

Practical Software and Systems Measurement

A foundation for objective project management



<Lean Six Sigma>

<July 16, 2008>

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PSM Users Group Conference

14-18 July 2008

Mystic, Connecticut

Workshop Title

- ***Use of Lean Six Sigma analytical techniques in software intensive systems development.***

Objectives of the Workshop

- *What analytical techniques prove useful?*
- *What additional techniques are desired?*
- *What do you want to know?*

- *What obstacles? What's been tried and not useful? What context?*

Workshop Format

- *Collect participant information*
 - *quick survey completion*
 - *review results*

Discuss use of measures in participants' context.

*Discussion: what do you want to know?
What analytical techniques get you there?*

Intended Output

- *List of methods employed by example.*
- *List of desired techniques.*
- *Goals & Objectives.*

Workshop Title

- *Use of Lean Six Sigma analytical techniques in software intensive systems development.*

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Workshop Participants

- *Sam Padgett (NASA)*
- *Joseph Seppy (SSCI)*
- *Joe Lindley (Raytheon)*
- *Rosalind Singh (Raytheon)*
- *Bob Floyd (Raytheon)*
- *Ed Casey (Raytheon)*
- *Greg Niemann (Lockheed Martin)*
- *Liz Kung (Lockheed Martin)*
- *Irene Chan (Army)*
- *Dave Herron*
- *Anonymous*

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Summary

Descriptive Stats:

- **Mean 10**
- **Median 10**
- **Std Deviation 9**
- **Variance 10**
- **Skewness 1**
- **Kurtosis 1**

Summary

Hypothesis Testing: Parametric

- 1-sample t-test **2**
- 2-sample t-test **1**
- Analysis of Variance/MANOVA **4**
- Analysis of CoVariance/MANCOVA **0**
- Discriminant Analysis **1**

Summary

Hypothesis Testing: Non-Parametric

- Test of Proportions **1**
- 1-sample Wilcoxon **0**
- Mann-Whitney **0**
- Kruskal-Wallis **0**
- Cross Tabulation/ChiSquare **2**

Summary

Graphical Methods

- Histograms 10
- scatter plots 10
- pareto charts 9
- Box plots 3
- Normal probability plots 7

Summary

Statistical Process Control Charts

- X-bar R 2
- X-bar S 2
- IMR 4
- C 4
- U 1
- NP 0
- P 0
- Other [EWMA] 1

Summary

Exploratory Analysis & Predictive Modeling

- Pearson Correlation 6
- Spearman Correlation 1
- Regression 9
- Stepwise Regression 2
- Logistic Regression 0
- Dummy Variable Regression 0
- Outlier Analysis 6

Summary

Voice of the Customer

- KJ Analysis 0
- User Stories and Measures 1
- Analytic Hierarchy Process 1
- KANO Analysis 1
- Y-x trees 0
- QFD 6
- Other [Capability Goal] 1

Summary

Other methods not listed

DFSS: FMEA, Optimization, Sensitivity Analysis
(1 person)

Conclusions, Recommendations, and Results

*Useful discussion: focused on types of data,
appropriate techniques, what you can learn.
(See the minutes ... Word file)*

*Some experience with parametric hypothesis testing,
but almost none with non-parametric. Points to
need for methods to analyzed discrete data.*

*Some experience with VoC methods, but not clear if
used to generate data for analysis.*

*Need more methods for prediction; improvement
testing.*

Next Steps/Action Items

Determine & Coordinate PSM and SEI future actions.

- ***Do we treat Lean Six Sigma independently or as a subset of advance analytical techniques?***
- ***What offerings?***

Possible white paper