NAVAIR LAMP Model – A Coaches Aid in Helping Teams Apply TSP[SM]

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Prepared By:
Bradley Hodgins
NAVAIR Systems Software Support Center (NSSC)

Presentation Objectives

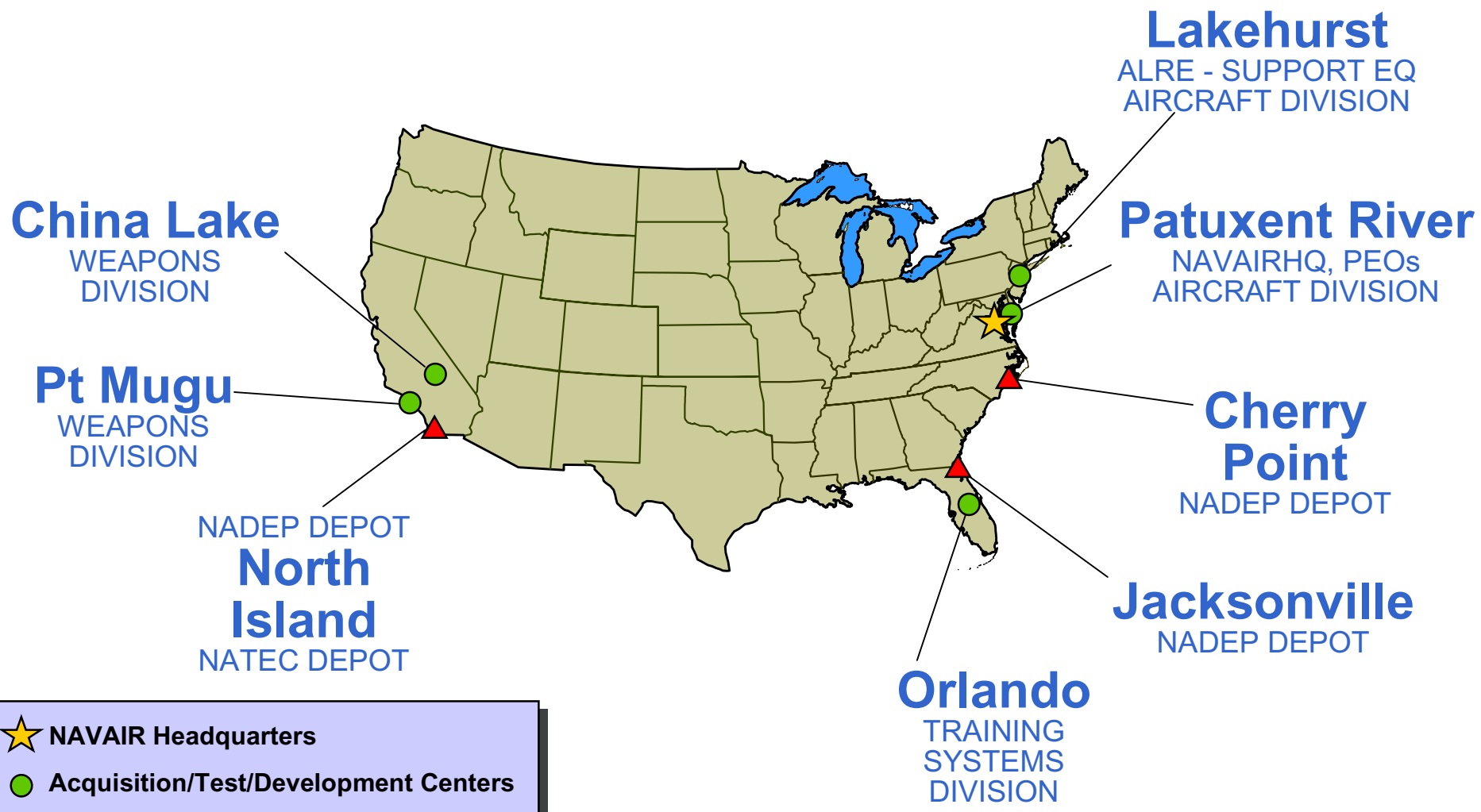
- Background
  - NAVAIR
  - Personal Software Process (PSP) and Team Software Process (TSP)[1]
- Problem: Estimating Coaching Support
- Solution: the LAMP Model
- Added Benefits of the LAMP Model

[1]Personal Software Process, PSP, Team Software Process, and TSP are service marks of Carnegie Mellon University

Who is NAVAIR?

- 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.

Where is NAVAIR?



What is PSP/TSP?

- 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

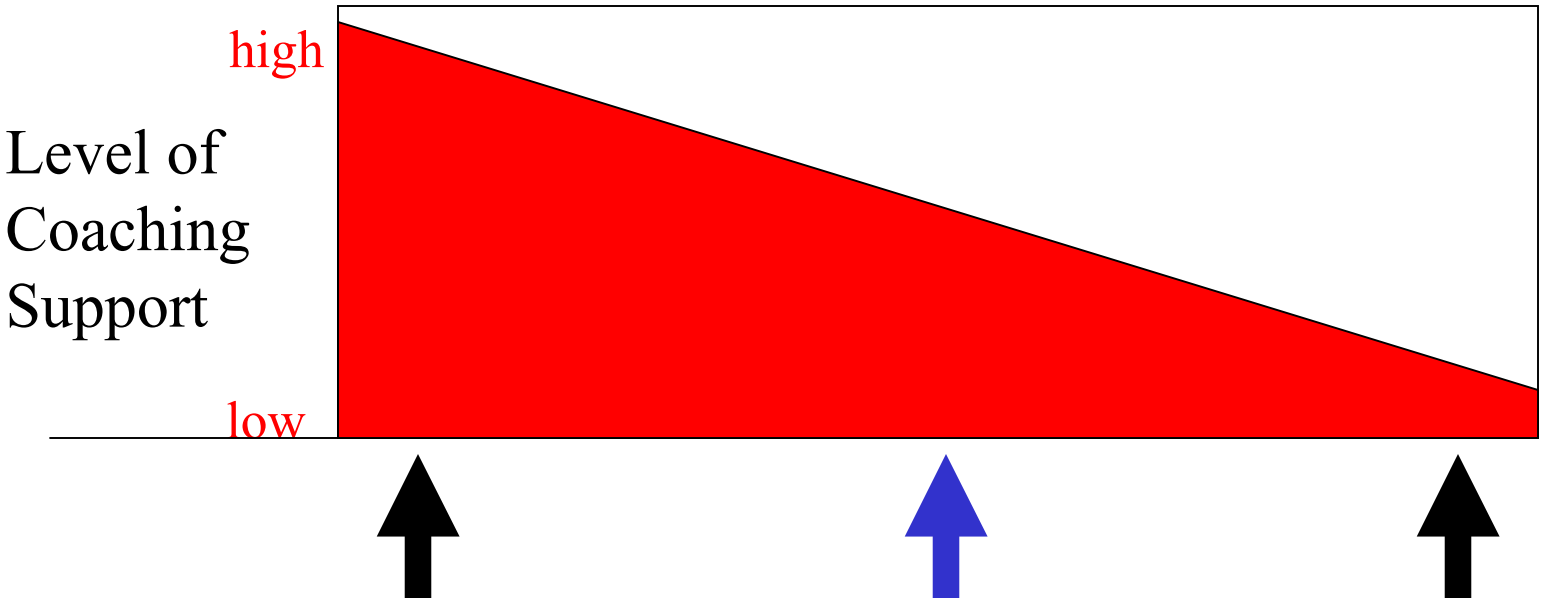
- PSP/TSP quickly improves the performance of software groups.
- Planning and tracking is accurate, timely, and precise.
- Product quality is managed and measured from the beginning of the job.
- By finding and fixing problems before test, project cycle time is substantially reduced.

The Problem

- Need to estimate size of coaching effort to support TSP teams across NAVAIR
  - NSSC needs to budget for TSP Coaching Support
  - Solution needs be objective
- All TSP teams are not the same
  - Different sizes
  - Require different amounts of coaching support (even same size teams)

Coach Support Profile

Level of Coaching vs. Team Familiarity with TSP



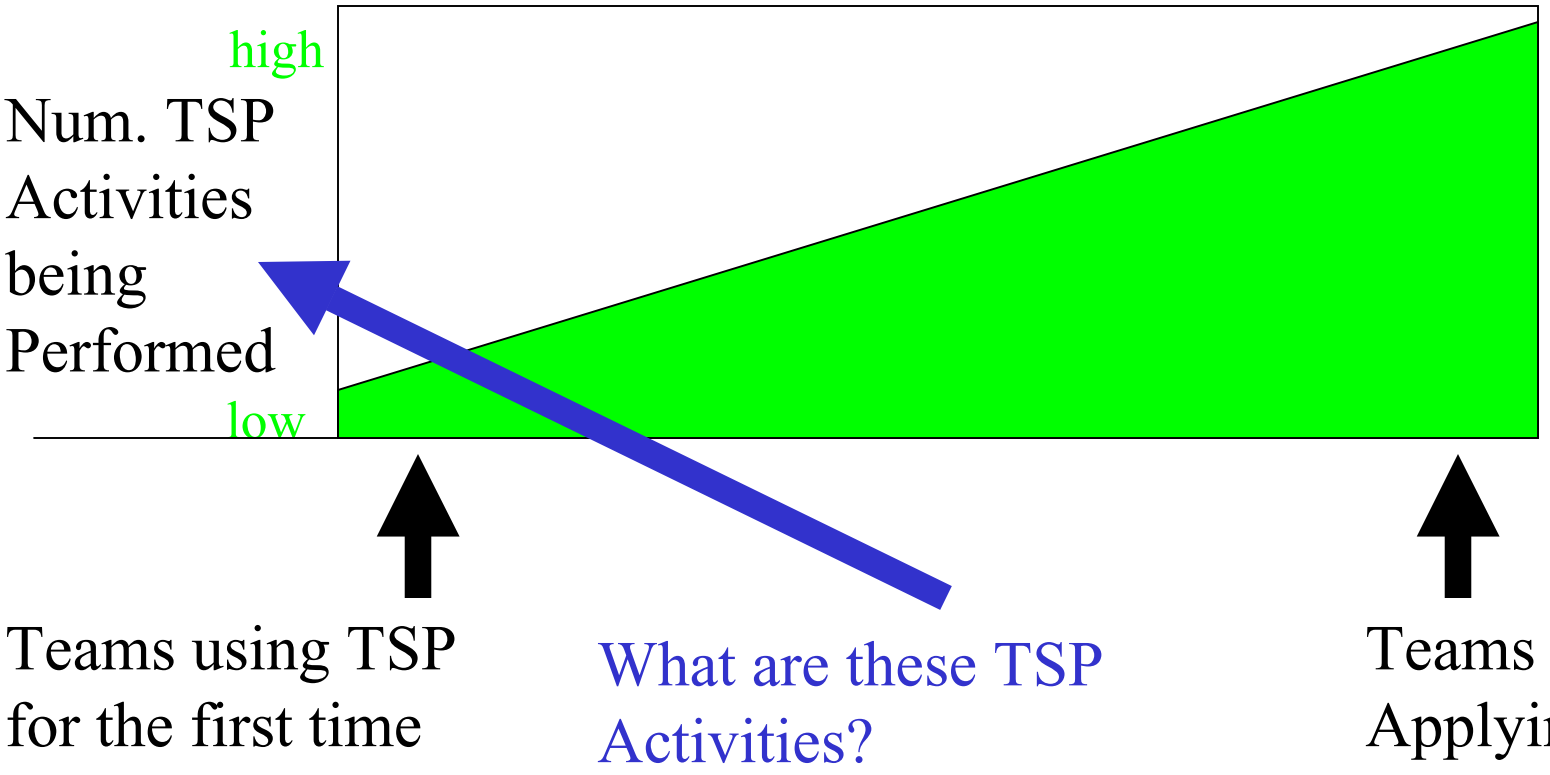
Teams using TSP for the first time

How can team's coaching needs be profiled between these extremes?

Teams fully applying TSP

TSP Activity Profile

TSP Activities Performed vs. Team Familiarity with TSP



TSP Activities

TSP Activity Dependencies

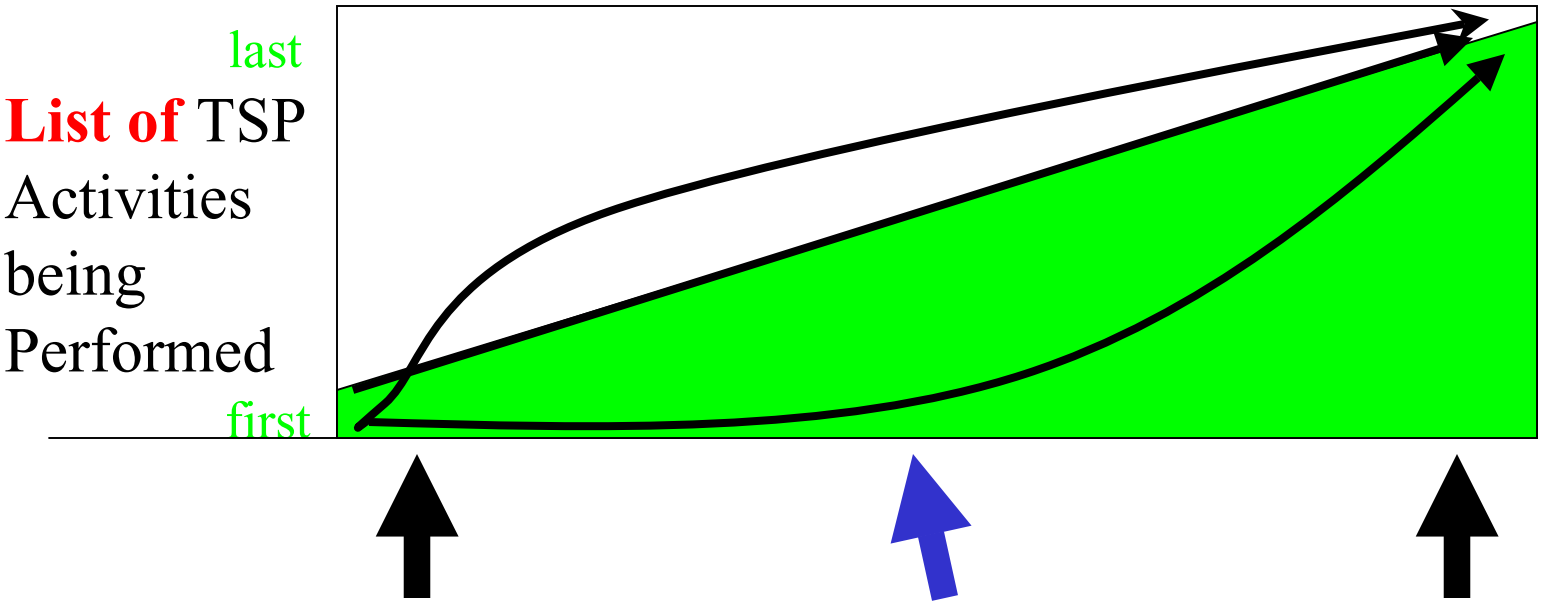
- Some TSP Activities depend on other activities to be in place for them to work

Using PROBE? → **Logging Time?**
Entering Size?

Describing Defects Properly? → **Logging Defects?**

TSP Activity Advancement Profile

TSP Activities Performed vs. Team Familiarity with TSP



TSP Team Advancement

- At first, the team is **learning TSP** and is not expected to be consistent with any TSP Activities
- Once the team is consistently performing the fundamentals, they are now **applying TSP**
  - Logging Time
  - Logging Defects
  - Following Workflow/Lifecycle
  - Holding Meetings
  - Entering Sizes

TSP Team Advancement

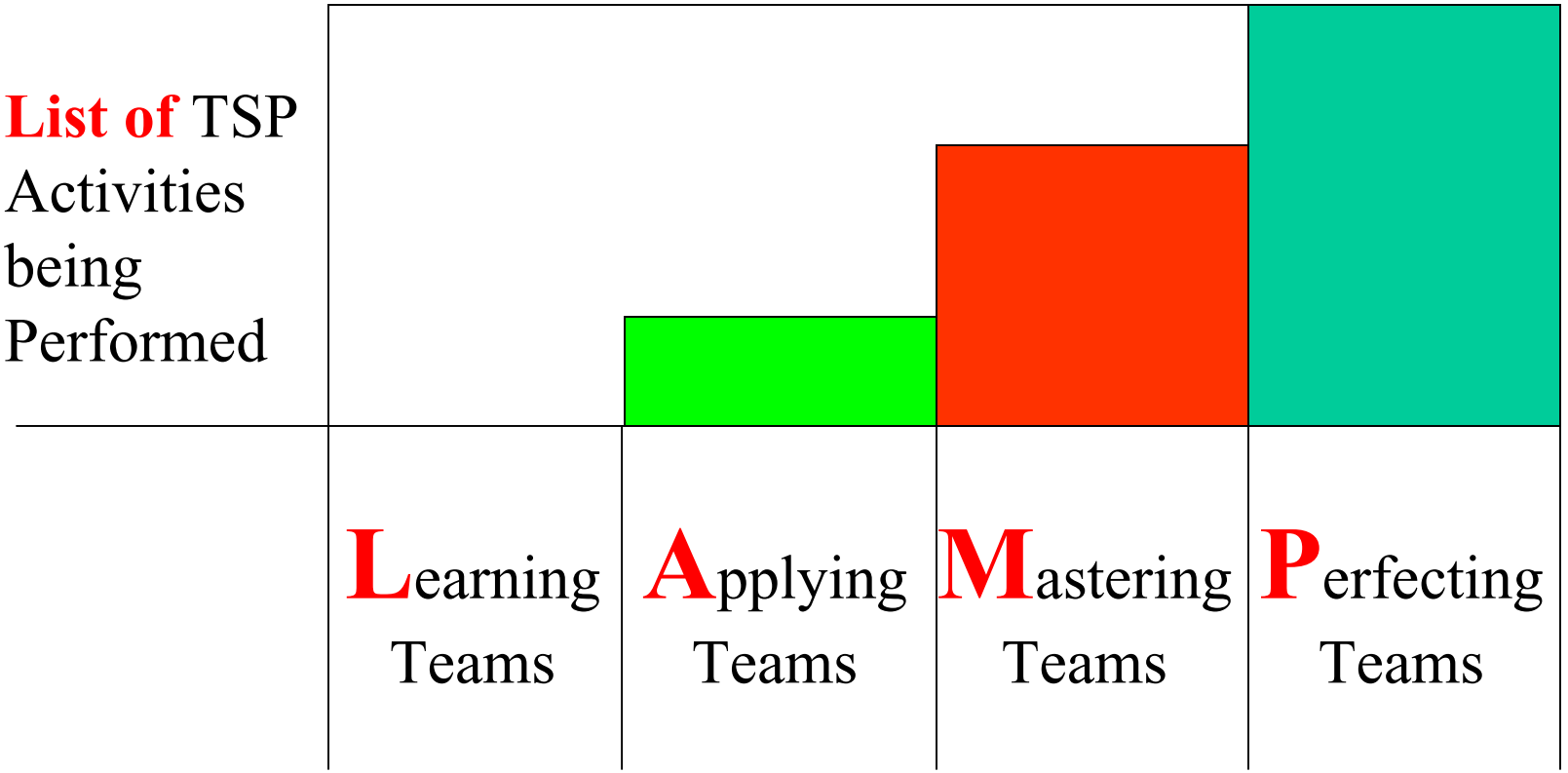
- At some point, the team has **mastered TSP** and is performing all the standard TSP Activities.
  - Performing Previous Activities as well as
  - Using Checklists
  - Using PROBE
  - Performing Roles
  - Reviewing Action Items
  - Reviewing Goals
  - Reviewing Risks
  - Reviewing Role Status
  - Describing Defects Properly

TSP Team Advancement

- As Teams press on from here to find ways to perform TSP faster, better, cheaper, they are **perfecting TSP**.
  - Performing Previous Activities as well as
  - Updating Checklists
  - Updating Action Items Prior to Meeting
  - Updating Goals Prior to Meeting
  - Updating Risks Prior to Meeting
  - Updating Role Reports Prior to Meeting
  - Performing Component Postmortems
  - Reporting Quality Problems to Coordinator

The Solution

The LAMP Model



Activity Assessment Methods

	Teams using Dashboard	Teams using Excel
Prerequisites:	**Team Dashboard** (most activities) **Team members' Personal Dashboards** (2 activities)	**Rollup workbook** (most activities) **team member's workbooks** (3 activities)
Activity		
Times are being logged	In the **team members' Personal Dashboard**: Go to Task & Schedule and look at Direct Time Chart over the assessment period. Go to Time Log, and review how time has been entered over the assessment period. (Less robust options) 1.) - In **Team Dashboard,** go to Task & Schedule and look at individual charts direct time graph	In the **team members' workbooks**: Go to Project sheet and look at Cummulative Time Chart over the assessment period. Go to LOGT sheet, and review how time has been entered over the assessment period.
Defects are being logged	In **Team Dashboard,** dump the Report task list to excel and look at tasks that have been signed off since last LAMP assessment. Dump defect log to excel, look for defects from completed defect removal tasks (DR, DI, CR, COMPILE, CI, UT, IT, …)	In **Rollup workbook,** look at tasks that have been signed off since last LAMP assessment. From **individual workworks,** collect defect logs together, look for defects from completed defect removal tasks (DR, DI, CR, COMPILE, CI, UT, IT, …)
Workflow/Lifecycle phases are being executed in the proper order	In **Team Dashboard**, dump the Report task list to excel and look at tasks that have been signed off since last LAMP assessment. For all components involved, study completion dates for proper order of lifecycle execution.	In **Rollup workbook,** look at tasks that have been signed off since last LAMP assessment. For all components involved, study completion dates for proper order of lifecycle execution.

(portion of more complete table covering all Activities)

- Best time for Coach to conduct a LAMP Assessment is during a Checkpoint.
- LAMP Assessment time is half a day to a day (based on team size).

Assessment Guidelines

Guidelines for assessing a team's performance for an activity

consistency of team members performing the activity			number of team members performing the activity: < 1/3 of team (< 25%)	about half of team (~ 50%)	most or all of team (> 75%)
	most of the time	> 75%	S	S	M
	half the time	~ 50%	R	S	S
	a little	< 25%	R	R	S

M – Mostly (performed by MOST team members)

S – Sometimes (performed by SOME team members)

R – Rarely (performed by FEW team members)

Assessment History Example

Level 4 - Perfecting	Level 3 - Mastering	Level 2 - Applying	Level 1 - Learning	Conditions for achieving	Activity	Jan-06	Apr-06	Jul-06	Oct-06	Jan-07	Apr-07	Jul-07	Oct-07	Jan-08	Apr-08
				ANY	Times are being logged	M	M	M							
				ANY	Defects are being logged	M	M	M							
				ANY	Workflow/Lifecycle phases are being executed in the proper order	M	M	M							
				ANY	Periodic team meetings are being held	M	M	M							
				ANY	Actual SLOC sizes are being entered	R	S	M							
				ANY ANY	Review checklists are being used	M	M	M							
				ANY ANY	PROBE is used during planning phase for each component/assembly	S	M	M							
				ANY ANY	Assigned roles are performed	S	M	M							
				ANY ANY	Action items are reviewed during the periodic s/w team meeting.	S	M	M							
				ANY ANY	Assigned goals are reviewed during the periodic s/w team meeting.	S	M	M							
				ANY ANY	Assigned risks are reviewed during the periodic s/w team meeting.	S	M	M							
				ANY ANY	Role activities are reported during the periodic s/w team meeting.	M	M	M							
				ANY ANY	Defect descriptions describe the defect, not the solution.	S	S	M							
				ANY ANY ANY	Review checklists are being modified/updated during a cycle	R	R	R							
				ANY ANY ANY	Action item status' are updated prior to the periodic s/w team meeting.	R	R	R							
				ANY ANY ANY	Assigned goals are updated prior to the periodic s/w team meeting.	R	R	R							
				ANY ANY ANY	Assigned risks are updated prior to the periodic s/w team meeting.	R	R	R							
				ANY ANY ANY	Role activity reports are updated prior to the periodic s/w team meeting.	S	S	S							
				ANY ANY ANY	Postmortems are performed on components as they are completed	S	S	S							
				ANY ANY ANY	Quality Coordinator is notified when a team member finds their metrics fall short of the quality plan	R	R	R							

Project/Team: ARM UPC

Assessment History

M	**Mostly** (performed by **MOST** team members)
S	**Sometimes** (performed by **SOME** team members)
R	**Rarely** (performed by **FEW** team members)

Addressing the Problem

- Populate a table containing estimates for Coaching efforts for different kinds of teams (in work years)

Team LAMP Level \ Team Size (num. of team members)	Small (1-4)	Medium (5-7)	Large (8+)
Learning	1/6	1/4	1/3
Applying	1/8	1/6	1/4
Mastering & Perfecting	1/8	1/8	1/6

Addressing the Problem

- Count up the number of each kind of team in your organization
- Then do some math to get the coaching effort

num. of small, learning projects X 1/6 workyr
+ num. of med, learning projects X 1/4 workyr
+ num. of large, learning projects X 1/3 workyr
+ num. of small, applying projects X 1/8 workyr
…
Coaching Effort = Sum of above products

Added Benefits of LAMP Model

- Build a profile of "ramp-up" time for a team to advance to Mastering or Perfecting Level
  - Use this profile to refine estimate for Coaching effort
- Build a overall status of TSP within the organization
  - By tracking the LAMP levels of teams over time, a picture can be built of not only how many TSP teams are operating within an organization, but at what level of advancement those teams are performing TSP
- Use as a guide to prioritize a team's problems to address the most important problems first.

Summary Conclusions

- LAMP Model can help an organization in a number of ways.
  - Estimating Coaching efforts
  - Building a TSP “ramp-up” profile for new teams
  - Building a overall status of TSP within the organization
  - Prioritizing team problems

Contact Information

- Brad Hodgins
  - phone: (760) 939-0666/4446
  - e-mail: bradley.hodgins@navy.mil

Abbreviations

- NAVAIR – Naval Air Systems Command
- NSSC – NAVAIR Systems Software Support Center
- PROBE – PROxy Based Estimating
- PSP – Personal Software Process
- SEI – Software Engineering Institute
- TSP – Team Software Process