

GENERAL DYNAMICS

Land Systems

Multi-Attribute Modeling and Practical Use

David Sobetski, PMP
Margaret Corr
November 18, 2009

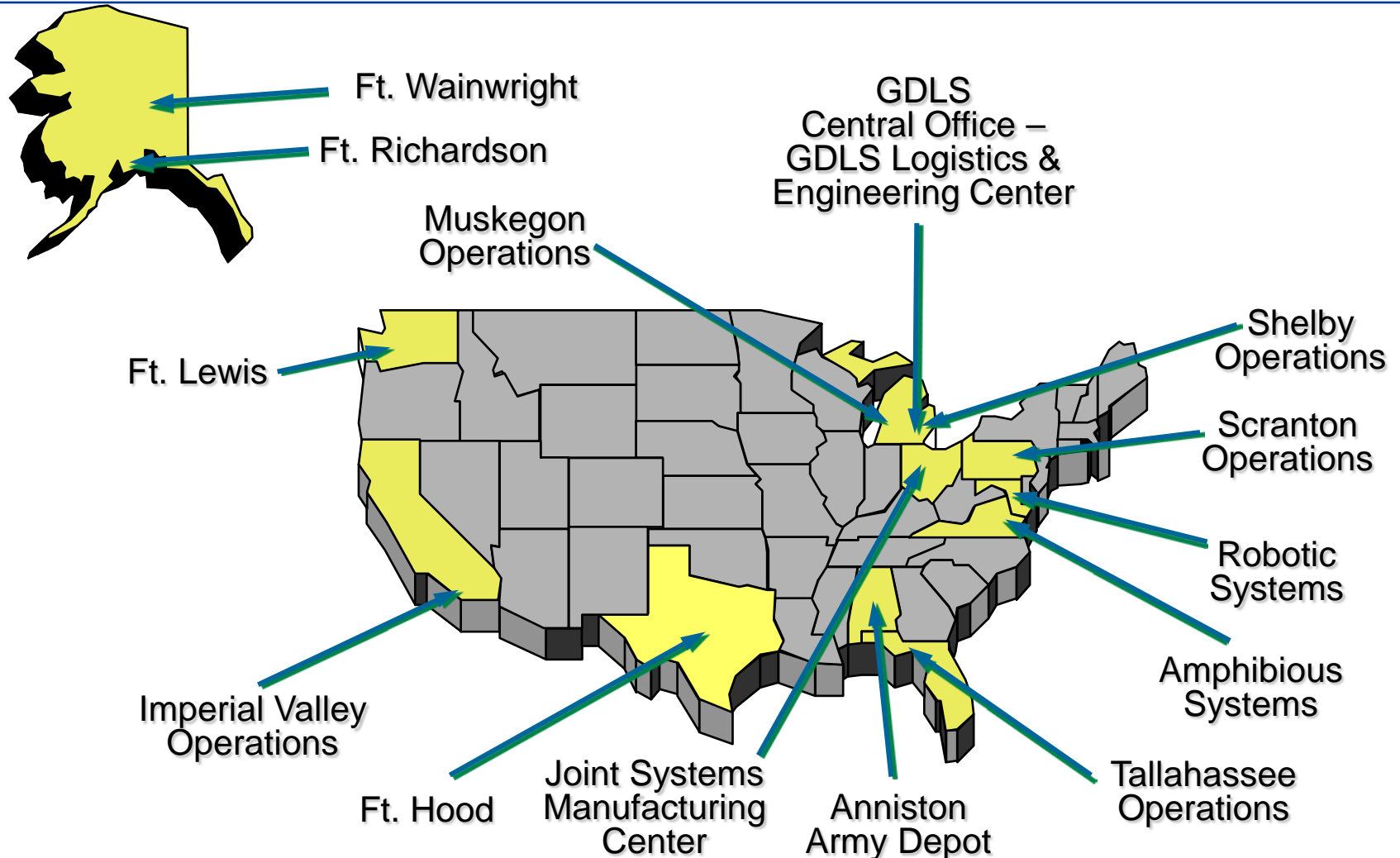
Agenda

- GDLS Overview
- Peer Review Tool
- Process Performance Models (PPM)
- Software Metrics Tool
- Results & Benefits
- Challenges
- Summary

Land Systems Products



U.S. Locations



GENERAL DYNAMICS

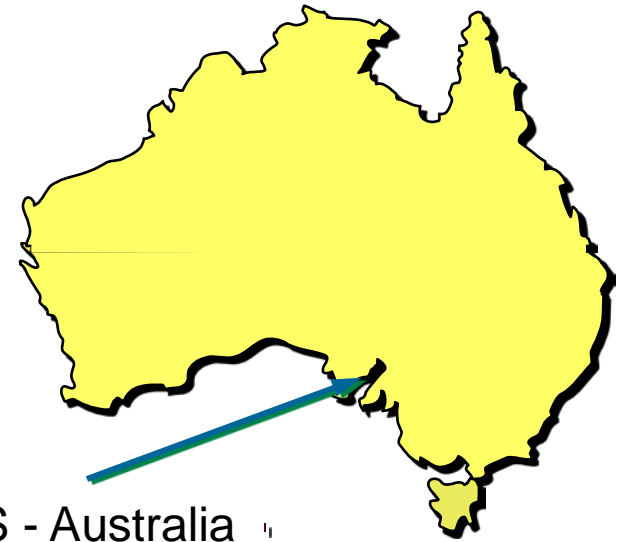
Land Systems

Approved for Public Release, Distribution Unlimited, GDLS Approved, Log 2009-119, Dated 11/09/2009

International Locations



GDLS - Canada
London, Ontario



GDLS - Australia
Adelaide, Australia

Peer Review Tool – History

- Original version created ~2000 for Software Engineering
- Updated over the years, but was always a software tool for software personnel.
- Needed a facelift for usability outside of software – Systems Engineering, Logistics, Prototype Shop, i.e. all engineering (approximately 3000 employees).
- Updated July 2007 with new look and feel.
- Approximately 5000 peer reviews per year across Systems, Software, and Logistics engineering disciplines.

Peer Review Tool – Features

Four types of peer reviews

- Desk Check (Without Meeting)
 - Colleague Review (Instant)
 - Formal Review (With Meeting)
 - Inspection (Formal Review with a Review Lead to verify all issues properly addressed)
- Three levels of issue severity – Major, Minor, & Editorial.
 - Over 100 different work product types, each with their own issue categories. Each issue category is mapped to one or more severities.
 - User interface leads user through screens.
 - Emails automatically sent to participants at various stages of the review.
 - Reporting and query capabilities.
 - Permissions-based input fields & screens.
 - Project-based access to data.
 - Used to coordinate peer reviews across sites.
 - ITAR (International Traffic in Arms Regulations) compliant.
 - Regularly scheduled reviews with GDLS-Canada.



Peer Review Tool – Home Page

Peer Review Tool

logged in as sobetski

[home](#) | [create peer review](#) | [search & reports](#) | [edit groups](#) | [ips process](#) | [user guide](#) | [feedback](#)

The following features have been added to the Peer Review Tool:

Saving Searches - Users now have the ability to run a search from the Search & Reports page and then save it for later use. An unlimited number of searches can be saved per user with a title and optional description. These searches may also be modified at any time to change the title and description, to or change any of the criteria used in the search. These saved searches may also be deleted at any time.

Prep Time - Authors may now automatically fill in a value of 0 minutes of Prep Time for all participants / items in a review if those participants have not already entered their Prep Time for an item and if they have not submitted an issue against that particular item.

[Click Here To View Your Closed Reviews](#)

Open Peer Reviews You Own or Created

Review #	Family Code	Project	Author	Type	Status	Rev. Date
10518	Organizational	Process Improvement	Sobetski, David M	Formal (Meeting)	Scheduled	Sep 23, 2009

Open Peer Reviews You Are Participating In

Review #	Family Code	Project	Author	Type	Status	Rev. Date
----------	-------------	---------	--------	------	--------	-----------

Peer Review Tool – Create Screen

Peer Review Tool

logged in as sobetski

[home](#) | [create peer review](#) | [search & reports](#) | [edit groups](#) | [ips process](#) | [user guide](#) | [feedback](#)

Create Peer Review

Use this form to create a new peer review. You must first select the Family Code this review belongs to. Then, select the specific Project for this Family Code as well.

* **Family Code:**

* **Project:**
NEW Project now shows the ED&D project number before the name of the project.

* **Domain:**

* **Review Type:**

Author:
Format: Last Name, First Name - username ; This field is optional - fill in only if you are not the author

Charge Number: **Task Code:** **Cross Charge Department:**

Additional Information about the Review:

- Desk Check
- Colleague Review
- Formal Review
- Inspection

Peer Review Tool – Add Items Screen

Peer Review Tool logged in as sobetski

[home](#) | [create peer review](#) | [search & reports](#) | [edit groups](#) | [ips process](#) | [user guide](#) | [feedback](#)

[Main](#) | [Items](#) | **Participants** | **Schedule** | **Send Invite**

Add Review Item

Fill out this form to add an item to the review. Please note that browsing for a file on your local hard drive will NOT work!! The Network Link box does not attach files, it simply provides a link to the location of the file on the network. You must enter a Network Link *or* Web Link unless this is an Instant Peer Review.

* Item Name:

Version:

* Item Location (Full Path):
Network Link (ex: U:drive):
Web Link (ex: IDE, ACE):

* Support Item? Yes No

* Work Product Type:

* Work Product Size: Select a Work Product Type to determine the proper Units

List of Items to be Reviewed

Item # 1 - NDIA CMMI Presentation Abstract	Action: [Edit] [Delete]
Version: 1	
Web Link: http://www.ndia.org/meetings/0110/Documents/Abstracts/9407.pdf	
Work Product: Type: Technical Publication (Or Equivalent) Size: 1 Pages To Be Reviewed	

List of Support Items (Items Not Being Reviewed)

There are currently no support items.

Viewing Review # 10519

100+ Work Product Types.

Size Units dependent upon work product type.

GENERAL DYNAMICS
Land Systems

Approved for Public Release, Distribution Unlimited, GDLS Approved, Log 2009-119, Dated 11/09/2009

10

Peer Review Tool – Issues Screen

Peer Review Tool logged in as sobetski

[home](#) | [create peer review](#) | [search & reports](#) | [edit groups](#) | [lps process](#) | [user guide](#) | [feedback](#)

[Main](#) | [Items](#) | [Participants](#) | [Schedule](#) | [Issues](#) | [Prep Time](#) | [Close Meeting](#) | [Close Review](#)

Excel Report: Export Issues (Note: Report may contain technical data - ITAR rules apply)

'NEW' [Click here to hide the 'Add Review Issue' and 'Upload Issues' forms to make it easier to view and scroll through issues \(any filters will remain\).](#)

Add Review Issue

* Item: NDIA CMMI Presentation Abstract

Submitted By:

Accept:

Issue Category:

Issue Severity:

Location in Item:

* Issue:

Note:

REMEMBER TO ENTER PREP TIME AFTER YOU ARE DONE ADDING ISSUES

Filter Issues

Issue State:

Issue Creator: Issue Assigned To:

List of Peer Review Issues - 0 Issues with given Filter(s)

There are no Issues for this Review with the given filter(s).

Viewing Review # 10519

Tabs lead user through peer review steps.

Categories based upon type of work product.

Severity based upon Category.

- Major
- Minor
- Editorial

Peer Review Tool – Search Screen

Peer Review Tool

logged in as sobetski

[home](#) | [create peer review](#) | [search & reports](#) | [edit groups](#) | [ips process](#) | [user guide](#) | [feedback](#)

Saved Searches

You have not yet saved any searches.

Search Peer Reviews

Use this form to search for existing Peer Reviews. Leave any field blank that you do not wish to search on. For dates, if you put a minimum date but no maximum date, then all dates **after** the minimum date will be selected. If you put a maximum date but no minimum date, then all dates **before** the maximum date will be selected. This same concept applies to all ranges on this form. If you leave a minimum or maximum blank, there will not be a lower or upper bound for that range.

Managing Organization:	[Select One]
Family Code:	[Select One]
Project:	[Select One]
Project Number:	<input type="text"/> <small>Entering a value here will override searching on Family Code and Project</small>
TAA Number:	[Select One]
Domain:	[Select One]
Review Type:	<input type="checkbox"/> Colleague Review (Instant) <input type="checkbox"/> Formal Review (With Meeting) <input type="checkbox"/> Desk Check (Without Meeting) <input type="checkbox"/> Inspection
Status:	<input type="checkbox"/> Open <input type="checkbox"/> Scheduled <input type="checkbox"/> Reviewed <input type="checkbox"/> Closed <input type="checkbox"/> Canceled
Work Product Type:	[Select One]
Item Name:	<input type="text"/> <small>Use % For Wildcard</small>
Creator:	<input type="text"/> <small>Format: Last Name, First Name - username</small>
Author:	<input type="text"/> <small>Format: Last Name, First Name - username</small>
Review Lead:	<input type="text"/> <small>Format: Last Name, First Name - username</small>
Participant:	<input type="text"/> <small>Format: Last Name, First Name - username</small>
Author Department:	<input type="text"/>
Charge Number:	<input type="text"/> <small>Use % For Wildcard</small> Task Code: <input type="text"/> <small>Use % For Wildcard</small>
Cross Charge Department:	<input type="text"/>
Peer Review # Range:	<input type="text"/> to <input type="text"/>
Creation Date Range:	- - - to - - -
Close Date Range:	- - - to - - -
Issue Due Date Range:	- - - to - - -
<input type="button" value="Search Peer Reviews"/>	

Search upon any field to obtain data for analysis and reports.

Multiple report types available.

PPMs Use Peer Review Data

Peer Review Tool

logged in as sobetski

[home](#) | [create peer review](#) | [search & reports](#) | [edit groups](#) | [ips process](#) | [user guide](#) | [feedback](#)

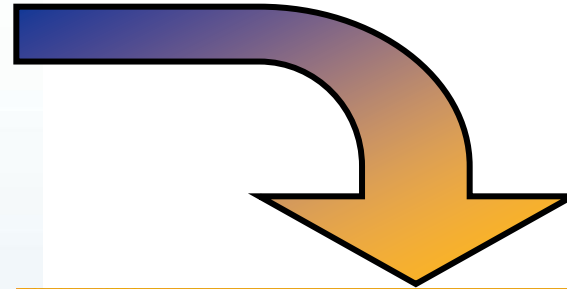
Saved Searches

You have not yet saved any searches.

Search Peer Reviews

Use this form to search for existing Peer Reviews. Leave any field blank that you do not wish to search on. For dates, if you put a minimum date but no maximum date, then all dates **after** the minimum date will be selected. If you put a maximum date but no minimum date, then all dates **before** the maximum date will be selected. This same concept applies to all ranges on this form. If you leave a minimum or maximum blank, there will not be a lower or upper bound for that range.

Managing Organization:	[Select One]
Family Code:	[Select One]
Project:	[Select One]
Project Number:	<input type="text"/> <small>Entering a value here will override searching on Family Code and Project</small>
TAA Number:	[Select One]
Domain:	[Select One]
Review Type:	<input type="checkbox"/> Colleague Review (Instant) <input type="checkbox"/> Formal Review (With Meeting) <input type="checkbox"/> Desk Check (Without Meeting) <input type="checkbox"/> Inspection
Status:	<input type="checkbox"/> Open <input type="checkbox"/> Scheduled <input type="checkbox"/> Reviewed <input type="checkbox"/> Closed <input type="checkbox"/> Canceled
Work Product Type:	[Select One]
Item Name:	<input type="text"/> <small>Use % For Wildcard</small>
Creator:	<input type="text"/> <small>Format: Last Name, First Name - username</small>
Author:	<input type="text"/> <small>Format: Last Name, First Name - username</small>
Review Lead:	<input type="text"/> <small>Format: Last Name, First Name - username</small>
Participant:	<input type="text"/> <small>Format: Last Name, First Name - username</small>
Author Department:	<input type="text"/>
Charge Number:	<input type="text"/> <small>Use % For Wildcard</small> Task Code: <input type="text"/> <small>Use % For Wildcard</small>
Cross Charge Department:	<input type="text"/>
Peer Review # Range:	<input type="text"/> to <input type="text"/>
Creation Date Range:	- / - / - to - / - / -
Close Date Range:	- / - / - to - / - / -
Issue Due Date Range:	- / - / - to - / - / -
<input type="button" value="Search Peer Reviews"/>	



Software Systems Metrics Welcome, David M Sobetski | [FAQ](#) | [Feedback](#) | [Tools Portal](#)

[Home](#) | [Projects](#) | [Manpower](#) | [Resources](#) | [Efficiency](#) | **Peer Reviews** | [Overtime](#) | [Tools](#) | [Training](#)

Code Selection Criteria Averages

With Meeting	Without Meeting
Major/Minor Defects per Review: 0.00	Major/Minor Defects per Review: 0.00
Total Peer Review Time: 0 min	Total Peer Review Time: 0 min
Major/Minor Defects Found per Total Peer Review Time: 0.0 defects/hour	Major/Minor Defects Found per Total Peer Review Time: 0.0 defects/hour

Preparation Recommendations with Meeting:
 > Number of Participants Entering Issues: **0**

Peer Review Model >>

Action:

Program:

Type:

Meeting:

Requirements Selection Criteria Averages

With Meeting	Without Meeting
Major/Minor Defects per 100 Requirements per Review: 0.00	Major/Minor Defects per 100 Requirements per Review: 0.00
Total Peer Review Time: 0 min	Total Peer Review Time: 0 min
Major/Minor Defects Found per 100 requirements per Total Peer Review Time: 0.0 defects/hour	Major/Minor Defects Found per 100 requirements per Total Peer Review Time: 0.0 defects/hour

Preparation Recommendations with Meeting:
 > Average Prep Time per Participated: **0 min**
 > Software Requirements Reviewed: **0**

Abrams Requirements Selection Criteria Averages

With Meeting	Without Meeting
Major/Minor Defects per Review: 0.0	Major/Minor Defects per Review: 0.0
Total Peer Review Time: 0 min	Total Peer Review Time: 0 min
Major/Minor Defects Found per Total Peer Review Time: 0.0 defects/hour	Major/Minor Defects Found per Total Peer Review Time: 0.0 defects/hour

Preparation Recommendations with Meeting:
 > Hold Overviews for all Peer Reviews
 > Average Prep Time per Invited: **0 - 0 min**
 > Number of Reviewers Entering Issues: **0**

© 2009 GENERAL DYNAMICS Land Systems 1000

Process Performance Models Overview

- Families of models based upon
 - Program (New development & maintenance)
 - Requirements / Code
 - Meetings / No Meetings
- 24 models in total
- Baselines developed for
 - Technical defects
 - Cost (hours)
 - Efficiency (defects / hour)
- Users reference baselines to choose the appropriate peer review process and PPM.

PPM Techniques, Tools, & Data

- Techniques
 - ↗ Initial models based upon single attribute regression.
 - ↗ Current models based upon multi-attribute, stepwise regression.
 - ↗ Modeling techniques chosen based upon available data and causal correlation of inputs to outputs.
- Data
 - ↗ Data was reviewed and corrected in the development of baselines.
 - ↗ Outlier data was removed in the iterations of the model development.
 - ↗ F-Tests and T-Tests were run to determine aggregation of data. Models were separated by vehicle programs. The programs were separated by new development or maintenance.
 - ↗ F-Tests and T-Tests were run to determine if baseline changes were significant.

PPM Techniques, Tools, & Data – 2

- Tools included:
 - Mini-tab
 - SigmaZone DOE PRO XL
 - In-house developed Excel models
 - In-house developed web-based models
- Model Verification and Validation
 - Models were peer reviewed by a team of subject matter experts.
 - Models were compared to the different iterations of the models.
 - Comparison model provides additional validation of prediction models.
 - Models were piloted.

Software Metrics Tool Introduction

- Developed by Software Systems organization within GDLS.
- Metrics tool automates Software Systems organizational and project measurements.
- Peer review section contains peer review process performance baseline data and process performance models (PPM).
- Models were initiated for process improvement, specifically to improve the quality of software requirements and code, and to reduce rework.
- Models used by software developers and technical leads performing peer reviews on requirements and code to
 - Predict peer review results
 - Compare results against existing baselines
 - Mandatory use on all requirements and code peer reviews
 - Optimize time and defects for peer reviews

PPM Tool – Planning Peer Reviews

- Users select information to determine the appropriate model from the family of PPMs
 - Program (Models are vehicle platform specific)
 - Meeting | No Meeting
 - Requirements | Code
 - Prediction | Optimization

The screenshot shows the 'Software Systems Metrics' interface. It features a navigation bar with 'Home', 'Projects', 'Management', 'Resources', 'Efficiency', 'Peer Reviews', 'Overlaid', 'Tools', and 'Training'. The main content area is divided into several sections:

- Code Selection Criteria Averages:** A table comparing 'With Meeting' and 'Without Meeting' metrics for Major/Minor Defects per Review, Total Peer Review Time, and Major/Minor Defects Found per Total Peer Review Time.
- Preparation Recommendations with Meeting:** A section with a dropdown for 'Number of Participants Entering Issues'.
- Requirements Selection Criteria Averages:** A table comparing 'With Meeting' and 'Without Meeting' metrics for Major/Minor Defects per 100 Requirements per Review, Total Peer Review Time, and Major/Minor Defects Found per 100 Requirements per Total Peer Review Time.
- Abrams Requirements Selection Criteria Averages:** A table comparing 'With Meeting' and 'Without Meeting' metrics for Major/Minor Defects per Review, Total Peer Review Time, and Major/Minor Defects Found per Total Peer Review Time.
- Peer Review Model Configuration:** A form with fields for 'Action' (Prediction), 'Program' (Abrams), 'Type' (Requirements), and 'Meeting' (Yes), with a 'Go' button.



The screenshot shows the 'Peer Review Tool' interface. It features a navigation bar with 'Home', 'Create Peer Review', 'Search & Reports', 'Edit Groups', 'Ips Process', 'User Guide', and 'Feedback'. The main content area is a 'Create Peer Review' form with the following fields:

- Family Code:** Organizational
- Project:** S05 - Process Improvement
- Domain:** Systems Engineering
- Review Type:** Formal Review (With Meeting)
- Author:** (Format: Last Name, First Name - username)
- Charge Number:** (Task Code)
- Cross Charge Department:**
- Additional Information about the Review:** Review of NDIA CMMI Presentation

Software Metrics Tool – PPM Main Page

Code Selection Criteria Averages

With Meeting	Without Meeting
Major/Minor Defects per Review: 0.00	Major/Minor Defects per Review: 0.00
Total Peer Review Time: 0 min	Total Peer Review Time: 0 min
Major/Minor Defects Found per Total Peer Review Time: 0.0 defects/hour	Major/Minor Defects Found per Total Peer Review Time: 0.0 defects/hour

Preparation Recommendations with Meeting:

» Number of Participants Entering Issues: **0**

Peer Review Model >>

Action:

Program:

Type:

Meeting:

Go

**Prediction
Optimization
Comparison**

Requirements Selection Criteria Averages

With Meeting	Without Meeting
Major/Minor Defects per 100 Requirements per Review: 0.00	Major/Minor Defects per 100 Requirements per Review: 0.00
Total Peer Review Time: 0 min	Total Peer Review Time: 0 min
Major/Minor Defects Found per 100 requirements per Total Peer Review Time: 0.0 defects/hour	Major/Minor Defects Found per 100 requirements per Total Peer Review Time: 0.0 defects/hour

Preparation Recommendations with Meeting:

» Average Prep Time per Participated: **0 min**
 » Software Requirements Reviewed: **0**

Abrams Requirements Selection Criteria Averages

With Meeting	Without Meeting
Major/Minor Defects per Review: 0.0	Major/Minor Defects per Review: 0.0
Total Peer Review Time: 0 min	Total Peer Review Time: 0 min
Major/Minor Defects Found per Total Peer Review Time: 0.0 defects/hour	Major/Minor Defects Found per Total Peer Review Time: 0.0 defects/hour

Preparation Recommendations with Meeting:

» Hold Overviews for all Peer Reviews
 » Average Prep Time per Invited: **0 - 0 min**
 » Number of Reviewers Entering Issues: **0**

PPM Tool – Prediction

Abrams Requirements with Meeting Prediction Tool

Estimated Number of Reviewers Invited:

Estimated Avg. Prep Time per Invited (mins):

Estimated Review Meeting Time (mins):

Predictions

Number of Reviewers Attended:	n.n
Number of Reviewers Participated:	n.n
Number of Reviewers Making Comments:	n.n
Avg. Prep Time per Attended (mins):	n.n
Avg. Prep Time per Participated (mins):	n.n
Technical Errors [95% CI]:	n.n [+/- n.n]
Total Peer Review Time (mins) [95% CI]:	n.n [+/- n.n]

User can enter the tool on their own or is automatically routed here at the start of a peer review.

User can predict peer review results based upon number of reviewers invited, preparation time spent by the reviewers, and meeting time.

PPM Tool – Optimize Defects

Abrams Requirements with Meeting Optimization Model

	Minimum	Maximum
Number Reviewers Invited:	<input type="text" value="n"/>	<input type="text" value="n"/>
Avg. Prep Time per Invited (mins):	<input type="text" value="n"/>	<input type="text" value="n"/>
Actual Review Meeting Time (mins):	<input type="text" value="n"/>	<input type="text" value="n"/>
Target Errors Found:	<input type="text" value="n"/>	
Target Total Time Spent (mins):		<input type="text" value="n"/>
Goal:	<input type="text" value="Maximize Errors Found"/>	
<input type="button" value="Optimize"/>		

User can optimize peer review defect detection.

Optimized Outcome

Recommended Number of Reviewers Invited:	n
Expected Number of Reviewers Attended:	n
Expected Number of Reviewers Participated:	n.n
Expected Number of Reviewers Making Comments:	n.n
Recommended Avg. Prep Time per Invited (mins):	n
Expected Avg. Prep Time per Attended (mins):	n.n
Expected Avg. Prep Time per Participated (mins):	n
Recommended Actual Review Meeting Time (mins):	n
Expected Technical Errors [95% CI]:	n.n [+/- n.n]
Expected Total Peer Review Time (mins) [95% CI]:	n.n [+/- n.n]

PPM Tool – Optimize Time

Abrams Requirements with Meeting Optimization Model

	Minimum	Maximum
Number Reviewers Invited:	<input type="text" value="n"/>	<input type="text" value="n"/>
Avg. Prep Time per Invited (mins):	<input type="text" value="n"/>	<input type="text" value="n"/>
Actual Review Meeting Time (mins):	<input type="text" value="n"/>	<input type="text" value="n"/>
Target Errors Found:	<input type="text" value="n"/>	
Target Total Time Spent (mins):		<input type="text" value="n"/>
Goal:	<input type="text" value="Minimize Cost (Total Time Spent)"/>	
<input type="button" value="Optimize"/>		

User can optimize peer review cost (time).

Optimized Outcome

Recommended Number of Reviewers Invited:	n
Expected Number of Reviewers Attended:	n
Expected Number of Reviewers Participated:	n.n
Expected Number of Reviewers Making Comments:	n.n
Recommended Avg. Prep Time per Invited (mins):	n.n
Expected Avg. Prep Time per Attended (mins):	n.n
Expected Avg. Prep Time per Participated (mins):	n.n
Recommended Actual Review Meeting Time (mins):	n
Expected Technical Errors [95% CI]:	n.n [+/- n.n]
Expected Total Peer Review Time (mins) [95% CI]:	n.n [+/- n.n]

PPM Tool – Post Peer Review Comparison

Peer Review Tool logged in as sobetski

home | create peer review | search & reports | edit groups | ips process | user guide | feedback

Main | Items | Participants | Schedule | Issues | Prep Time | **Close Meeting** | **Close Review**

Excel Report | Export Issues (Note: Report may contain technical data - ITAR rules apply)

NEW! Click here to hide the 'Add Review Issue' and 'Upload Issues' forms to make it easier to view and scroll through issues (only filters will remain).

Add Review Issue

* Renc: NDIA CMMI Presentation Abstract

Submitted By:

Accept:

Issue Category:

Issue Severity:

Location in Renc:

* Issue:



Software Systems Metrics

Home Projects Manpower Resources Efficiency

Abrams Requirements with Meeting Comparison Tool

	Actual	Var (%)
Review Meeting Time (mins):	<input type="text" value="n"/>	<input type="text" value="n"/>
Avg. Prep Time per Invited (mins):	<input type="text" value="n"/>	<input type="text" value="n"/>
Number Reviewers Invited:	<input type="text" value="n"/>	<input type="text" value="n"/>
Number Reviewers Making Comments:	<input type="text" value="n"/>	<input type="text" value="n"/>
Technical Errors:	<input type="text" value="n"/>	
Total Peer Review Time (mins):	<input type="text" value="n"/>	

Comparison

	Predicted	Actual
Technical Errors [95% CI]:	n.n [+/- n.n]	n
Total Peer Review Time (mins) [95% CI]:	n.n [+/- n.n]	n

1. Based on the comparison data was this peer review effective?
2. Will a re-review be held?
3. Describe decisions or analysis made as a result of using the Comparison Tool.

Users are directed at peer review closure from the Peer Review Tool to the Metrics Tool.

Data is automatically filled in for the user from the Peer Review Tool to determine if the review was within the baseline.

Users are required to provide analysis information on their results.

Results and Benefits

- Improvements were as high as 400% increase in technical defect detection
 - 70% increase in cost (time) to achieve 400% improvement.
- Acceptance and buy-in of models
 - Automation and communication were key.
 - Mandatory usage of post comparison model.
- Use of the models is a negligible additional cost based on easy access and automation.
- More knowledgeable user base
 - Model development is understood & performed by more people.
 - Model purpose and value is understood by user base.

Challenges

- Data
 - ↗ Accuracy & consistency
 - Correctly identifying defect severities between technical and editorial.
 - Size data is often entered incorrectly.
 - ↗ Quantity (Subject to available historical data)
- Model usage
 - ↗ User-friendly and easily accessible
 - ↗ Documenting usage
- Stakeholder buy-in
 - ↗ Understanding the intent and purpose of the models
 - ↗ Keeping it from being personal, i.e. measuring the process & product and not the person performing the work
 - ↗ Trusting the data and the models
- Documenting savings / cost benefit

What Worked Well

- Multiple subject matter experts evaluating the model
 - Ensure model integrity.
- Automation - ease of use
 - Web-based tools.
 - Integration of modeling tool with peer review tool for both planning and post comparison.
 - Documenting evidence of use of models.
 - Automation leads to data and process consistency.
- Communication
 - Strong and repeated communication with users.
 - Educating key stakeholders to help others buy-in.
 - Updated processes and guidelines to identify when and how models should be used.

Summary

- Keep it simple.
 - Automate as much as possible.
 - Data collection must be integral with the work flow.
 - If the models are not easy to use, they won't be used.
 - Users need to focus on finding defects in products, not spending time running models.
- Bring it to the floor.
 - Communicate with users.
 - Work with users to understand the model usage and benefits. (Market and sell the models.)
 - Incorporate user feedback.

Contact Information

David Sobetski, PMP
Sr. Specialist Business Processes, Systems Engineering Process Excellence
38500 Mound Road
Sterling Heights, MI 48310
586-825-5362
sobetski@gdls.com

Margaret Corr
Software Engineering Process Group Lead
Section Manager, Software Process, Tools & Environment
38500 Mound Road
Sterling Heights, MI 48310
586-825-5787
corr@gdls.com

GENERAL DYNAMICS

GENERAL DYNAMICS

Land Systems

Approved for Public Release, Distribution Unlimited, GDLS Approved, Log 2009-119, Dated 11/09/2009