NFB	2500	2250	250	0	0	1055	42
17A1	TD REPORTING CPPS	TJR	310	155	155	0	310	310	100
17A3	TD REPORTING SW DEVELOPMENT	TJR	1230	375	375	240	240	575	47
17A4	SCAN PROCESSOR DOCUMENTATION	TJR	1078	863	215	0	0	0	0
17A5	TIMS, DEBUG, SVL DOCUMENTATION	TJR	7420	6550	870	0	0	3465	47
17A7	SOFTWARE DEV TOOLS DOCUMENT	TJR	4818	3563	1255	0	0	3563	73
TOTALS:			18132	13950	3314	434	434	9192	51

Figure 7-11 Summary status report.



# Reference



1. <https://centricconsulting.com/client-stories/world-class-software-testing-organization/>
2. <https://www.edureka.co/blog/software-testing-models/>



# THANK YOU