Defense Business Systems - Examples

<u>**Example 1**</u>

2.3. Deficiency Reporting

The EBS Workbench tool is used to document deficiencies (defects) detected during testing and tracks all steps in the defect resolution. The EBS Workbench uses the <u>IEEE Standard 12207.2, (Annex J, dated April 1998)</u>, as the source for deficiency priority definitions.

Defect analysis will be conducted during all phases of Test and Evaluation. The developer should assign each problem in software products or activities to one of the priorities in Table 2-2.

Table 2-2: Priorities to be Used When Classifying Problems

(IEEE Standard 12207.2, Annex J, April 1998)

Priority	Applies if a problem could
1	a) Prevent the accomplishment of an essential capability b) Jeopardize safety, security, or other requirement designated "critical"
2	a) Adversely affect the accomplishment of an essential capability and no work-around solution is known b) Adversely affect technical, cost, or schedule risks to the project or to life cycle support of the system, and no work-around solution is known
3	a) Adversely affect the accomplishment of an essential capability but a work-around solution is known b) Adversely affect technical, cost, or schedule risks to the project or to life cycle support of the system, but a work-around solution is known
4	a) Result in user/operator inconvenience or annoyance but does not affect a required operational or mission-essential capability b) Result in inconvenience or annoyance for development or maintenance personnel but does not prevent the accomplishment of the responsibilities of those personnel
5	Any other effect

Priority/state changes and reworks are also tracked on a daily basis. DLA EProcurement Management reserves the right to change the EProcurement requirements if it appears that excessive rework will be needed to resolve a defect. The following data has been tracked on a daily basis since November 2009:

- Total Defects Created
- Total Critical and High Defects Created
- Total Medium and Low Defects Created
- Total Defects Closed
- Total Critical and High Defects Closed
- Total Medium and Low Defects Closed

- Total Defects Open
- Total Critical and High Defects Open
- Total Medium and Low Defects Open
- Average Days from Creation to Submit for Resolution
- Average Days from Lead Approval to Assigned to Developer
- Average Days to Resolve Defects
- Average Days from Resolution to Close
- Average Days from Creation to Close
- Open Defects by State
    - Defect Drafted
    - Resolution in Progress
    - Clarification Required
    - Ready for Retest

An example of Management's daily tracking report is shown in Table 2-3 below.

Table 2-3: EProcurement Daily Defect Aging Summary

	1 Mo	2 Mo	3 Mo	Older		TOTAL
CRITICAL	0	0	0	0		0
HIGH	3	0	0	0		3
MEDIUM	21	0	1	3		25
LOW	1	0	1	0		2
TOTAL	25	0	2	3		30

Once a deficiency/problem is detected during testing, a "Defect Report" is entered into Workbench. The Development Team Leads reviews the Defect and determine its validity and probable cause. If valid, the Defect is assigned to the appropriate developer for resolution. Once resolved, the Defect is assigned to the appropriate tester for validation of the fix.

All valid defects and their resolutions are stored in a repository for future use in testing. The Development Team records the user actions that lead to the validated defect. The recorded user actions are then used by EBS Workbench and installed in the script library.

Production Deficiency Reporting

Once the system goes live, it enters the sustainment phase of the program. At this point the system is no longer in development. During the sustainment phase it is managed by our J6 Sustainment Operations Division in Columbus, OH. They manage the production deficiency reporting process by listing the identification, investigation, and resolution activities in workbench.

Defense Business Systems – Examples

Identification Phase

- Sustainment POC receives Remedy ticket to research an issue that is occurring in the production environment. If the incident requires a defect to be created, the sustainment or build POC will create the defect in the EBS Workbench.
- If it's determined that a Remedy ticket requires a code fix/configuration change, the assigned person creates a defect in Workbench citing the ticket number. The assignee creates a defect in the workbench using the ticket information. The Workbench is then used to track the flow of work for ultimate transport to production. Information contained in the Workbench documents are functional specification documentation, test results data, table views.
- Defect should be updated to "Team Lead Submit" state
- Sustainment Functional Lead assigns EProcurement (SRM) defects to appropriate POC. Development Lead assigns the defect to the appropriate developer for investigation

Investigation Phase

- Developer performs necessary modifications in the development environment and documents the resolution details in the defect
- If a production issue requires a code or configuration change, the developer test the specific functionality in question, including any inputs, outputs, and dependent tasks before migrating the changes to PRD.

Resolution Phase

- Sustainment Configuration Control team migrates the changes to the System Test environment
- Once migrated, the Tester will get an email notification (automated)
- Once migrated to System Test (S*1), testers will determine if the defect has been resolved; if so, testers will document test results in the defect, update any associated regression test plans & cases with additional test steps/data/expected results to validate the defect scenario during future test efforts, and set it to 'Ready for Production Approval' state
    - If the defect has not been fixed or resolved, the tester updates the existing defect with retest details and assigns the defect back to the developer
    - If a new issue/problem emerges as a result of the defect fix/resolution, a new defect should be created
- Once in 'Ready for Production Approval' state, the Sustainment Functional Leads will start the administrative approval process for release to Production
- When the code is released to production, the assigned person goes into Remedy to annotate that the ticket is completed/closed.
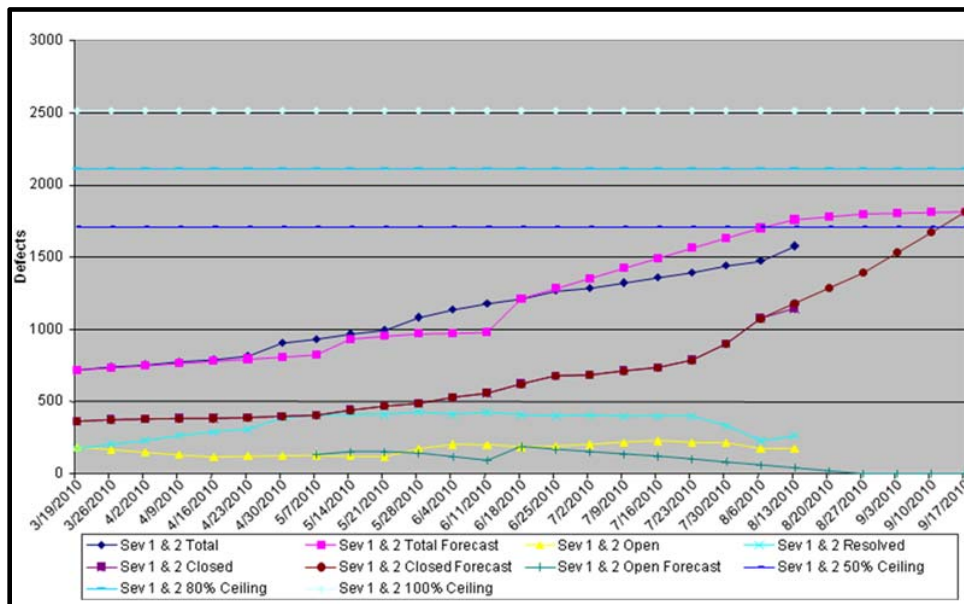
Example 2

2.3. Deficiency Reporting

- Discrepancy Report (DR) status: Each DR written against KMI developed software was prioritized into 5 levels as defined by the IEEE 12207.2 specification. Each DR was initially assigned a level by the sub-contractor developing that particular software. The prime integrator and the Government Program Office performed an independent analysis and redefined levels accordingly. Graphs were maintained showing the number of open, closed and resolved (fixed but not tested) statistics over time, categorized by priority level. Example data is shown in Figures 2-4 and 2-5.
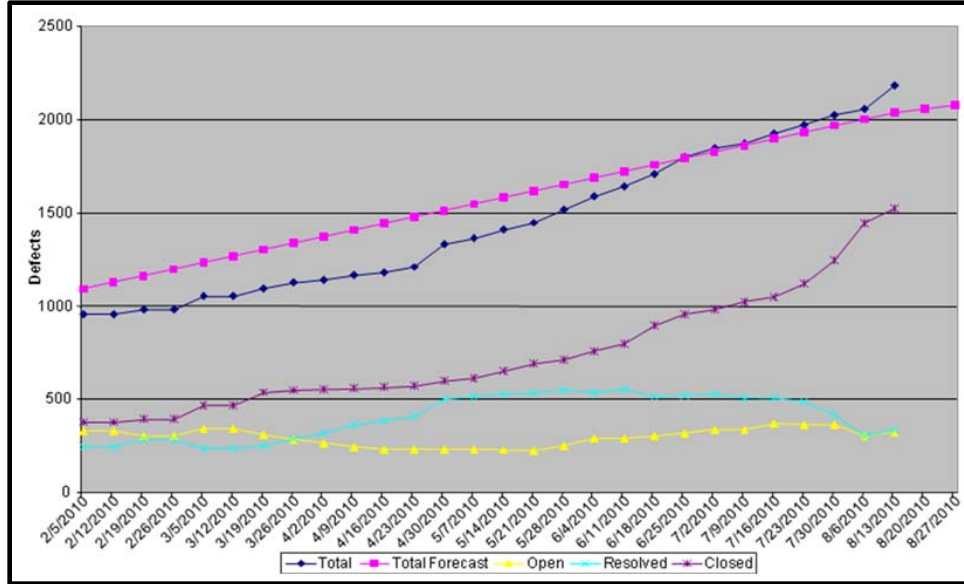
Figure 2-4: DR volume tracking (all priorities)

Figure 2-5: DR volume tracking (Priorities 1 and 2)

- DR Aging: DRs at each priority level were also tracked to show how many of each level were open for a particular timeframe. The timeframes were separated into 30 day increments, up to a column for >120 days. Example data is shown in Table 2-6.

Table 2-6: Sample DR Aging Metric

	Assigned and Submitted Defects - Days Open				
	0-30	31-60	61-90	91-120	>120
Severity					
1	4	2	7	0	0
2	99	21	11	7	9
3	38	28	11	8	16
4	3	6	6	1	5
5	3	0	2	3	6
Total	147	57	37	19	36

- Commercial Off the Shelf (COTS) DRs: The ageing statistic described above was also maintained for issues found with commercially purchased equipment, such as routers, servers, etc. Example data is shown in Exhibit 2-6.

The Management Strategy for fixing software and hardware failures is as follows. Every DR will be analyzed to determine the effect of the failure. Using this information, a determination will be made as to the severity of the problem (a.k.a Priority, as defined by the IEEE 12207.2 specification). All failures that rate a Priority 1 and 2 will be fixed prior to entering the next phase of testing.