# Using PSM to Help "Crisis Projects"

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### **Presentation Overview**

Purpose: To describe how PSM was used to help a "crisis mode" project, and to reflect on lessons learned from the experience.

### **Outline:**

- Background
- PSM Approach/Timeline
- Issue Identification
- Inventory Phase
- Detailed Startup Approach
- Sample Indicators
- Documenting the Measurement Process
- Lessons Learned/Recommendations

### Background

# Called in to help a large project approaching delivery date

- Multi-year program
- <1 MSLOC
- Multiple contractors; > 100 staff
- Highly complex domain
- OO, COTS, generated code, extensive use of libraries
- Serious problems with first release
- Major pressure on staff to perform and produce

# New Program Manager wanted objective insight into project

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- Will they make the currently scheduled delivery date?
- Are they making (enough) progress?
- What are the long poles?
- Will the product meet requirements?

## **PSM Approach/Timeline**

#### **Decided to use PSM Approach:**

- Understand <u>issues</u>, risks, concerns facing all stakeholders ASAP.
- Answer Program Manager's <u>questions</u> ASAP.
- Develop ongoing <u>measurement</u> process and integrate it into project ASAP.
- Teach project to <u>use</u> measurements (other than schedule) to manage and make decisions ASAP.
- Get in and out ASAP.



## **Meta Issues**

## PRIMARY: Regain Customer Confidence



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#### Also:

- Improve Communications
- Improve Predictability of Schedules
- Regain Project Control
- Deal with Staff Burnout and Low Morale
- Address/Counterbalance 3rd Party Assessments

## **Issue Identification**

### **Requirements Growth**

- How many new/changed requirements are being added?
- How many requirements have been verified?
- How many are blocked?

### **Defect Status**

- How many open defects are there?
- How many new defects are being discovered?

### **Schedule and Progress**

- Is the current schedule feasible?
- Will all high priority defects be fixed in time?
- Will all requirements/functions be tested in time?

### Performance

- Is system performance improving?
- Does current performance meet requirements?
- Is the system's reliability improving?

### Maintainability

• Will the customer be able to maintain the system?

### **Asset Inventory**

#### **Measurement Assets**

- <u>Two</u> defect tracking databases
- Requirements database
- Little trending information
- Two quasi-spreadsheets used by SW manager
- Very detailed schedule and full-time scheduler
- Limited testing reports with quantitative performance results
- McCabe Toolset
- Limited measurement knowledge; some clerical support

### **Process Assets**

- Nice set of abandoned procedures
  - Not suitable for crisis mode

No Foundation for Understanding Measurements

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Lots of Data,

Little Information



## **Detailed Startup Approach**

- Looked at existing data and databases
- Interviewed staff
- Flowcharted processes
  - change request
  - defect management
  - CM processes
- Documented rules
  - defect categories
  - defect phases
  - testing outcomes
- Developed spreadsheets and graphs
- Started producing weekly measurement reports
- Started reviewing measurements in project management meetings

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• Started including measurements in customer briefings



### **Requirements Indicators**





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### **Defect Indicators**

### Status of Severity 1 DRs



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\*Historical numbers adjusted to reflect "Pending" status.

## **Schedule Indicators**

### **Defect Prediction Model**



## **Performance Indicators**

### System Performance

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### **Measurement Process**

### **Weekly Measurement Process**



## **Measurement Procedures**

#### **Report Preparation Process**

#### Steps:

- 1. Find out from Program Manager what weekly telecons, customer briefings, status meetings, or metrics review meetings are scheduled and which ones require reports.
- 2. Discuss with Program Manager the graphs that will be required for each report. At a minimum, three reports are always produced:
  - Weekly Status Report provided to Prime (Due Thursday Noon)
  - Internal Status Report (Due Thursday Noon)
  - Weekly Schedule Review (Due Thursday Noon)
- 3. Send message reminding data providers of their deadline for providing inputs. See Flowchart for data provider POCs.
- 4. Once inputs are received, use the PowerPoint template(s) to create each report:
  - Cut graphs into PowerPoint, in the required sequence.
  - QC Checklist:
    - Make sure the Date on the cover page is correct
    - Make sure the "Data Source:" and "Data as of:" information in the bottom right corner of each slide is correct
    - Make sure graph titles and graph areas are approximately the same size on each slide
    - Check the graphs for spelling errors
    - Print the reports to make sure all information is readable and everything is printing correctly



### **Lessons Learned-General**

- Must have a documented, understood, repeatable development process to 1) utilize data and 2) correctly interpret information.
- Must use measurement as an investigative tool -- allow experimentation and evolution of measures.
- Expect heated debates about what the data means and whether the data is valid -- this is the basis for objective communications.
- Getting managers to trust the data takes time.
- When the data cannot provide good insights because the process is broken, fix the process!

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## **Recommendations for Crisis Projects**

- Make sure there is a measurement sponsor.
- Add a measurement resource to the project.
  SW and measurement experience essential
- Integrate measurement into the existing management mechanisms.
- Use integrated analysis -- make "midnight decisions" based on more than one factor or data point.
- Have a plan for transitioning measurement responsibilities within the project.
- Don't expect a miracle!

### **Contact Information**

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