



# **NAVAIR TSP<sup>SM</sup> Experiences Using the Excel Workbook and Team Dashboard**

**Prepared For:  
Systems Software Technology Conference (SSTC)  
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# Presentation Objectives

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- Background
  - NAVAIR
  - Personal Software Process (PSP) and Team Software Process (TSP)<sup>1</sup>
  - TSP Workbook and Process Dashboard tools
- Strengths and Weaknesses of Tools
  - Planning Phase (TSP Launches)
  - Plan Execution Phase (Daily Use)
  - Analysis of Plan Execution (Postmortems)

<sup>1</sup>Personal Software Process, PSP, Team Software Process, and TSP are service marks of Carnegie Mellon University



# Who is NAVAIR?

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- NAVAIR is the Naval Air Systems Command.
- We **develop, acquire, and support the aircraft and related weapons systems** used by the U. S. Navy and Marine Corps.
- We translate the needs of the Navy and Marine Corps into the technical and financial requirements needed by industry to actually produce an aircraft or other weapon system.
- Our goal is to **provide the fleet with quality products** that are both affordable and available when they are most needed.
- Our **support extends across the entire life span of a product**, including all upgrades and modifications to that product.



# Who is NAVAIR?





# What is PSP/TSP?

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- PSP shows software professionals how to
  - plan and track their personal work
  - define processes that best suit them
  - measure and manage cost, schedule, and quality
- TSP shows teams of PSP-trained professionals how to
  - establish realistic commitments
  - keep management informed
  - deliver quality products
  - minimize project cost and schedule



# PSP/TSP Benefits

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- PSP/TSP **quickly improves the performance** of software groups.
- Planning and tracking is **accurate, timely, and precise.**
- Product **quality is managed and measured** from the beginning of the job.
- By finding and **fixing problems before test**, project cycle time is substantially reduced.



# What is TSP Workbook?

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- Created by Software Engineering Institute (SEI) at Carnegie Mellon University
  - Automates implementation of TSP/PSP concepts
  - Enables software engineers to focus on work
  - Uses Microsoft Excel and Visual Basic macros



# TSP Workbook – S/W Task List

Microsoft Excel - sw-dlb-2.xls

File Edit View Insert Format Tools Data Window Help

TSP Tools

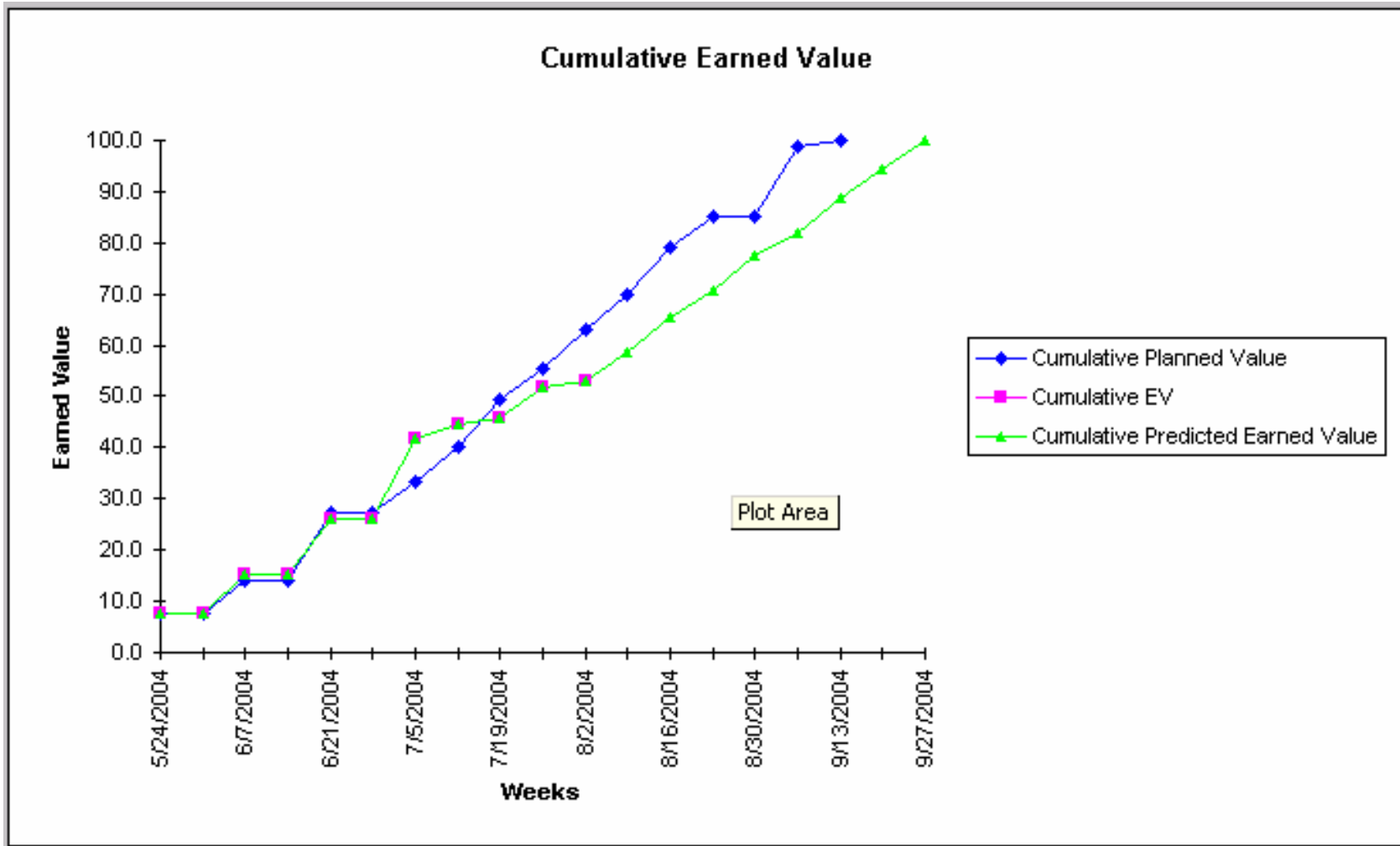
T122 =

TSP Task Planning Template - Form TASK			Total Plan Hours		Total Actual H									
1	Name Dave Breitigam		261.64		35									
2	Team Software													
3	Date 4/28/2005													
4	Cycle Build 2													
5														
6														
7	Assembly	Phase	Task	Resources	Estimated Size	Core Measure	Rate (per Hr.)	Estimated Hours	Engrs	Plan Hours	Plan Date	Plan Week	Actual Hours	Actual Date
60	BR - Main Form	DLD	BR - Main Form Detailed Design		1156	LOC	115.19	10.0	1.0	10.0	3/11/2002	14	9.6	4/10/2002
64	BR - Main Form	DLDR	BR - Main Form DLD Review		1156	LOC	420.16	2.8	1.0	2.8	4/1/2002	17	1.6	4/17/2002
67	BR - Main Form	DLDINSP	POPS_I2_A012 PREP		1156	LOC	354.59	1.7	1.0	1.7	4/8/2002	18	0.3	4/23/2002
68	BR - Main Form	DLDINSP	POPS_I2_A012 POST		1156	LOC	354.59	1.6	1.0	1.6	4/8/2002	18	2.2	4/25/2002
69	BR - Main Form	CODE	BR - Main Form Code		1156	LOC	111.81	10.3	1.0	10.3	4/15/2002	19	5.2	4/23/2002
70	BR - Main Form	CR	BR - Main Form Code Review		1156	LOC	614.62	1.9	1.0	1.9	4/15/2002	19	0.5	4/23/2002
71	BR - Main Form	COMPILE	BR - Main Form Compile		1156	LOC	514.75	2.2	1.0	2.2	4/15/2002	19	0.1	4/23/2002
72	BR - Main Form	CODEINSP	POPS_I2_C008 PREP		1156	LOC	402.37	1.4	1.0	1.4	4/15/2002	19	0.4	4/25/2002
73	BR - Main Form	CODEINSP	POPS_I2_C008 POST		1156	LOC	402.37	1.5	1.0	1.5	4/22/2002	20	0.4	4/29/2002
74	BR - Main Form	UT	BR - Main Form Unit Test		1156	LOC	219.69	5.3	1.0	5.3	4/22/2002	20	4.9	4/29/2002
109	BR - Main Form	TD	BR - Main Form Test Development		1156	LOC	1442.58	0.8	1.0	0.8	5/6/2002	22	0.8	6/14/2002
119														

11 of 111 records found



# TSP Workbook – EV Chart





# What is Team Dashboard?

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- Created by the Air Force Software Technology Support Center (STSC)
  - Automates implementation of TSP/PSP concepts
  - Enables software engineers to focus on work
  - Uses Java scripts
  - Filled need for a PSP/TSP tool for use on Unix-based computers (tool also works on Windows-based computers)



# Team Dashboard – S/W Task List

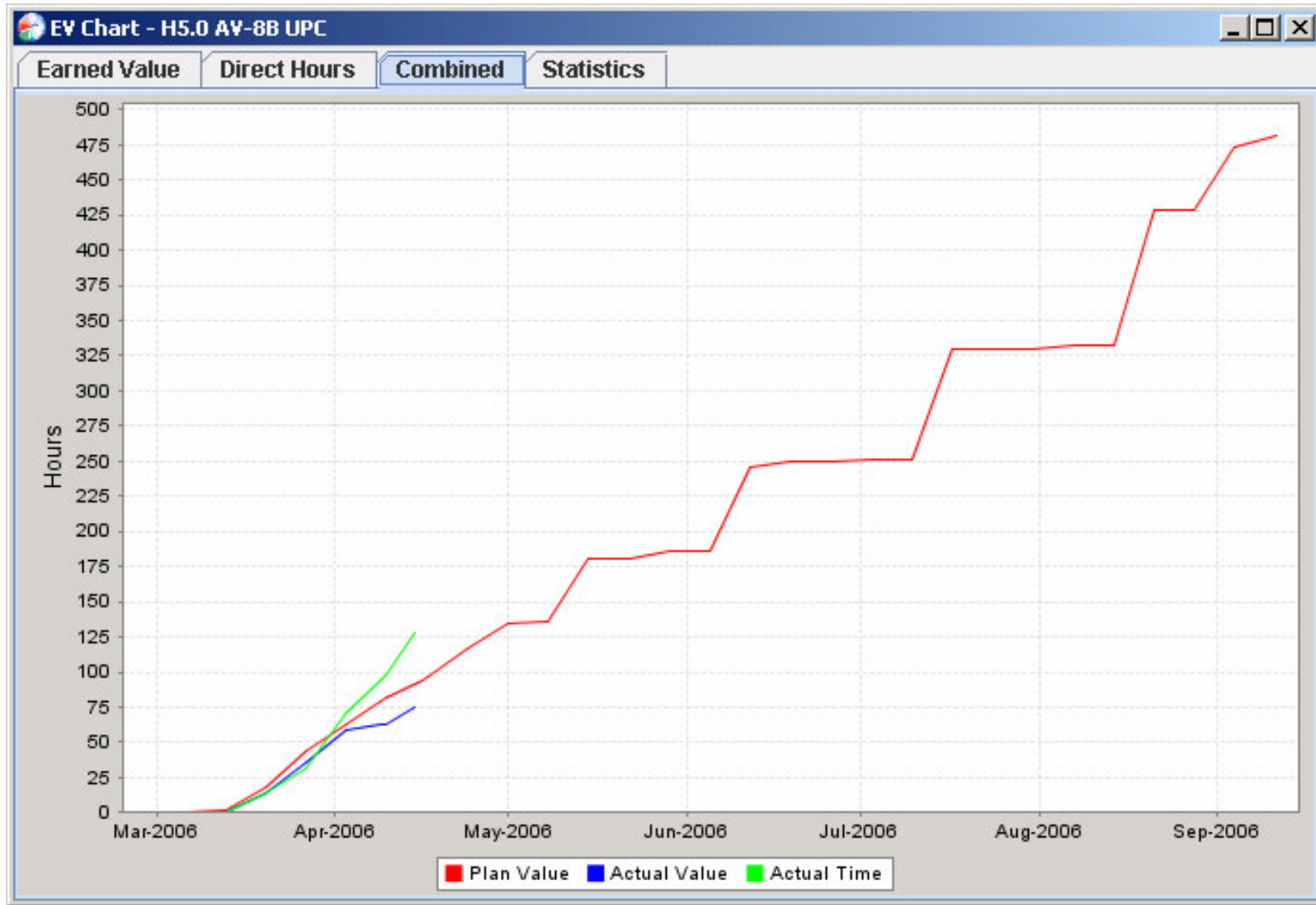
Robert's Dashboard

C [Play] [Bug] [List] Project H5.0 AV-8B UPC Dev VMF CAS Screen Move-Add Buttons Int Test Task Int Test

Task and Schedule Rollup									
Project/Task	PT	Time	PV	Plan Date	Date	%C	%S	EV	
Move-Add Buttons	23:10	19:39	4.8%	Apr 9, 2006		94%	85%	4.5%	
HLD Task	0:22	0:32	0.1%	Mar 19, 2006	Mar 17, 2006	100%	143%	0.1%	
HLD Inspect Task	0:07	0:15	0%	Mar 26, 2006	Mar 22, 2006	100%	208%	0%	
PSP	18:00	14:45	3.7%	Apr 9, 2006	Apr 5, 2006	100%	82%	3.7%	
Planning	0:47	1:14	0.2%	Mar 19, 2006	Mar 17, 2006	100%	156%	0.2%	
Design	5:00	2:18	1%	Mar 26, 2006	Mar 20, 2006	100%	46%	1%	
Design Review	1:23	0:13	0.3%	Mar 26, 2006	Mar 20, 2006	100%	16%	0.3%	
Code	4:16	2:39	0.9%	Mar 26, 2006	Mar 21, 2006	100%	62%	0.9%	
Code Review	1:31	0:03	0.3%	Mar 26, 2006	Mar 21, 2006	100%	3%	0.3%	
Compile	0:17	1:29	0.1%	Mar 26, 2006	Mar 22, 2006	100%	516%	0.1%	
Test	3:58	5:15	0.8%	Mar 26, 2006	Mar 23, 2006	100%	132%	0.8%	
Postmortem	0:47	1:34	0.2%	Apr 9, 2006	Apr 5, 2006	100%	198%	0.2%	
Test Plan	0:06	0:01	0%	Mar 26, 2006	Mar 20, 2006	100%	15%	0%	
Design Inspect Task	0:56	0:21	0.2%	Mar 26, 2006	Mar 22, 2006	100%	37%	0.2%	
Test Devel Task	0:19	0:05	0.1%	Mar 26, 2006	Mar 20, 2006	100%	27%	0.1%	
Code Inspect Task	1:52	3:40	0.4%	Apr 9, 2006	Apr 4, 2006	100%	197%	0.4%	
Int Test Task	1:28	0:00	0.3%	Apr 9, 2006					



# Team Dashboard – EV Chart





# What is a TSP Launch?

<b>Meeting 1</b>	Review Management goals.	<p>Tools used for these steps</p>
<b>Meeting 2</b>	Set S/W Team goals.	
<b>Meeting 3</b>	Produce development strategy and process.	
<b>Meeting 4</b>	Produce top-down plan.	
<b>Meeting 5</b>	Review quality plan.	
<b>Meeting 6</b>	Produce bottom-up plan (detailed individual plans).	
<b>Meeting 7</b>	Perform risk assessment.	



# TSP Launches – TSP Workbook

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- Strengths
  - Top-down plan is easy to enter real-time
  - Quality Plan is generated automatically
  - Non-software development efforts are supported
  - User tool training is reduced (COTS-based)
- Weaknesses
  - Balancing workloads is time-consuming (at times)
  - Implementing personal rates is error-prone
  - Producing bottom-up plan requires all team members to use tool



# TSP Workbook – Lifecycle Processes<sup>1</sup>

Microsoft Excel - BuildTask (SEI 2004 tool).xls

File Edit View Insert Format Tools Data Window Help

E23 =

	C	D	E	F	G
1	Process	Process Step	Process Step Description	TSP Phase	Step %
2					
3	STR Lite Lifecycle Process	Prob Identification	Identify Cause of Problem	IDENT	29.7%
4	STR Lite Lifecycle Process	In Work	Implement Solution to Problem	INWRK	41.8%
5	STR Lite Lifecycle Process	Inspection	Prepare, attend, and fix and problems encountered in in	INSP	18.5%
6	STR Lite Lifecycle Process	Integration Test	Integration Test	IT	10.0%
7	Classic Lifecycle Process	Detailed Design	Complete Detailed Design	DLD	22.1%
8	Classic Lifecycle Process	DLD Review	Personal Review of Detailed Design	DLDR	11.1%
9	Classic Lifecycle Process	DLD Inspection	Prepare, attend, and fix and problems encountered in in	DLDINSP	8.8%
10	Classic Lifecycle Process	Code	Complete Code	CODE	20.0%
11	Classic Lifecycle Process	Code Review	Personal Review of Code	CR	10.0%
12	Classic Lifecycle Process	Compile	Compile and fix and bugs and continue this process unt	COMPILE	3.4%
13	Classic Lifecycle Process	Unit Test	Unit Test	UT	6.8%
14	Classic Lifecycle Process	Code Inspection	Prepare, attend, and fix and problems encountered in in	CODEINSP	8.8%
15	Classic Lifecycle Process	Integration Test	Integration Test	IT	9.0%

ProcessDefinition

Ready

1 - Launch Assistant tool provided by Advanced information Services (AIS)



# TSP Workbook – Non-S/W Task List

Microsoft Excel - sw-jimc-3.xls

File Edit View Insert Format Tools Data Window Help

A91 = STR 7146

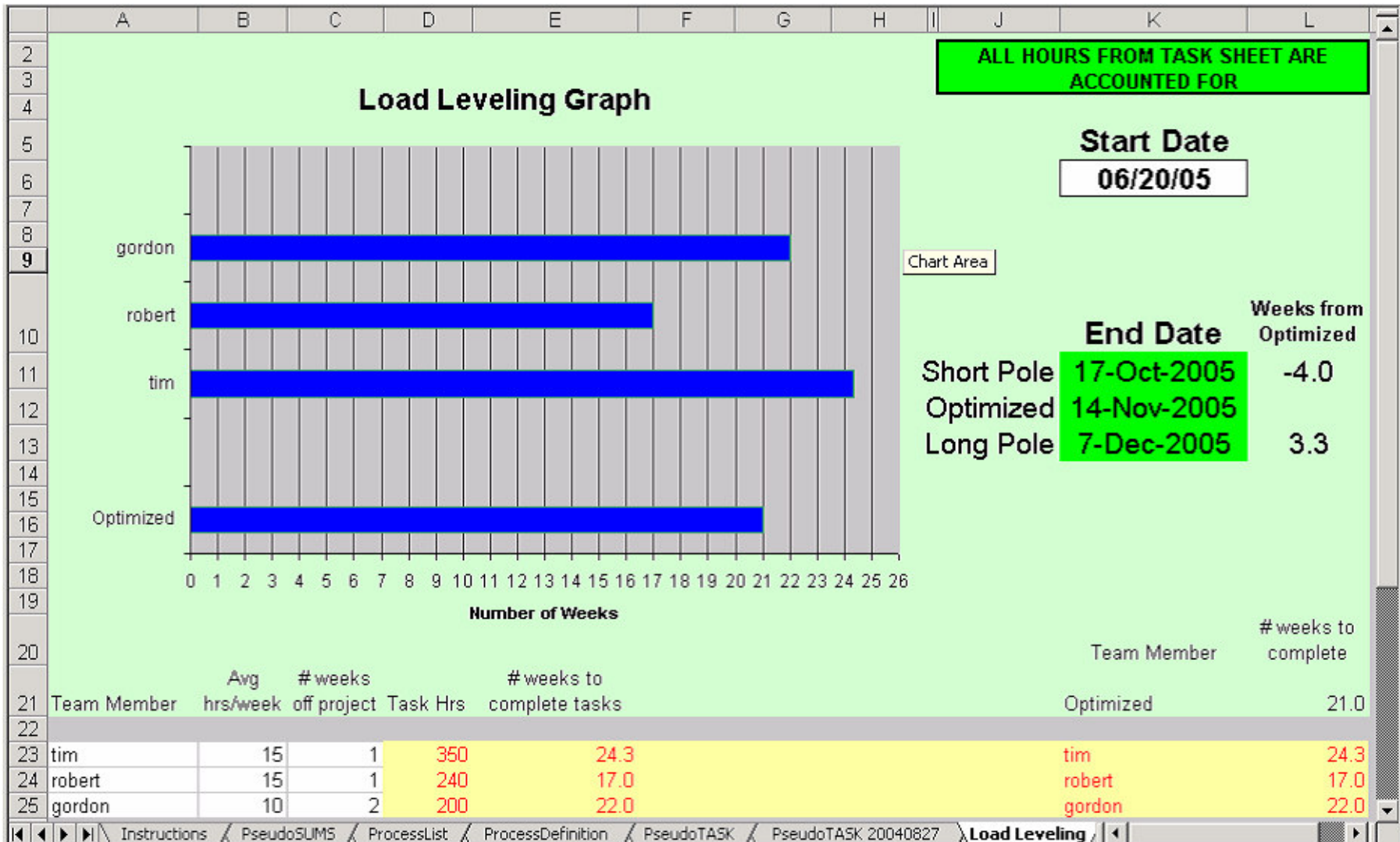
TSP Task Planning Template - Form TASK			Total Plan Hours										Total Actual H	
1	<b>Name</b>	James Crowell	344.5										16	
2	<b>Team</b>	MSC Software	Reminder:											
3	<b>Date</b>	4/28/2005	If Size and Rate are present, estimated hours is calculated as Size / Rate											
4	<b>Cycle</b>	3	whenever the plan is updated. To prevent calculation, size or rate must be blank.											
<input type="button" value="Generate Task List"/> <input type="button" value="Update Task and Schedule Plan"/>			Estimated Size	Size Measure	Rate (per Hr.)	Time in Phase %	Estimated Hours	Engrs	Plan Hours	Plan Date	Plan Week	Actual Hours	Actual Date	
7	Assembly	Phase	Task											
8	STR 7460	IDENT	STR 7460 - Prob Identification	17	LOC	0.8	29.7	6.0	1.0	6.0	1/3/2005	1	4.8	1/3/2005
9	STR 7460	INWRK	STR 7460 - In Work	17	LOC	0.8	41.8	8.5	1.0	8.5	1/17/2005	3	17.5	1/13/2005
10	STR 7460	INSP	STR 7460 - Inspection	17	LOC	0.8	18.5	3.8	1.0	3.8	1/17/2005	3	3.5	1/20/2005
11	STR 7460	IT	STR 7460 - Integration Test	17	LOC	0.8	10.0	2.0	1.0	2.0	1/24/2005	4	1.7	1/21/2005
12										0.0	1/24/2005	4		
61	PR 287	IDENT	PR 287 - Prob Identification	6	LOC	0.8	29.7	2.1	1.0	2.1	4/4/2005	14	0.6	4/7/2005
62	PR 287	INWRK	PR 287 - In Work	6	LOC	0.8	41.8	3.0	1.0	3.0	4/4/2005	14	0.2	4/20/2005
63	PR 287	INSP	PR 287 - Inspection	6	LOC	0.8	18.5	1.3	1.0	1.3	4/4/2005	14		4/20/2005
64	PR 287	IT	PR 287 - Integration Test	6	LOC	0.8	10.0	0.7	1.0	0.7	4/4/2005	14		4/20/2005
65										0.0	4/4/2005	14		
85	STR 7106	IDENT	STR 7106 - Prob Identification	17	LOC	0.8	29.7	6.0	1.0	6.0	4/18/2005	16	0.5	
86	STR 7106	INWRK	STR 7106 - In Work	17	LOC	0.8	41.8	8.5	1.0	8.5	4/25/2005	17		
87	STR 7106	INSP	STR 7106 - Inspection	17	LOC	0.8	18.5	3.8	1.0	3.8	4/25/2005	17		
88	STR 7106	IT	STR 7106 - Integration Test	17	LOC	0.8	10.0	2.0	1.0	2.0	4/25/2005	17		
89										0.0	4/25/2005	17		

Project / Team / Goals / Roles / SUMP / SUMQ / SUMS / Task / Schedule / LOGT / LOGD / Week / IRTL / IRWeek / DefectType

Ready NUM



# TSP Workbook – Load Leveling





# TSP Workbook – Load Leveling

C	K	L	M	N	O	P	Q	R	S	T
<b>Template - Form TASK</b>										
Draft a Design Standard for the team	aa					5.0	1.0	5.0	8/23/2004	2
Team Review and comment on standard	team					2.0	3.0	6.0	8/23/2004	2
Improve standard based on comments	aa					2.0	1.0	2.0	8/23/2004	
Issue the standard to the team	aa					0.5	1.0	0.5	8/23/2004	
Core Requirements REQINSP - inspection	aa, cc	55 pgs		2.0		27.5	3.0	82.5	9/1/2004	
Core Requirements REQINSP - meeting	bb, aa, cc					1.0		0.0	9/1/2004	
"A" Requirements REQ - write requirements	aa	45 pgs		0.5		90.0	1.0	90.0	9/1/2004	
"A" Requirements REQINSP - meeting	aa, bb, dd					1.0		0.0	10/1/2004	
"A" Requirements REQINSP - resolve issues	aa					5.0	1.0	5.0	10/1/2004	
Core SW DLDINSP - Inspection	aa, bb	500 LOC		200.0		2.5	3.0	7.5	11/8/2004	13
Core SW DLDINSP - Inspection Meeting	cc, aa, bb					1.0	3.0	3.0	11/8/2004	13
Core SW CODEINSP - Inspection	aa, bb	500 LOC		200.0		2.5	3.0	7.5	11/8/2004	
Core SW CODEINSP- Inspection Meeting	cc, aa, bb					1.0	3.0	3.0	11/8/2004	
"A" SW DLD	aa	1000 LOC		15.0	30.0	20.0	1.0	20.0	11/15/2004	
"A" SW DLDR	aa	1000 LOC		15.0	15.0	10.0	1.0	10.0	11/15/2004	
"A" SW DLDINSP - Inspection Meeting	aa, bb, cc					1.0	3.0	3.0	11/15/2004	
"A" SW DLDINSP - Resolve Issues	aa					2.0	1.0	2.0	11/15/2004	
"A" SW CODE	aa	1000 LOC		15.0	30.0	20.0	1.0	20.0	11/15/2004	
"A" SW CR	aa	1000 LOC		15.0	10.0	6.7	1.0	6.7	11/15/2004	
"A" SW CODEINSP- Inspection Meeting	aa, bb, cc					1.0	3.0	3.0	12/6/2004	
"A" SW CODEINSP - Resolve Issues	aa					2.0	1.0	2.0	12/6/2004	
"A" SW COMPILE	aa	1000 LOC		15.0	3.0	2.0	1.0	2.0	12/6/2004	
"A" SW UT	aa	1000 LOC		15.0	12.0	8.0	1.0	8.0	12/6/2004	

Click on the "P" (Plan Hours) Column, and the entire column will be selected.

EXCEL will display the "SUM", the total effort hours, planned for aa.

Sum=213.7



# NSSC TSP Launches – Team Dashboard

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- Strengths
  - Top-down plan is easy to enter real-time
  - Quality Plan is generated automatically
  - Non-software development efforts are supported
  - Balancing team workloads is quick & easy
  - Tool familiarity is not required
- Weaknesses
  - Some tool workarounds require explanation



# Team Dashboard – Non-S/W Workflow

Team Project - Common Team Workflows				
Name	%	Rate	Units	# People
<input type="checkbox"/> Common Workflows				
<input checked="" type="checkbox"/> Crisis Management				
Planning	5% of 3		Crises per Hour	1 person
Stop	10% of 3		Crises per Hour	1 person
Drop	10% of 3		Crises per Hour	1 person
Roll	40% of 3		Crises per Hour	1 person
Postmortem	35% of 3		Crises per Hour	1 person



# Team Dashboard – Non-S/W Task List

SPIKE-Phase3 - Work Breakdown Structure

File Edit Workflow Team

Size Accounting Time Task Time

Phase	Task Si...	Units	Rate	Hrs/Indiv	# People	Time	Assigned To
		0 LOC				39	vic(27), kevin(12)
Int Test		6 Problems	0.5	12	2	24	vic, kevin
Misc		24 Test Cas...	4	6	1	6	vic
Int Test		36 Test Cas...	4	9	1	9	vic
		0 LOC				45	dave(45)
Int Test		30 Hours	1	30	1	30	dave
Int Test		15 Hours	1	15	1	15	dave
		0 LOC				115	vic(31), dave(84)
Int Test		9 Hours	1	9	1	9	dave
Int Test		44 Hours	1	44	1	44	dave
Int Test		4 Hours	1	4	2	8	vic, dave
Int Test		27 Hours	1	27	2	54	vic, dave
		0 LOC				40	vic(12), kevin(8), dave(20)
Misc		4 Meetings	0.5	8	2	16	vic, dave
Misc		8 Hours	1	8	2	16	kevin, dave
Misc		4 Hours	1	4	2	8	vic, dave



# Daily Use – TSP Workbook

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- Strengths
  - Logging time and defects is easy
  - Changing order of tasks is easy
  - User ramp-up time is short (COTS-based)
- Weaknesses
  - Additional steps required to build team status
  - No support for PROBE analysis



# TSP Workbook – Time and Defect Logs

## TSP Time Recording Log - Form LOGT

Name **Robert N Lindeman**  
 Team **MSS Team**

Date **5/3/2006**  
 Cycle \_\_\_\_\_  
 Hours **91.6**

Assembly	Phase	Task	Date	Start	Int.	Stop	Delta	Comments
UPC AMU RS / CODE		UPC AMU RS Access DB Create - Data Entry	8/6/2004	11:40:24	0.0	11:40:26	0.0	PB done
UPC AMU RS / CODE		UPC AMU RS Access DB Create - Data Entry	8/6/2004	11:40:36	0.0	12:00:40	20.1	Net done
UPC AMU RS / CODE		UPC AMU RS Access DB Create - Data Entry	8/6/2004	12:03:04	0.0	12:06:18	3.2	delete all traces of pilot data file
UPC AMU RS / CODE		UPC AMU RS Access DB Create - Data Entry	8/6/2004	12:06:32	0.0	12:34:11	27.7	corrected and remove inapplicable personalities
UPC AMU RS / ACR		UPC AMU RS Access DB Create - Data Entry	8/6/2004	12:36:11	0.0	12:39:21	3.2	done review of the OC1.2 changes
UPC AMU RS / ACR		UPC AMU RS Access DB Create - Data Entry	8/6/2004	12:39:38	0.0	12:45:38	6.0	done
UPC AMU RS / CODEINSP		UPC AMU RS Access DB Create - Data Entry In	8/6/2004	12:46:57	0.0	13:09:46	22.8	sent out request to review
UPC AMU RS / DLDINSP		UPC AMU RS Access DB Create - DLD Inspecti	8/11/2004	10:52:47	0.0	10:52:55	0.1	
UPC AMU RS / DLDR		UPC AMU RS Access DB Create - DLD Review	8/11/2004	10:53:40	0.0	11:17:56	24.3	will have review sessions for construction an

## TSP Defect Recording Log - Form LOGD

Name **Robert N Lindeman**  
 Team **MSS Team**

Date **5/3/2006**  
 Cycle \_\_\_\_\_

Date	Num	Type	Assembly	Injected	Removed	Fix Time	Fix Ref.	Description
8/2/2004	9	10	UPC AMU RS DSUUAPI In PVCS	DLD	DLDINSP	10.0		move interp layer to same level as rule server
8/2/2004	10	10	UPC AMU RS DSUUAPI In PVCS	DLD	DLDINSP	10.0		move interface stack and scsi1553 to its own folder
8/2/2004	11	10	UPC AMU RS DSUUAPI In PVCS	DLD	DLDINSP	0.5		clarify words for whats in "the rest"
8/2/2004	12	10	UPC AMU RS DSUUAPI In PVCS	DLD	DLDINSP	0.5		name of doc in review incorrect in review form
8/4/2004	13	40	UPC AMU RS DSUUAPI New Records	DLD	DLD	20.0		wrong msb in access data base for wpyt file checksum
8/5/2004	14	10	UPC AMU RS Access DB Create	DLD	CODE	2.0		clarify that OC1.2 db will be modded for H4.0 DSU
8/6/2004	15	70	UPC AMU RS Access DB Create	DLD	CODE	10.0		must remove the 16, 17 and 18 personalities from AMU DB
8/6/2004	16	70	UPC AMU RS Access DB Create	CODE	CR	0.5		wrong number of words for MX
8/12/2004	17	10	UPC AMU RS DSUUAPI New Records	DLD	DLDINSP	15.0		mod so OC1.2 does not contain any H4.0 items
8/12/2004	18	70	UPC AMU RS Access DB Create	CODE	CODEINSP	60.0		remove references to AMU in H4.0 access data base
8/12/2004	19	70	UPC AMU RS Access DB Create	DLD	DLDR	60.0		pilot data belongs in addition to new files in H4.0 access data base



# Daily Use – Team Dashboard

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- Strengths
  - Logging time and defects is easy
  - Team status is built automatically
  - PROBE analysis is fully supported
- Weaknesses
  - Tasks must be manually reordered to support TSP
  - Changing order of tasks is awkward (at times)
  - Full training of tool requires time
  - Training materials are still in development



# Team Dashboard – Task List

Project/Task	PT	Time	PV	Plan Date	...	...	...	EV
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/HLD Task/HLD	0:22	0:00	0.1%	Mar 19, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/HLD Inspect Task/HLD Inspect	0:07	0:00	0%	Mar 19, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/PSP/Planning	0:18	0:00	0.1%	Mar 19, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/PSP/Design	1:53	0:00	0.4%	Mar 19, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/PSP/Design Review	0:31	0:00	0.1%	Mar 19, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/PSP/Code	1:37	0:00	0.4%	Mar 19, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/PSP/Code Review	0:34	0:00	0.1%	Mar 19, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/PSP/Compile	0:07	0:00	0%	Mar 19, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/PSP/Test	1:30	0:00	0.4%	Mar 26, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/PSP/Postmortem	0:18	0:00	0.1%	Mar 26, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/Test Plan/Test Devel	0:06	0:00	0%	Mar 26, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/Design Inspect Task/Design Inspect	0:56	0:00	0.2%	Mar 26, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/Test Devel Task/Test Devel	0:19	0:00	0.1%	Mar 26, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/Code Inspect Task/Code Inspect	1:52	0:00	0.4%	Mar 26, 2006				
/Project/H5.0 AV-8B UPC/DevVMF/CAS Screen/Move-Add Buttons/Int Test Task/Int Test	1:28	0:00	0.3%	Mar 26, 2006				

Buttons: Add Task..., Remove Task, Move Task Up, Move Task Down, Flat View

Note that bottom tasks are not in the proper sequential order for TSP development



# Team Dashboard – PROBE Support

PROBE Wizard - Microsoft Internet Explorer

## PROBE - /Non Project/PSP for Engineers/6A

### Step 1: Verify Estimated Object LOC

From your Size Estimating Template, your Estimated Object LOC is **102**.

If you want to alter your Estimated Object LOC, you should return to the Size Estimating Template now and make the necessary changes.

If you are satisfied with your Estimated Object LOC, press the continue button.

PROBE Wizard - Microsoft Internet Explorer

## PROBE - /Non Project/PSP for Engineers/6A

### Verify Historical Data

Calculations will be based upon the following set of historical data:

Project/Task	Estimated Object LOC	Estimated New & Changed LOC	Actual New & Changed LOC	Estimated Hours	Actual Hours	Exclude?
SP for Engineers/1A			125	3	1.52	<input type="checkbox"/>
SP for Engineers/2A		50	39	1	0.73	<input type="checkbox"/>
SP for Engineers/3A		40	73	0.65	1.07	<input type="checkbox"/>
SP for Engineers/4A	37	46.0	44	0.73	1.33	<input type="checkbox"/>
SP for Engineers/5A	69	79.1	80	1.59	1.05	<input type="checkbox"/>

If you feel that one or more of the projects in the list above is an "outlier," you may exclude it from the PROBE calculations by checking the appropriate box in the "Exclude" column. Unless you **really** understand what you are doing, it is best to leave all the boxes unchecked.)

If all the information above is correct, press the continue button.

Back Continue

Outliers - Microsoft Internet Explorer

The word **outlier** is a statistical term for an unusual data point. When you have a collection of historic data points and one of those data points is **very** different from the rest, it may be an outlier.

Identifying outliers is not a simple task. You can't just look at the data points and throw out the ones that don't fall along the best-fit line. You can generally only decide that a point is an outlier if you are familiar with the project in question, and you know that something unusual happened on that project to skew the data point.

For example, if your computer were to crash halfway through a project, and you were forced to start over, that project would likely end up taking much longer than expected. The resulting data point could fairly be considered to be an outlier. On the other hand, making a bad estimate is **not** an unusual occurrence, so you can't throw out data points simply because your estimate was bad.



# Team Dashboard – PROBE Support

PROBE Wizard - Microsoft Internet Explorer

## PROBE - /Non Project/PSP for Engineers/6A

### Step 3: Size

To create your final size estimate, use your engineering judgement.

112 LOC      Your best option for estimating bounds (beta1 = 1.1).

119 LOC      Your next best option is probably 1.17).

LOC      Your next best option is probably PROBE method D. Use your engineering judgement to examine the estimates generated by the other PROBE methods. If you do not feel that they accurately project the new and changed LOC required for this project, then make your best estimate of the new and changed LOC and enter it in the field to the left.

*You should not use PROBE method B for size. The correlation between your historical data points is not reliable for planning purposes ( $r^2 = 0.25$ ).*

*You cannot use PROBE method A for size. You do not have enough historical data.*

Choose your size estimate from the options above, then click the Continue button.

Back    Continue

#### PROBE Method C2 for Size

Est N&C LOC	N&C LOC
40	75
45	45
50	40
80	80

Est N&C LOC

Est Obj LOC

Est N&C LOC



# Team Dashboard – PROBE Support

PROBE Wizard - Microsoft Internet Explorer

## PROBE - /Non Project/PSP for Engineers/6A

### Step 4: Time

To create your time estimate, use

2.18 Hours      Your best bounds (b

1.77 Hours      Your next

[?????] Hours      Your next the estimat the total d developm

2.29 Hours      Your next best option is probably PROBE method C1. The slope of the line is within bounds ( $\beta_1 = 44.5 \text{ LOC/Hr}$ ).

*You should not use PROBE method B for time. The value of  $\beta_1$  is supposed to be close to your historical productivity (63.3 LOC/Hr); unfortunately, it is not. ( $\beta_1 = -740 \text{ LOC/Hr}$ ) The value of  $\beta_0$  is supposed to be significantly smaller than the time you are currently estimating; unfortunately, it is not. ( $\beta_0 = 1.12$ )*

*You cannot use PROBE method A for time. You do not have enough historical data.*

Choose your time estimate from the options above, then click the Continue button.

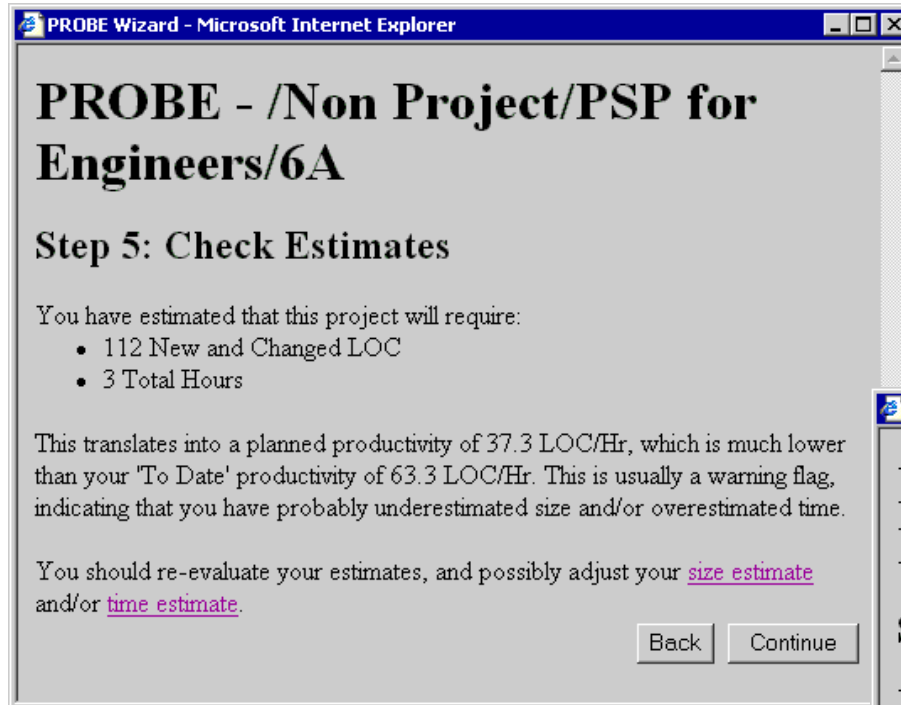
Back    Continue

PROBE Method B for Time - Microsoft Internet Explorer

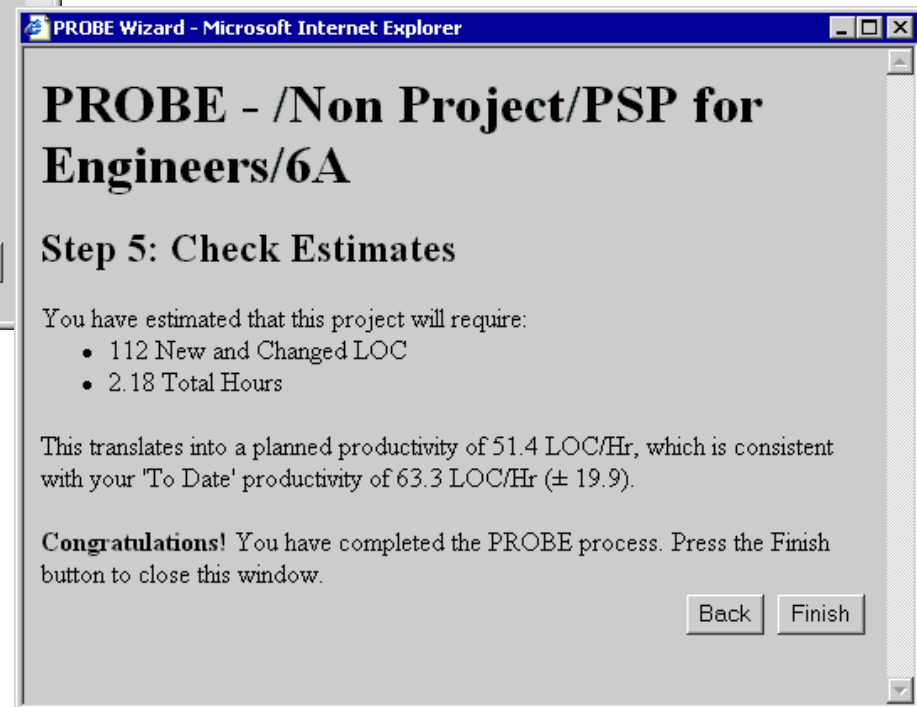
PROBE Method B for Time uses historical data from your completed projects to help generate an accurate estimate. It draws a chart using *estimated new and changed LOC* on the horizontal axis and *actual time* on the vertical axis, and plots a point for each completed project. Then it draws the best-fit line for those points, and uses it to translate your *estimated new and changed LOC* into an *estimated time*. Finally, using statistical methods, it draws two lines that surround 70% of the points on the chart, and uses those lines to estimate maximum and minimum likely values for *actual time*.



# Team Dashboard – PROBE Support



– OR –





# Postmortems – TSP Workbook

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- Strengths
  - Compiles team defect log automatically
  - Easy to generate charts from data
- Weaknesses
  - None



# Postmortems – Team Dashboard

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- Strengths
  - Compiles team defect log automatically
  - Data analysis charts provided within tool
  - Easy to export data to Excel (easy to generate charts from data)
- Weaknesses
  - None



# Summary Conclusions

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- TSP Workbook and Team Dashboard
  - are successful implementations of fundamental PSP/TSP concepts
  - are neither “Silver Bullets” nor perfect implementations of all PSP/TSP concepts
  - can be used to execute a TSP project
- Expect to work with your PSP/TSP tool to determine how your team will use it



# Contact Information

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Note: These slides are not on the SSTC 2006 CD. Please email me if you wish additional information.



# Abbreviations

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- COTS – Commercial Off The Shelf
- NAVAIR – Naval Air Systems Command
- NSSC – NAVAIR Systems Software Support Center
- PROBE – PROxy Based Estimating
- PSP – Personal Software Process
- SEI – Software Engineering Institute
- STSC – Software Technology Support Center (Air Force)
- TSP – Team Software Process