

# An Investigation of Perceptions on COSYSMO based on Data Availability

PSM User Group  
July 2006

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## Outline

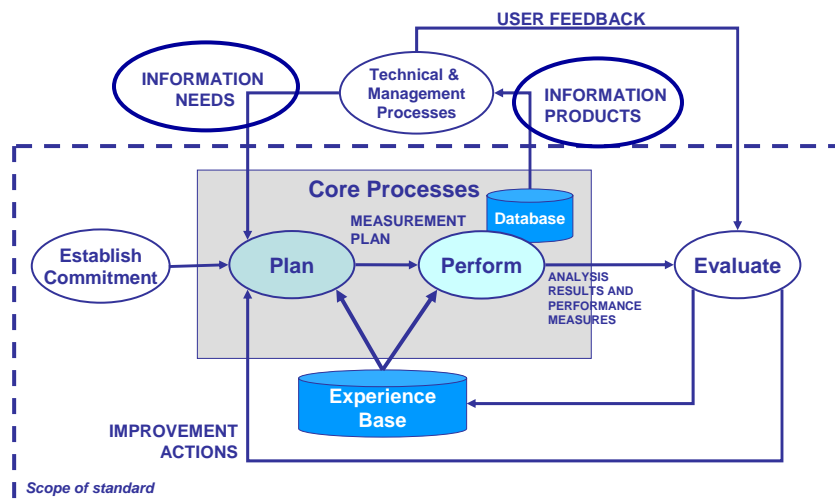
- Research Problem
- Measurement Process
- Research Goal
- Research Methodology
- Survey Instrument
- Risks
- Tasks/Schedule
- SME Review of Survey

## Research Problem

- Estimate user (decision maker) external to the measurement process
- Parametric models rely on historical data
  - Assumes “Past performance is the best indication of future performance”
- Systems engineering effort estimates are needed early in the project life cycle
- Systems engineering community has a need for a (better) estimation capability
- Use of estimates depends on user perceptions (i.e., do they trust the data)

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## Measurement Process



Adapted from ISO/IEC CD 15939, Information Technology – Software Measurement Process

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## Research Goal

- Effective estimation capability couples the estimate user and estimation model
- COSYSMO development effort did not to address the information needs at key decision points (milestones) in a project life cycle.
- Estimates are most useful in the early phases of a project for planning and costing
- **This research is concentrating the perceptions of the users of SE effort estimates at important decision points in a project's life cycle.**

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## Research Methodology

- Survey-based research to capture perceptions:
  - Target population: systems engineering community
  - Systems engineering estimation expectations/requirements at early life cycle milestones (model output)
  - COSYSMO input parameter availability (model input)
  - Collect demographic information
- Analysis focuses on responding to research goal
  - Determine if the model inputs are sufficient to produce the usable (i.e., credible) estimates (model output)
  - Investigate similarities and differences in perceptions with the expectations/requirements (model output) and the data availability (model input) across demographics

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## Survey Instrument

- Draft survey instrument has five components:
  - Introduction/cover sheet
  - Directions and definitions
    - Key terms
    - Milestone descriptions
  - Respondent information (i.e., demographic data)
  - Questions on systems engineering estimates (model output)
  - Questions on COSYSMO (model inputs)

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## Risks

### 1. Lack of response (insufficient data)

#### Mitigation:

- Use quality survey instrument (proactive)

### 2. Survey instrument quality

- Clarity/Readability, key milestones, demographics, identify an approximate "time to complete" the survey

#### Mitigation

- Conduct SME review

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## Tasks/Schedule

- Validate survey instrument with SMEs (COSYSMO WG)
- Pilot survey (representative sample of target respondents) for readability/understandability of survey
- **Review with research committee**
- Obtain IRB approval
- Conduct survey and collect data
- Perform Analysis
- Draft Findings
- **Review with research committee**

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## SME Survey Review

- Please read through the survey as if you were attempting to complete it
  - Record the time it takes to complete the survey (survey size)
  - Make notes about readability, clarity, and overall ability to complete (question wording)
  - Other issues/comments
- Return survey to Chris Miller tomorrow during workshop

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