Process Maturity Profile

Software CMM®
2004 Year End Update

March 2005

We could not produce this report without the support of the organizations and lead appraisers who reported their appraisal results to the SEI℠.

Our many thanks for their continuing cooperation with our data collection and analysis efforts.

CMMI Appraisal Program
# Process Maturity Profile: Software CMM 2004 Year End Update

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**Standard Form 298 (Rev. 8-98)**

Prepared by ANSI Std Z39-18
Outline

Introduction

Current Status

Community Trends

Organizational Trends

Summary

This briefing is based solely on the number of appraisals reported to the SEI. It cannot be used as a source for an exact indicator of all organizations in the world using SEI models or appraisal methods nor can it be used for certification or verification purposes.

The SEI does not certify organizations. The SEI only licenses SEI partners and SEI authorized lead assessors to conduct appraisals. Neither the SEI nor any other organization is a “certifying authority” of the results from an appraisal. Therefore requests to the SEI to provide information to be used for this purpose can not be fulfilled. Information provided by the SEI, such as this briefing, is to demonstrate use of its products and services only.

Organizations performing source selection or verification should consider performing an evaluation appraisal. For more information on appraisal methods and for a directory of authorized lead appraisers who can perform them, visit: http://www.sei.cmu.edu/managing/app.directory.html
Introduction - 1: Purpose and Source

Characterize the process maturity of the software community

This briefing uses information from appraisals using the SW-CMM in:

- CMM®-Based Appraisals for Internal Process Improvement (CBA IPIs) and

- Software Process Assessments (SPAs) and

- Standard CMMI®, Appraisal Method for Process Improvement (SCAMPI℠), v1.1

Please visit:

http://www.sei.cmu.edu/sema/profile_about.html

for additional information or to answer questions you may have about this briefing
Introduction - 2: Briefing Contents

This briefing includes three primary sections:

1. Current Status
   - Snapshot of the software community based on the most recent appraisal, since 2000, of reporting organizations

2. Community Trends
   - Global distribution of appraisals
   - Growth in the number of appraisals performed
   - Shifts in the maturity profile over time

3. Organizational Trends
   - Analysis of Key Process Area (KPA) satisfaction
   - Time to move up in maturity based on change in maturity level and time between appraisals
Section 1: Current Status

Appraisals conducted from 2000 through December 2004 and reported to the SEI by January 2005

- 1,940 organizations
- 894 participating companies
- 10,038 projects
- 58.7% Non-USA organizations

Please refer to: Terms Used in this Report on page 29
Based on most recent appraisal, since 2000, of 1,940 organizations reporting a maturity level rating.
Reporting Organization Categories

Based on 1,940 organizations reporting organization categories

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Based on most recent appraisal, since 2000, of 1,940 organizations reporting categories and a maturity level rating...
Organization Type
Based on Primary Standard Industrial Classification (SIC) Code

Based on 818 organizations reporting SIC code. For more information visit: http://www.osha.gov/oshstats/sicser.html
Organization Size
Based on the total number of employees within the area of the organization that was appraised

Based on 1,902 organizations reporting size data
Maturity Profile by Organization Size
Based on the total number of employees within the area of the organization that was appraised

The number of organizations for the 2000+ category is small which inflates the maturity level bars. Please see page 9 and take this into account. The purpose of this chart is to indicate that all size categories contain most, if not all, maturity levels.

Based on 1,902 organizations reporting size data and a maturity level rating
USA and Non-USA Reporting Organization Categories

Based on 802 U.S. organizations and 1138 Non-USA organizations reporting organization categories

Commercial/In-house
- USA: 24.4%
- Non-USA: 53.4%

DoD/Fed Contractor
- USA: 13.2%
- Non-USA: 5.3%

Military/Federal
- USA: 3.7%
- Non-USA: 0%

% of Organizations
Maturity Profile by All Reporting USA and Non-USA Organizations

Based on 802 U.S. organizations and 1138 Non-USA organizations reporting categories and a maturity level rating.
Section 2: Community Trends

CBA IPIs, SPAs and SCAMPI v1.1 using the SW-CMM conducted since 1987 through December 2004 and reported to the SEI by January 2005

- 3,590 appraisals
  - 3,042 CBA IPIs
  - 484 SPAs
  - 64 SCAMPIs
- 2,746 organizations
- 1,036 participating companies
- 663 reappraised organizations
- 15,128 projects

Please refer to: Terms Used in this Report on page 29
Countries Where Appraisals have been Performed and Reported to the SEI

Argentina  Australia  Austria  Barbados  Belgium  Brazil  Canada
Chile       China       Colombia  Costa Rica  Cyprus  Czech Republic  Denmark
Egypt       Finland     France    Germany    Greece    Hong Kong    Hungary
India       Indonesia   Ireland   Israel     Italy     Japan       Korea, Republic of
Latvia      Lithuania   Malaysia  Mauritius  Mexico    Morocco     Netherlands
New Zealand  Norway     Pakistan  Peru      Philippines  Poland    Portugal
Puerto Rico  Russia     Saudi Arabia  Singapore  South Africa  Spain     Sweden
Switzerland  Taiwan     Thailand  Turkey    Ukraine    United Arab Emirates
United States Uruguay  Venezuela  Vietnam

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March 2005
# Number of Appraisals and Maturity Levels Reported to the SEI by Country

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<th>Maturity Level 2 Reported</th>
<th>Maturity Level 3 Reported</th>
<th>Maturity Level 4 Reported</th>
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</table>

The organization maturity profile, page 8, can be created for certain countries using the Interactive Maturity Profile available in the Software Engineering Information Repository Web site. Please visit: [http://seir.sei.cmu.edu](http://seir.sei.cmu.edu). If you are not already a member of the SEIR web site, please register to join. Registration and use of the site are free.
Number of SW-CMM Appraisals Reported to the SEI by Year

Based on 3,590 appraisals conducted through Dec 2004 and reported to the SEI by Jan 2005
Number of SW-CMM Appraisals Reported to the SEI by Organization Categories and Year

Based on 3,588 appraisals reporting organization categories
Trends in the Community Maturity Profile

Based on a cumulative view of the most recent appraisals of organizations up through the year indicated. This accounts for the difference from the figures on page 5.
Section 3: Organizational Trends

Appraisals conducted through December 2004 and reported to the SEI by January 2005

- 1,839 Key Process Area (KPA) profiles
  - satisfaction of KPAs by maturity level for organizations appraised at levels 1 and 2

- 663 reappraised organizations
  - accounting for 1,517 appraisals
  - although some organizations conducted multiple reappraisals, only the first and latest appraisals were used in creating the charts on pages 23 & 24

Please refer to: Terms Used in this Report on page 29
Key Process Area Profiles - 1
Organizations Appraised at Level 1

- Repeatability
  - RM
  - SPP
  - PTO
  - SSM
  - SQA
  - SCM

- Defined
  - OPF
  - OPD
  - TP
  - ISM
  - SPE
  - IC
  - PR

- Managed
  - OPM
  - SOM

- Optimizing
  - DP
  - TCM
  - PCM

Based on 576 CBA IPI and SCAMPI with SW-CMM appraisals reporting a maturity level rating.

Software Subcontract Management (SSM) is not applicable/not rated in many assessments. Please take that into account when interpreting its Fully Satisfied rating.
Key Process Area Profiles - 2
Organizations Appraised at Level 2

Based on 1263 CBA IPI and SCAMPI With SW-CMM appraisals reporting a maturity level rating

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Process Maturity Profile - Page 22
Maturity Level of First and Latest Appraisal

Based on 663 reappraised organizations using their first and latest appraisal.
Reappraisals
Change in Maturity Level

Based on 663 reappraised organizations using their first and latest appraisal

No Change 12.7%
Moved Down 2.7%
Level 1 to 2 21.0%
Level 1 to 4 2.1%
Level 1 to 5 0.8%
Level 2 to 3 27.6%
Level 2 to 4 3.8%
Level 2 to 5 2.1%
Level 3 to 4 2.9%
Level 3 to 5 5.6%
Level 4 to 5 7.1%
Level 1 to 1 5.3%
Level 2 to 2 4.7%
Level 3 to 3 1.7%
Level 4 to 4 0.5%
Level 5 to 5 0.6%
Time to Move Up

Number of months to move to next maturity level

Recommended time between appraisals

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<th>Time Period of Initial Appraisal</th>
<th>Level Orgs</th>
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<td>All (1987 to Present)</td>
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Largest observed value that is not an outlier
75th Percentile
Median 25th Percentile
Smallest observed value that is not an outlier

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Summary of Current Status

Commercial and in-house organizations reporting most appraisals

Of U.S. organizations, the services and manufacturing industries reported most appraisals

Half of the organizations reporting size have 100 or fewer software personnel

More Non-USA appraisals reported than U.S. in this 5 year snapshot
Summary of Organizational Trends - 1

The total number appraisals for 2004 is less than 2003. It is the first time decrease since 1996

Software Subcontract Management is the least frequently satisfied level 2 KPA among organizations* appraised at level 1

Integrated Software Management is the least frequently satisfied level 3 KPA among organizations* appraised at level 2

Higher maturity has been reached among those organizations reporting reappraisals
Summary of Organizational Trends (continued) - 2

For organizations that began their CMM-based SPI effort in 1992 or later, the median time to move from:

- maturity level 1 to 2 is 20 months
- maturity level 2 to 3 is 19 months
- maturity level 3 to 4 is 25 months
- maturity level 4 to 5 is 13 months

Note: The median time to move from maturity level 1 to 2 dropped from 22 month to 20 month
Terms Used in this Report

Appraisal - The appraisal methods used in this report are the Software Process Assessment (SPA), CMM-Based Appraisal for both Internal Process Improvement (CBA IPI) and Standard CMMI® Appraisal Method for Process Improvement (SCAMPI). We do request and receive other Software CMM-based appraisals such as Software Capability Evaluations (SCE) and Interim Profiles. As our sampling size of these other methods increase, they will be reported here.

Company - Parent of the appraised entity
A company can be a commercial or non-commercial firm, for-profit or not for-profit business, a research and development unit, a higher education unit, a government agency, or branch of service, etc.

Organization - a.k.a. Appraised entity
The organization unit to which the appraisal results apply. An appraised entity can be the entire company, a selected business unit, units supporting a particular product line or service, etc.

Non-USA - Appraised entity whose geographic location is not within the United States. The parent of the appraised entity may or may not be based within the United States.
Report your Appraisal Results to the SEI

The briefing is only possible due to the cooperation of organizations and individuals sending in their appraisal results to the SEI

In order to provide this information and service in the future, it will depend on this continued cooperation

Please visit:

http://www.sei.cmu.edu/sema/report.html

for forms, information, and instructions on how to report appraisals to the SEI
Contact Information

Please visit:

http://www.sei.cmu.edu/sema/profile_about.html

and review the information provided before contacting:

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SEI FAX number           (412) 268-5758

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Software Engineering Institute
Carnegie Mellon University
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