

Fraunhofer USA, Inc

Center for Experimental
Software Engineering
Maryland

Inspections Data Analysis and Inspection Dashboard Tool

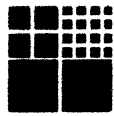
“Full Life-cycle Defect Management”
SAS Conference, Executive Briefing

By

Fraunhofer Center – Maryland Team

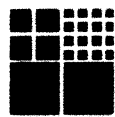
Dr. Forrest Shull (PI)
Mr. Raimund Feldmann
Mr. Ralf Haingaertner
Ms. Myrna Regardie
Dr. Carolyn Seaman

September 2007



Problem We Are Addressing

- We are 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:
 - *If I choose to apply inspections, what are the implications for the effort required to be spent on other non-optional activities, like system testing?*
 - *Can I make an informed decision about what type or how many inspection or testing activities to apply, based on the expected defect profile of a project?*



Initial Approach: Baseline analyses and “Inspection Dashboard” tool

- Model-building & analysis of inspection factors
 - Using data from multiple projects & Centers
- Encapsulating results in a prototype tool that
 - Leverages inspection models
 - Provides feedback on metrics from new inspections
 - Provides insight for comparing results with
 - ❖ Recommended values (from literature)
 - ❖ Norms at the Agency / Center / Project
 - Allows “what ifs” and help in planning

Example of Experience Base

Dashboard access to: FC-MD Inspection Experience Base - Windows Internet Explorer

http://fc-md.umd.edu/EBS/inspections/DASH-BOARD/start_viewDefects.html

File Edit View Favorites Tools Help

msn Search Web Form Fill Spaces My MSN News

mywebsearch Search Cursor Mania Smiley Central Screensavers Fun Cards Yahoo! Google White Pages

Dashboard access to: FC-MD Inspection Experience B...

Fraunhofer USA, Inc
Center for Experimental
Software Engineering
Maryland

Table of Contents

Tools & Resources

Training & Services

Inspection Checklists

A collection of checklists for different purposes.

For requirements documents:

Checklist	Short Description
System (1)	System-level requirements, developed and used by JPL.
Subsystem (2)	Subsystem-level, developed and used by JPL.
Software (3)	Software requirements, developed and used by JPL.
Requirements perspectives	
• Designer	Perspective-based scenarios tailored for a team at GSFC in 1994 by Dr. Vic Basili et al
• Tester	
• User	

For architecture and design documents:

Checklist	Short Description
Architecture (4_1)	Architecture-level, developed and used by JPL.
Architecture (4_2)	Architecture-level, compiled by FC-MD. Users should "tailor down" the checklist based on which questions match their organizational profile.
Detail (5_1)	Detailed design level, developed and used by JPL.

Internet 100%

start 4 2 2 S M S D 3:27 PM

Data Input

Dashboard (Prototype - Copyright 2007 Fraunhofer USA, Inc.)

Project Reports Other

Data Input Control Metrics Project Report

Software Design Document

96

6

☒ Tuesday August 16, 2005

☒ Wednesday August 24, 2005

☐

Status

Editing of existing inspection data

Id

Clear

Save

Characteristics Effort Defects

Defects

Performance

1

5

0

2

0

0

0

Other

Data

Major 2

Minor 13

Logic

Major 3

Minor 3

Interfaces

Major 7

Minor 10

Compliance to Requirements

Major 3

Minor 14

Compliance to Standards

Major 0

Minor 1

Other

Major 21

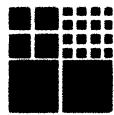
Minor 86

Summary

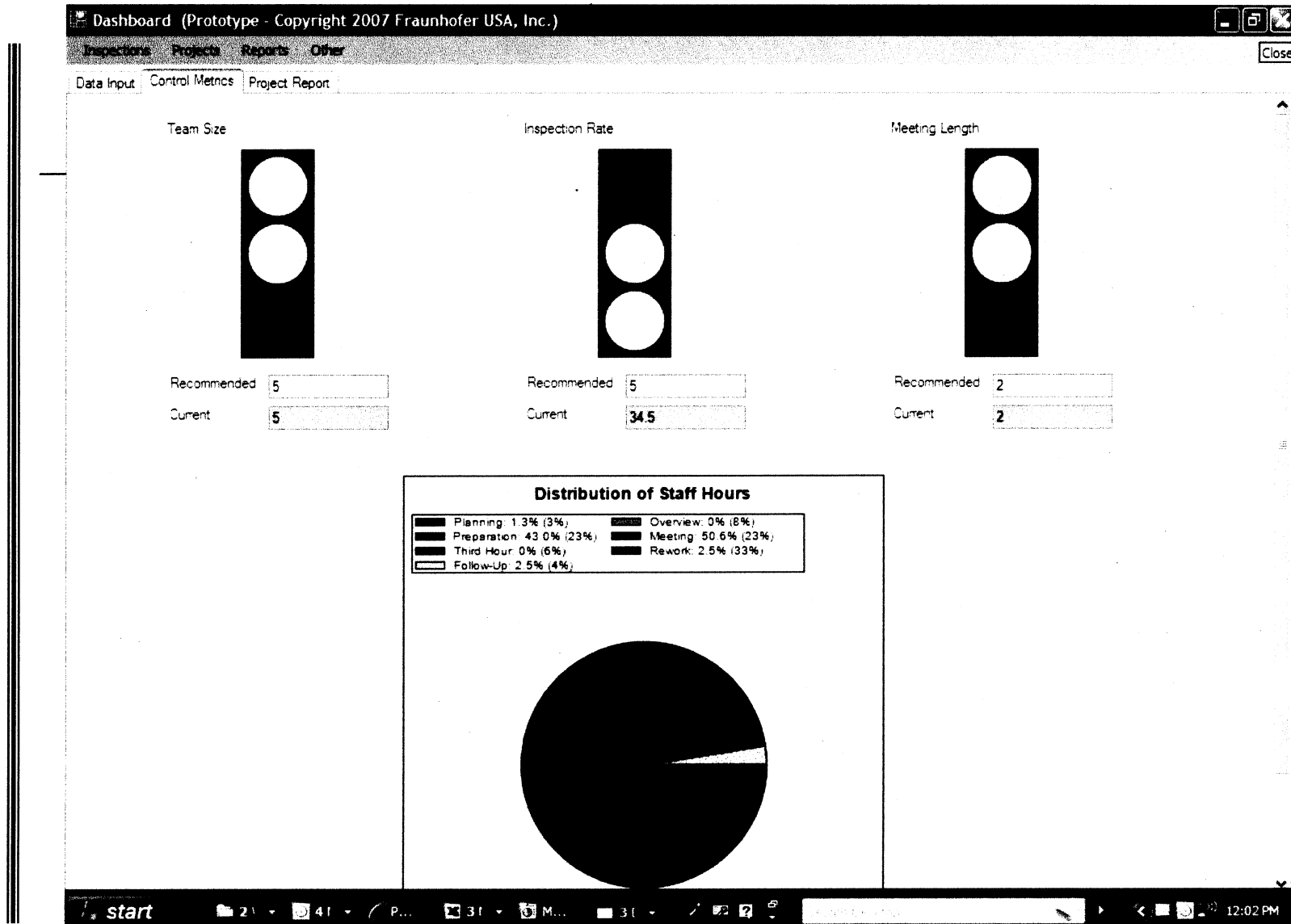
start

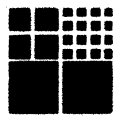
2 M... 2 M... 200... 2 W... 3 D...

1:50 PM

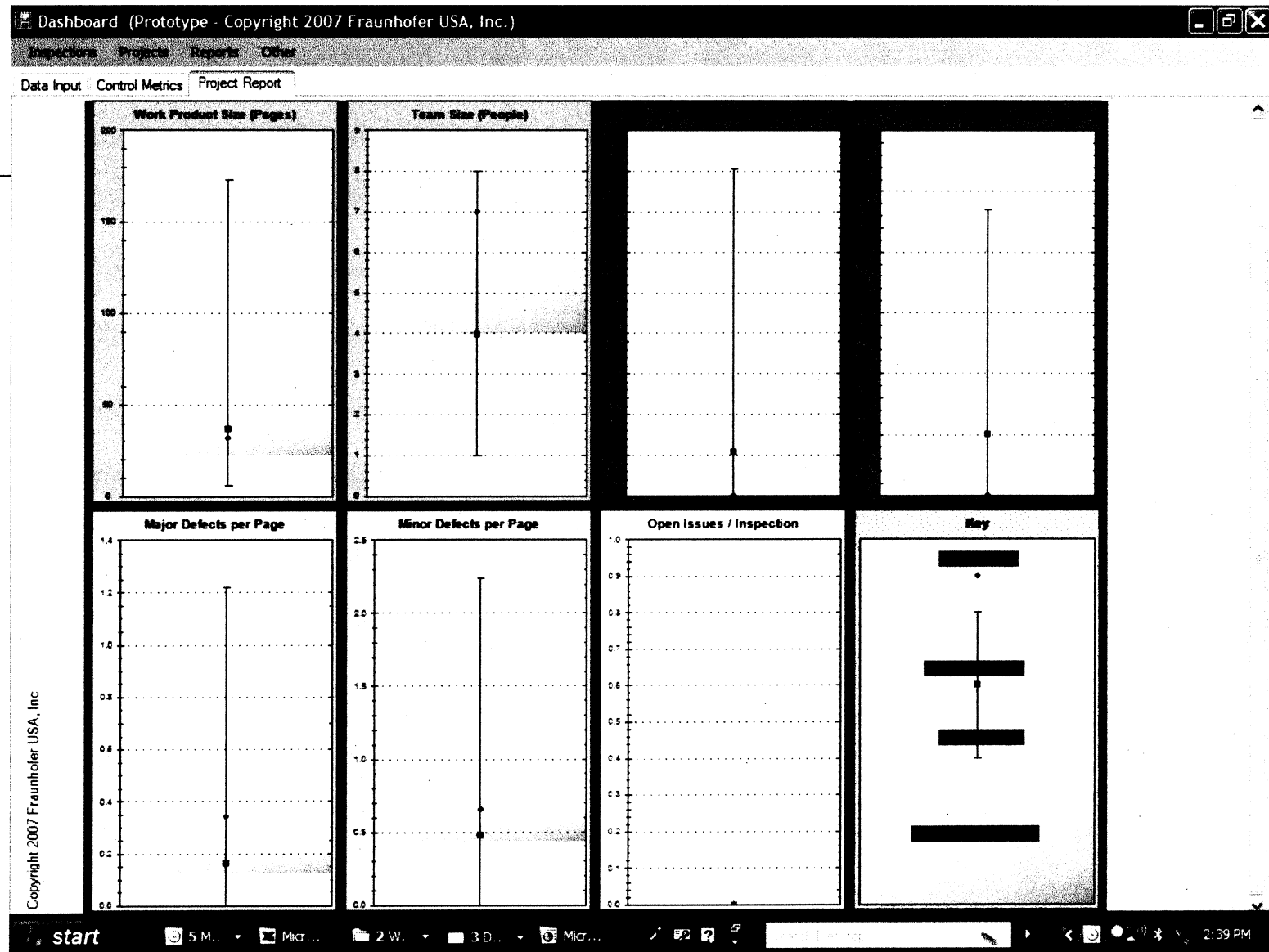


Control Metrics

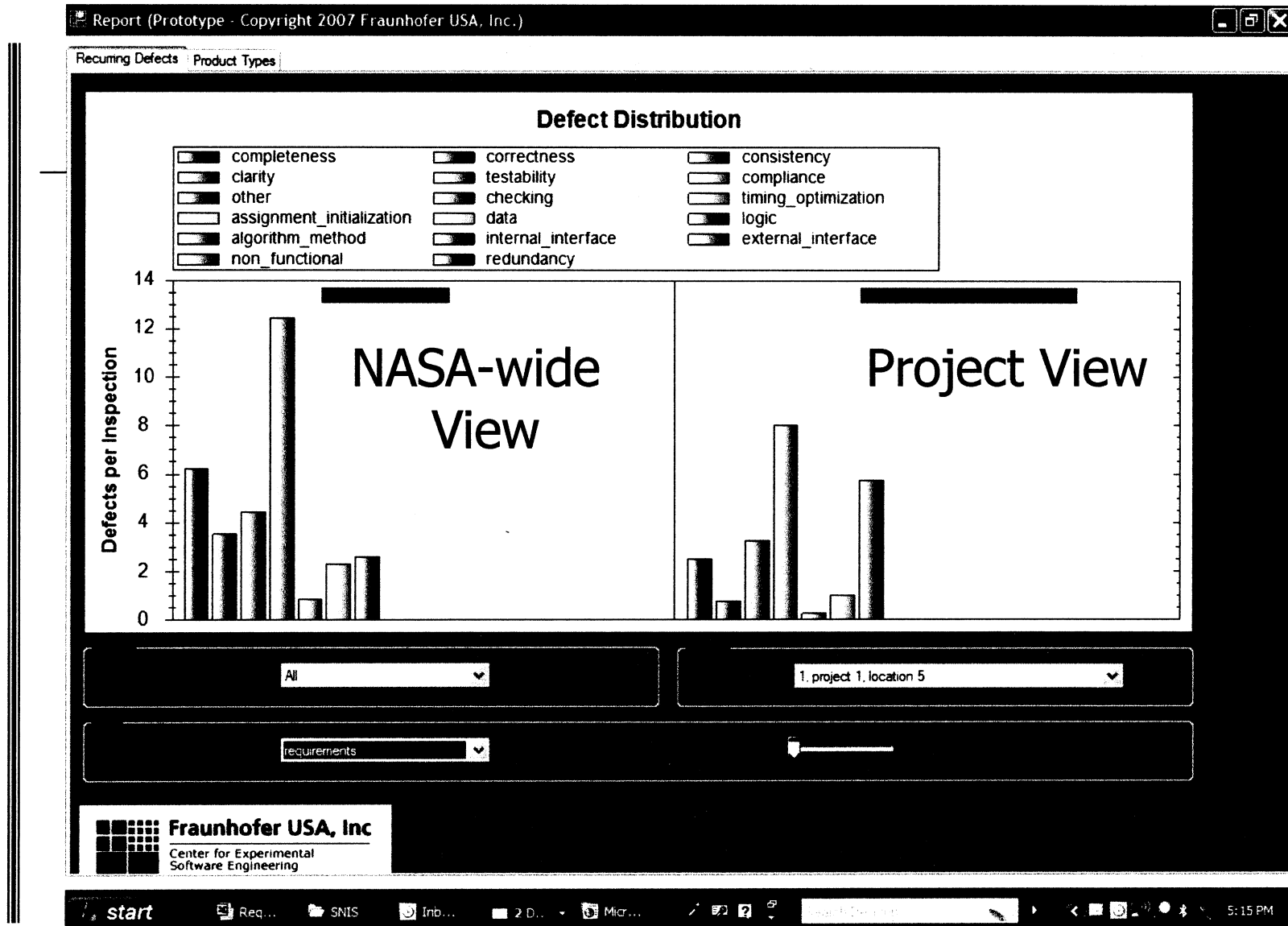


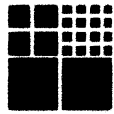


Inspection Parameter Comparison



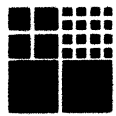
Defect Distribution Comparison





Next Steps

- We're working on...
 - Reconciling data from different sources
 - Refining the model – more sophisticated analyses based on project characteristics
 - Comparison of results from inspection and testing
 - Refining the Inspection Dashboard Prototype
- We need
 - Feedback on reports / analyses
 - Inspection data from additional domains
- This is a work in progress
- If you have suggestions that would make the tool and models more useful, let us know!



Fraunhofer USA, Inc

Center for Experimental
Software Engineering
Maryland

Contact Information

Forrest Shull (PI)

fshull@fc-md.umd.edu

301 403 8970

or

Myrna REGARDIE

mregardie@fc-md.umd.edu

301 403 2050

or

Sara Godfrey (NASA POC)

sara.h.godfrey@nasa.gov

301 286 5706