



SmartBear White Papers

ALM Tools

Critical Software Development Metrics

ALMComplete

This document discusses how metrics from ALMComplete can answer the most pressing questions for software development projects.

Narrative

Companies that develop and maintain software can dramatically improve their processes, obtain higher quality, and quicken their software releases by using ALMComplete (<http://www.SoftwarePlanner.com>). This white paper discusses how to use ALMComplete metrics to answer the most pressing questions for software development projects.

ALMComplete provides an array of analysis tools including screens, dashboards and reports.

Question: Will our software ship on time?

To determine if your software will ship on time, create a project plan for your software release and decompose tasks on the project plan so that each task has estimates and are assigned to the proper team member. At the end of each day, have your team members log their hours towards assigned tasks. When logging hours, have them estimate the hours remaining to complete the task (this will automatically update the percentage complete). If this is done, you can then view burn down charts that show you if the software will ship on time:



The first chart (burndown) shows the beginning of the software release through the end of the software release. The linear line shows the baseline (or the path in which the project should follow if everything stays on course). The Hours Remaining line shows what is actually happening. We can see clearly that the project began slipping on 2/18/2009, as the estimated hours remaining began creeping above the baseline. We can also see that this project will not ship on time unless the team adds more resources or works more hours.

The 2nd chart shows velocity for the past 2 weeks activity, charting both the estimated hours, actual hours and hours remaining. If the estimated hours spike on any day, you know you have increased scope.

Below is an example of a project plan:

Action	Seq	% Complete	Task Name	Linked Item	Est Start Date	Est Finish Date	Assigned To	Est Hours	Act Hours	Est Hours Remain
	1	98.2	Release 9.1 - Sprint 1		12/08/2008	02/05/2009		460	655.5	12
	2	18.64	Sprint 1 GeneralTasks		01/15/2009	01/27/2009		1	2.75	12
	3	100	Upgrade ExtJS Library to Latest Version	Link to Item...	01/15/2009	01/15/2009	Porterfield, Greg	1	0.75	0
	4	0	QA Licensing Engine - Jen	Link to Item...	01/27/2009	01/27/2009	Molitor, Jennifer	0	0	0
	5	14	QA Licensing Engine - Greg	Link to Item...	01/27/2009	01/27/2009	Porterfield, Greg	0	2	12
	6	100	PSC-0053 psOutlookSync - Test/Deploy		12/08/2008	12/19/2008		80	76	0
	8	100	PSC-0128 Project Plans - Redesign Hierarchical View for Fewer Refresh		12/08/2008	01/08/2009		102	163	0
	16	100	PSC-0130 Traceability - Many to many relationships		12/22/2008	02/05/2009		253	391	0
	17	100	PSC-0130 Development		12/22/2008	02/05/2009		253	391	0
	18	100	PSC-0130.001 Traceability SubMenu	Req 87778: PSC-0130 Traceabi...	12/22/2008	12/22/2008	Khozov, Anton	3	1.5	0
	19	100	PSC-0130.002 Traceability Screen	Req 87778: PSC-0130 Traceabi...	12/22/2008	12/30/2008	Khozov, Anton	30	55.5	0
	20	100	PSC-0130.003 Traceability Form	Req 87778: PSC-0130 Traceabi...	12/30/2008	01/09/2009	Trubachov, Andrey	60	158	0
	21	100	PSC-0130.004 Traceability Report	Req 87778: PSC-0130 Traceabi...	01/09/2009	01/14/2009	Trubachov, Andrey	20	40	0
	22	100	PSC-0130.005 Quick Edit Enhancements	Req 87778: PSC-0130 Traceabi...	01/14/2009	01/23/2009	Khozov, Anton	60	54	0
	23	100	PSC-0130.006 Conversion	Req 87778: PSC-0130 Traceabi...	01/23/2009	01/29/2009	Khozov, Anton	30	14	0
	24	100	PSC-0130.007 Enhance Existing Traceability Reports	Req 87778: PSC-0130 Traceabi...	01/29/2009	02/03/2009	Gladchenko, Andrew	20	10	0
	25	100	PSC-0130.996 Create Test Cases	Req 87778: PSC-0130 Traceabi...	12/22/2008	12/23/2008	Miller, Steve	10	8	0
	26	100	PSC-0130.997 Programmer Runs Test Cases (Unit Testing)		02/03/2009	02/05/2009		20	50	0
	27	100	PSC-0130.997 Programmer Runs Test Cases (Andrey)	Req 87778: PSC-0130 Traceabi...	02/03/2009	02/05/2009	Trubachov, Andrey	15	41	0
	28	100	PSC-0130.997 Programmer Runs Test Cases (Anton)	Req 87778: PSC-0130 Traceabi...	02/04/2009	02/04/2009	Khozov, Anton	5	9	0

Question: Who is causing the project slippage?

If tasks begin to slip, you can quickly determine what team members are causing the slippage. It could be for a number of reasons, they could have been sick, the tasks were not estimated properly, or technical issues arose that caused the slippage. Below is a slipping tasks dashboard that identifies this:



When clicked, it shows you the details of the slippage:

Graph with Details

Sorted by Status, Project, Assignee, Id

AssignedTo: Chekhomova, Nadya

Project	Id	Done	Start	Due	Status	Title
eTeam: Internal Tasks 2009	38434	0	1/2/2009 8:30:00 AM	11/17/2009 1:30:00 PM	Project Plan Task	Internal Tasks - Nadya

Number of items: 1

AssignedTo: Gladchenko, Andrew

Project	Id	Done	Start	Due	Status	Title
eTeam: Internal Tasks 2009	38433	0	1/2/2009 8:30:00 AM	12/31/2009 4:30:00 PM	Project Plan Task	Internal Tasks - Andrew
eTeam: Internal Tasks 2009	38346	0	1/2/2009 8:30:00 AM	1/2/2009 8:30:00 AM	Project Plan Task	Subversion - Andrew
eTeam: Internal Tasks 2009	38348	0	1/2/2009 8:30:00 AM	1/2/2009 8:30:00 AM	Project Plan Task	SQL Server Reporting Services
eTeam: Internal Tasks 2009	38350	0	1/2/2009 8:30:00 AM	1/2/2009 8:30:00 AM	Project Plan Task	Define and Document Release Management Process - SoftDev
eTeam: Internal Tasks 2009	38351	0	1/2/2009 8:30:00 AM	1/2/2009 8:30:00 AM	Project Plan Task	Automated QA - Automated Build Studio
eTeam: Prof Services 2008 Q4	38359	0	11/26/2008 8:30:00 AM	11/26/2008 8:30:00 AM	Project Plan Task	NO-0057 Technical Analysis & Design - Andrew
eTeam: Prof Services 2008 Q4	38360	0	11/26/2008 8:30:00 AM	11/26/2008 8:30:00 AM	Project Plan Task	NO-0057 Development
eTeam: Prof Services 2009 Q1	38503	0	2/2/2009 8:30:00 AM	2/2/2009 8:30:00 AM	Project Plan Task	NO-0062 Tech Analysis/Detail Design - AG
eTeam: Release 9.1 - Sprint 2	38554	0	4/16/2009 8:30:00 AM	4/20/2009 10:30:00 AM	Project Plan Task	Allow deleting QuickForm Folders with children
eTeam: Release 9.1 - Sprint 2	38555	0	4/16/2009 8:30:00 AM	4/20/2009 10:30:00 AM	Project Plan Task	Allow adding Dept Prefs/System Preferences from UI

Number of items: 10

Question: Do we have adequate test coverage?

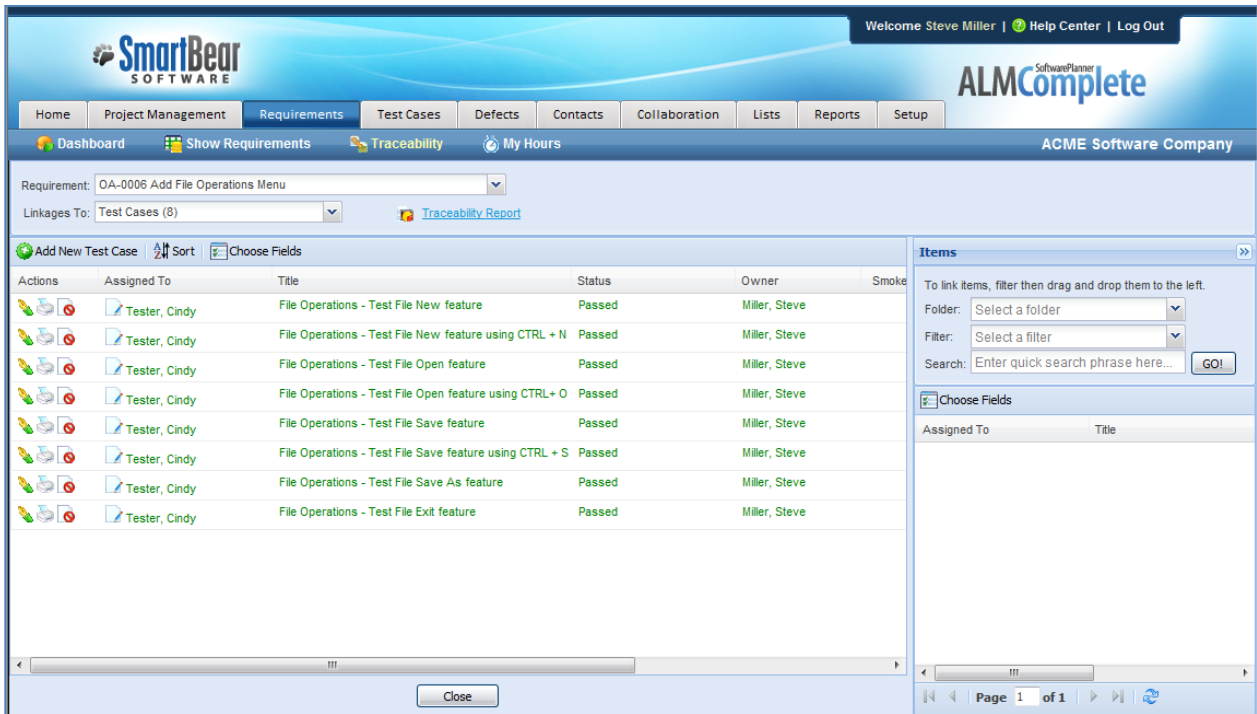
To determine if you have adequate test coverage, you must understand if each requirement has enough test cases to fully test the requirement. To accomplish this, have your QA team create test cases for each requirement and link those test cases back to the appropriate requirement. Once the

team completes the test cases, have a team review those test cases in detail to ensure you have adequate coverage. ALMComplete provides a traceability report that shows the requirements for a release as well as all test cases and defects associated with each requirement:

The screenshot shows a web browser window displaying a report titled "Test Case to Requirement Traceability". The report is sorted by Project, Requirement, and Test Case. It shows a list of requirements and their associated test cases, with their statuses.

Requirement / Test Cases / Defects	Status
Active Projects	
Project: eTeam	
Folder:	
Requirement: BH-0100 Broker Rewards	
Test Case: 158843 - BH-0100.003 Test Dynamic Text - Intro	Passed
Test Case: 158844 - BH-0100.003 Test Sort Order of Layout	Passed
Test Case: 158845 - BH-0100.001 Test Footer DynamicText and layout	Passed
Test Case: 158846 - BH-0100.003 Test File Manager Publish Start/End Dates	Passed
Test Case: 158847 - BH-0100.003 Test Images Display	Passed
Defect: 629,755 - BH-0100.003 Test Images Display - No Green Border (Status: Closed)	
Test Case: 158849 - BH-0100 Broker Rewards - Code Review	Passed
Test Case: 158850 - BH-0100.004 Test Footer DynamicText and layout	Passed
Defect: 629,790 - BH-0100.004 Test Footer DynamicText and layout (Status: Closed)	
Test Case: 158851 - BH-0100.003 Test Footer DynamicText and layout	Passed
Defect: 629,748 - BH-0100.003 Test Footer DynamicText and layout (Status: Closed)	
Test Case: 158852 - BH-0100.007 Test Footer DynamicText and layout	Passed
Test Case: 158853 - BH-0100.005 Test Footer DynamicText and layout	Passed
Test Case: 158854 - BH-0100.009 Test Footer DynamicText and layout	Passed
Test Case: 158855 - BH-0100.008 Test Footer DynamicText and layout	Passed
Defect: 631,241 - BH-0100.008 Test Footer DynamicText and layout (Status: Closed)	
Test Case: 158856 - BH-0100.010 Test Footer DynamicText and layout	Passed
Test Case: 158857 - BH-0100.002 Test Footer DynamicText and layout	Passed
Test Case: 158858 - BH-0100.006 Test Footer DynamicText and layout	Passed

You can also view traceability from the test cases traceability screen:



The screenshot shows the SmartBear ALMComplete interface. At the top, there is a navigation bar with tabs for Home, Project Management, Requirements, Test Cases, Defects, Contacts, Collaboration, Lists, Reports, and Setup. The 'Requirements' tab is active. Below the navigation bar, there is a header area with the SmartBear logo, the text 'Welcome Steve Miller | Help Center | Log Out', and the 'ALMComplete' logo. The main content area is titled 'Traceability' and shows a requirement 'OA-0006 Add File Operations Menu' with 8 linked test cases. The test cases are listed in a table with columns for Actions, Assigned To, Title, Status, and Owner. The 'Assigned To' column shows 'Tester, Cindy' for all entries, and the 'Owner' column shows 'Miller, Steve'. The 'Status' column shows 'Passed' for all entries. The 'Title' column lists various file operations like 'File Operations - Test File New feature', 'File Operations - Test File New feature using CTRL + N', etc. On the right side, there is a sidebar with 'Items' and 'Choose Fields' sections. The 'Items' section has a search box and a 'GO!' button. The 'Choose Fields' section has a table with columns for 'Assigned To' and 'Title'. At the bottom, there is a 'Close' button and a page indicator 'Page 1 of 1'.

Actions	Assigned To	Title	Status	Owner	Smoke
	Tester, Cindy	File Operations - Test File New feature	Passed	Miller, Steve	
	Tester, Cindy	File Operations - Test File New feature using CTRL + N	Passed	Miller, Steve	
	Tester, Cindy	File Operations - Test File Open feature	Passed	Miller, Steve	
	Tester, Cindy	File Operations - Test File Open feature using CTRL + O	Passed	Miller, Steve	
	Tester, Cindy	File Operations - Test File Save feature	Passed	Miller, Steve	
	Tester, Cindy	File Operations - Test File Save feature using CTRL + S	Passed	Miller, Steve	
	Tester, Cindy	File Operations - Test File Save As feature	Passed	Miller, Steve	
	Tester, Cindy	File Operations - Test File Exit feature	Passed	Miller, Steve	

Question: How is our test effort trending?

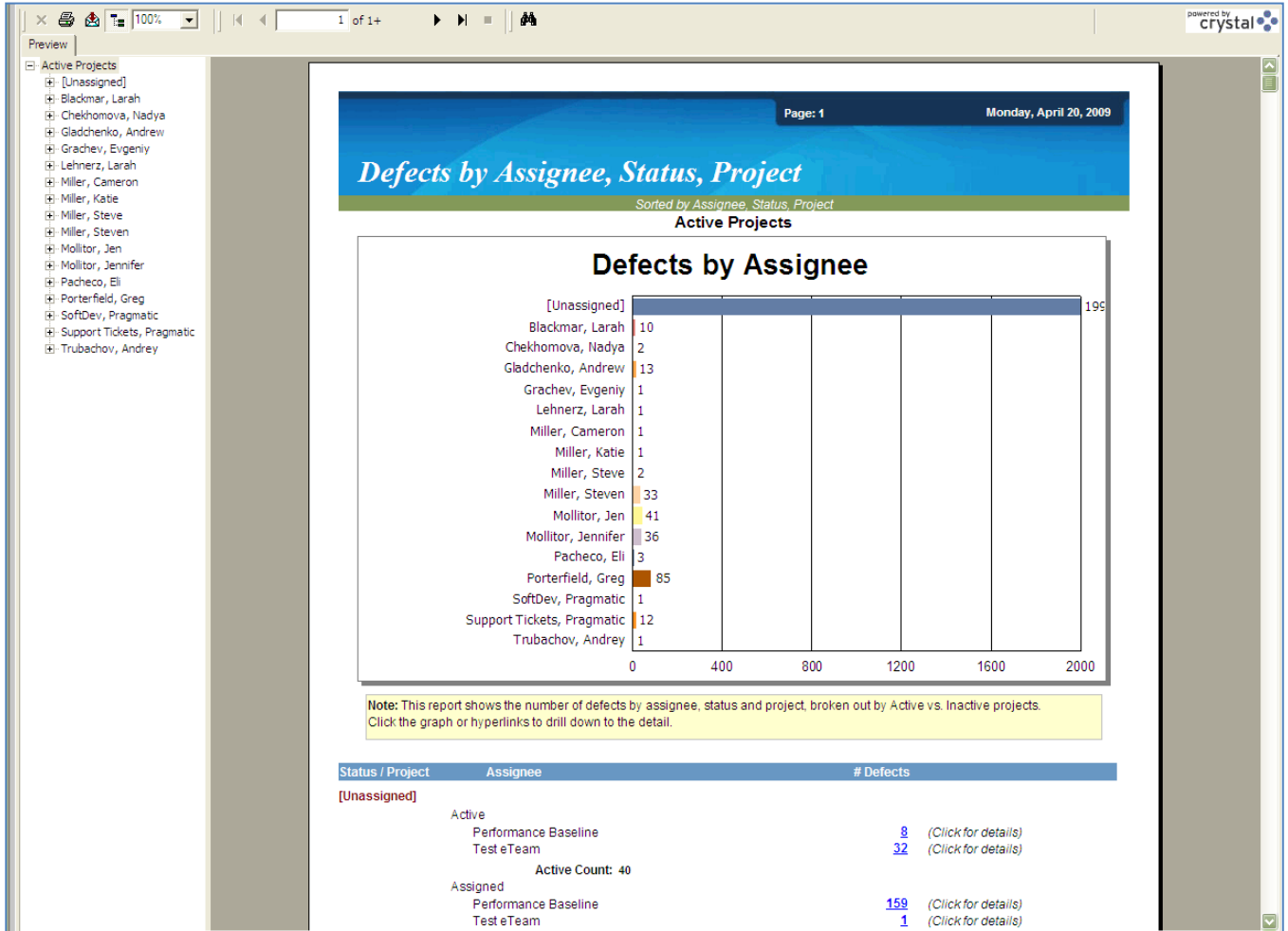
To determine if you are progressing properly in your test cycle, it is important to know how many test cases are still awaiting run, how many have passed and how many have failed. The dashboards tell you this:



We can tell by the graph above that this team is not currently in a QA cycle, as most of the test cases have a passed status so the release was probably just finished up. You can also see the automated test runs day-by-day.

Question: Who has the most assigned defects?

To determine who has the most assigned defects, you can first look at the defect assignee report:



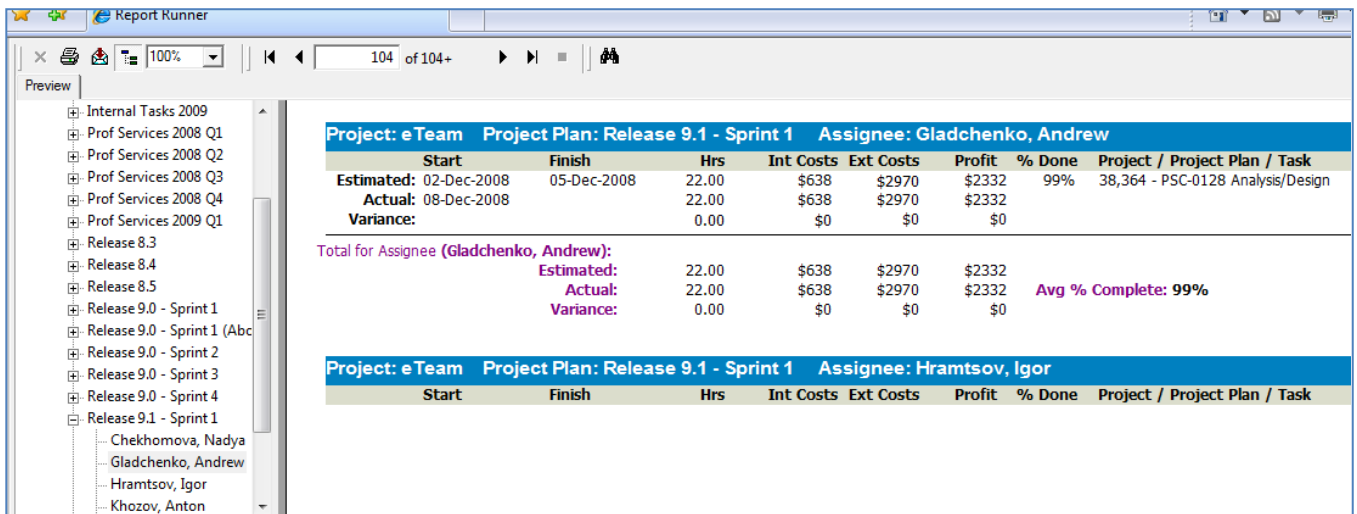
It displays the information graphically and allows you to double click the graph to see the detailed defects. You can then print them, export them to MS Word/Excel/PDF, or email them to others.

Question: What is our history with project variances?

It is important to learn from each project you do. By analyzing project variances, you can improve future estimates. You can first see estimate vs. actual for each of your projects by looking at the project plan screen:

Project Plans							
Actions	Project Plan	Owner	Assignee	Status	Est Hrs	Act Hrs	
0 0	Release 8.5	Miller, Steve	Mollitor, Jennifer	Active	157.5	184.33	
0 0	Release 9.0 - Sprint 1	Miller, Steve	Mollitor, Jennifer	Active	441.5	586.02	
0 0	Release 9.0 - Sprint 1 (Aborted)	Miller, Steve	Miller, Steve	Active	300	97.49	
0 0	Release 9.0 - Sprint 2	Miller, Steve	Mollitor, Jennifer	Closed	655.5	548.369	
0 0	Release 9.0 - Sprint 3	Mollitor, Jennifer	Gladchenko, Andrew	Active	881	740.531	
0 0	Release 9.0 - Sprint 4	Mollitor, Jennifer	Gladchenko, Andrew	Active	636.5	698.93	
0 0	Release 9.1 - Sprint 1	Mollitor, Jennifer	Gladchenko, Andrew	Active	472	403	

ALMComplete also provides a number of variance reports that also analyze this at a team member level:



Project: eTeam Project Plan: Release 9.1 - Sprint 1 Assignee: Gladchenko, Andrew							
Start	Finish	Hrs	Int Costs	Ext Costs	Profit	% Done	Project / Project Plan / Task
Estimated: 02-Dec-2008	05-Dec-2008	22.00	\$638	\$2970	\$2332	99%	38,364 - PSC-0128 Analysis/Design
Actual: 08-Dec-2008		22.00	\$638	\$2970	\$2332		
Variance:		0.00	\$0	\$0	\$0		
Total for Assignee (Gladchenko, Andrew):							
Estimated:		22.00	\$638	\$2970	\$2332		
Actual:		22.00	\$638	\$2970	\$2332		
Variance:		0.00	\$0	\$0	\$0	Avg % Complete: 99%	
Project: eTeam Project Plan: Release 9.1 - Sprint 1 Assignee: Hramtsov, Igor							
Start	Finish	Hrs	Int Costs	Ext Costs	Profit	% Done	Project / Project Plan / Task

Learn More

This white paper just skimmed the surface as to the quality of metrics provided by ALMComplete, there are many more dashboards and reports available. If you wish to learn more about ALMComplete, request a free trial, or receive a personalized demo of the product, contact **SmartBear Software** at +1 303-768-7680. You can also learn more at <http://www.SoftwarePlanner.com>.