



Making Use of a Decade of Widely Varying Historical Data

SARP project “Full Life-cycle Defect Management”

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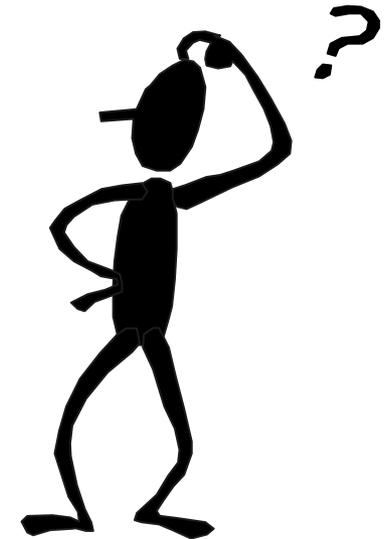
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Problem we are addressing

- We are in the **second year of our initiative** and studying
 - **Parameters** that affect the results of inspection
 - The **relation between V&V effectiveness** in early lifecycle (e.g. inspection) and late (testing)
- We are using this information to **provide feedback** and decision support to NASA projects, on questions such as:
 - *Can I get guidance on how to plan my inspections based on results from projects like my own?*
 - *Based on my inspection results, what are the implications for the effort required to be spent on other non-optional activities, like system testing?*





Unifying different defect classifications

- **Motivation:** Valuable defect data has been collected over the years across many Centers and projects
- **Issue:** Different defect classifications used in historic and contemporary data sets, as well as across Centers;
- **Action:** Definition of a unified defect classification schema and mapping of existing data sets into this unified schema
- **Benefits:**
 - Leverages data required by NPR 7150.2 for analysis and feedback to teams
 - Enables monitoring and validation of existing guidelines
 - Unified classification schema is applicable to inspections and testing

existing data sets
(historic and contemporary)



actions

Map historical data to new categorization if possible; partition remaining historical categories and refine new schema if needed

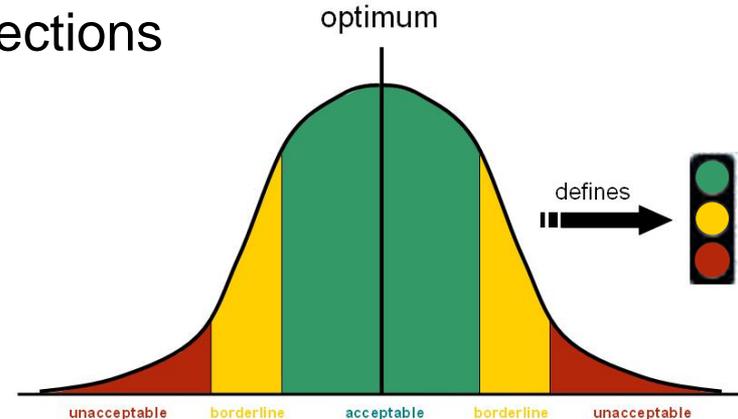
unified data set for
contemporary project feedback

ODC-based new schema



Updating existing inspection standards

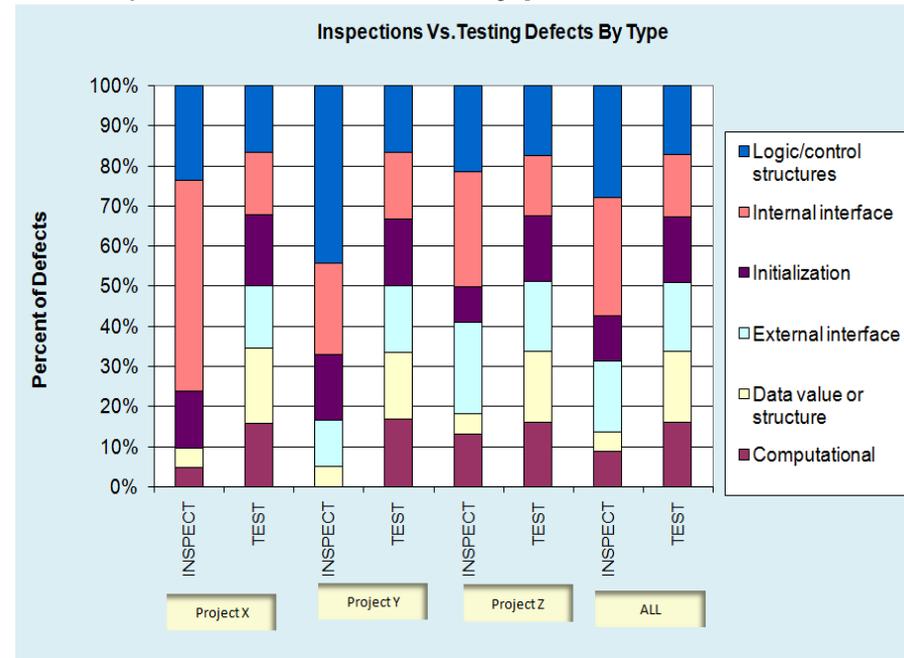
- NASA guidelines for effective inspections formulated in early 1990's
 - Number of participants
 - Page rate
 - Meeting length
- **Validating** these standards based on a wider set of more recent data
- **Refining** the standards – adding more variables, tailoring to different domains
- New standards built into
 - inspection support **tool**
 - inspection **training**
- Refined standards will increase **effectiveness** of inspections in terms of effort expended and defects found



Comparing test and inspection data

Research Questions:

- What defects types are typically removed by **inspections** vs. **testing**?
- What project characteristics (size, language, software domain, new development/enhancements) influence the types of defects found?
- What percent of logic errors can be expected to be removed by **inspections**?
- Can **test results** be used for post-mortem analysis of **inspection performance**?



Providing an inspection experience base

<http://fc-md.umd.edu/EB/>

Fraunhofer USA, Inc
Center for Experimental
Software Engineering
Maryland

Table of Contents

- About this Experience Base
- General Terms & Acronyms
- Tools & Resources
 - All
 - Checklists
 - Defect classifications
 - Forms & Templates
 - Tools
- Inspections Repository
- Training & Services
 - Inspection Tutorial
 - Full EB Access
- Suggest new documents

Contact EB manager:
fshull@fc-md.umd.edu

All categories

Choose subcategory: Requirements
Choose type: All
Filter by title:
Filter by description:
Filter by date: 7/21/2008

7 item(s) found

	Title	Description	Category	Subcategory	Inserted	Type
Open	Design-based Reading	Perspective-based scenarios tailored for a team at GSFC in 1994 by Dr. Vic Basili et al.	Checklists	Requirements	9/27/2007	PDF
Open	R1 - Software Requirements Checklist	Software requirements, developed and used by JPL.	Checklists	Requirements	9/27/2007	PDF
Open	Requirements defects	A defect classification for requirements documents	Defect classifications	Requirements	9/25/2007	PDF
Open	SU2 - Subsystem Functional Design Checklist	Subsystem-level, developed and used by JPL.	Checklists	Requirements	9/27/2007	PDF
Open	SY1 - System Requirements Checklist	System-level requirements, developed and used by JPL	Checklists	Requirements	9/25/2007	PDF
Open	Test-Based Reading Technique	Perspective-based scenarios tailored for a team at GSFC in 1994 by Dr. Vic Basili et al.	Checklists	Requirements	9/27/2007	PDF
Open	Use-based Technique	Perspective-based scenarios tailored for a team at GSFC in 1994 by Dr. Vic Basili et al.	Checklists	Requirements	9/27/2007	PDF

Improving tool support for inspections

Dashboard Tool 0.9.0

File Help

Dashboard

Inspection
Plan Inspection
Enter Results
Manage Inspections

Projects
Enter Project
Manage Projects

Reports
View Report

Characteristics Project: project 10 Document Type: 12

Data Source (Optional)

Import from file

Checklists used

Filter: Recommend Docs

available Documents

Name	Type	Action
Guidelines for "User/Develc	Word	View
JPL Excel Sheet	Excel	View
JPL Guidelines	Word	View

marked

Name	Type	Action
JPL Excel Sheet	Excel	JPL Excel She

Results

Meeting Date: 6/15/2008 major: 7 minor: 14

Completion Date: 8/20/2008

Participants: 12

Document Size: 5763 LoC

Enter Defects

Enter Effort

Save

file import capability

built-in experience base access

reporting and evaluation capabilities



Accomplishments so far

- 2529 unified inspection records in database
 - more data sets are welcome
- Initial tool that supports inspection planning and reporting
 - (test) users are welcome to try the tool
- Tool can accept data from JPL forms as well as various databases
 - possibility of later integration into NASA's eRoom
- Central inspection experience base available
 - <http://fc-md.umd.edu/EB>
- Accepted papers at ESEM and IEEE Software
 - additional publications are currently under review or planned

**More details are provided as part of
our technical presentation**



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**Inspection Experience Base on-line at:
<http://fc-md.umd.edu/EB>**

