ISO/IEC 15939 - Software Measurement Process Framework

July 1998

David N. Card
Software Productivity Consortium

Khaled El Emam
Fraunhofer IESE

Agenda

• Background
• Overview of 15939 Approach
• Relationship to Other ISO Standards
• Comparison with PSM
• Summary
Background

Motivation

• Measurement described inconsistently in existing engineering standards
• Several disjoint measurement standards
• Need for common terminology and framework to communicate measurement information increasing as measurement usage increases
  – internally by producers
  – in contractual situations by acquirers
Standards Process

• Organization
  – JTC1/SC7 (Francois Coallier, Bell Canada)
  – Working Groups (WG13 - Jack McGarry, NUWC)
  – National Bodies (USTAG - Leonard Tripp, Boeing)

• Life Cycle
  – Work Item
  – Working Draft
  – Committee Draft
  – Standard

15939 Milestones

• May 1997 - Work Item Proposed
• November 1997 - Preliminary Working Group 13 Meeting
• May 1998 - First Working Group 13 Meeting; Working Draft Developed
• November 1998 - Next Scheduled Working Group 13 Meeting
Participating Nations

- Australia
- Canada
- Germany
- Ireland
- South Africa
- Sweden
- United Kingdom
- United States

Overview of 15939 Approach
**Measurement Process**

- **12207 Process Terms**
  - Process (e.g., Measurement)
  - Activity (e.g., see below)
  - Task

- **15939 Activities**
  - Establish and Maintain Measurement Capability
  - Plan Measurement
  - Perform Measurement
  - Evaluate Measurement
  - Improve Measurement

---

**Process Architecture**

- Management Processes
- Establish
- Improve
- Plan
- Evaluate
- Perform
- Information Needs
- Actions
- Weaknesses
- Successful Measures
- Analysis Results
- Measurement Ability
- Measurement Plan
Establish and Maintain Measurement Capability

- Establish commitment
  - scope of effort
  - buy-in of affected parties
- Assign/obtain competent resources
  - personnel
  - training

Plan Measurement

- Identify information needs
- Prioritize information needs
- Identify candidate measures
- Select measures
- Define evaluation criteria
- Develop measurement plan
- Acquire and install tools
Perform Measurement

- Collect data
- Process and verify data
- Analyze and interpret data
- Communicate analysis results

Evaluate Measurement

- Assess effectiveness of measurement process
  - use criteria identified in planning
  - identify opportunities for improvement
- Assess effectiveness of measures
  - use criteria identified in planning
  - identify successful measures
**Improve Measurement**

- Capture lessons-learned
- Select process and measurement improvements
- Update measurement plan

*In addition to updates to the measurement plan driven by the changing information needs*

**Document Outline**

- Scope
- Normative References
- Definitions
- Application of the Standard
- Description of the Activities
- Tailoring Process
- Reporting Guidelines
- Measure Evaluation Criteria
- Process Evaluation Criteria
Relationship to Other ISO Standards

Relevant Standards

- Software Life Cycle Processes - 12207
- Software Process Assessment - 15504
- Software Measurement
  - Software Quality - 9126
  - Functional Size Measurement - 14143
  - Others
Key Concerns

• Consistent Terminology
• Common Architecture/Logical Relationships
• Minimize Redundancy
• Interface Agreements Must Negotiated Among Multiple Working Group and National Interests

Integration Approach
Comparison with PSM

Similarities and Differences

• Both are flexible approaches driven by information needs

• Establish, Plan, and Perform are similar to PSM Tailor, Apply, and Implement

• “Successful Measures” cache is similar to PSM Measurement Tables

• PSM does not specifically address the Evaluate and Improve activities, although they are implied by other activities

• PSM provides more detail in areas it covers
Summary

Going Forward

- PSM users are already largely compatible with the planned standard
- Standards development is a deliberate process
- Standards development is an open process
  - active participation in the working group is encouraged
  - comments on draft materials are solicited through the national bodies
For More Information

www.iso14001.net/iso15939