CMMI® Current State and Future Plans

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Topics

- **Current Status**
- **Appraisal Results**
- **Transition Status**
- **Product Suite V1.2 Improvements**
- **Summary**

Current Status

- Version 1.2 was released on August 25, 2006.
- Version 1.2 upgrade training is available online.
- New policies announced and implemented for version 1.2 appraisals.
- CMMI adoption continues to grow worldwide.

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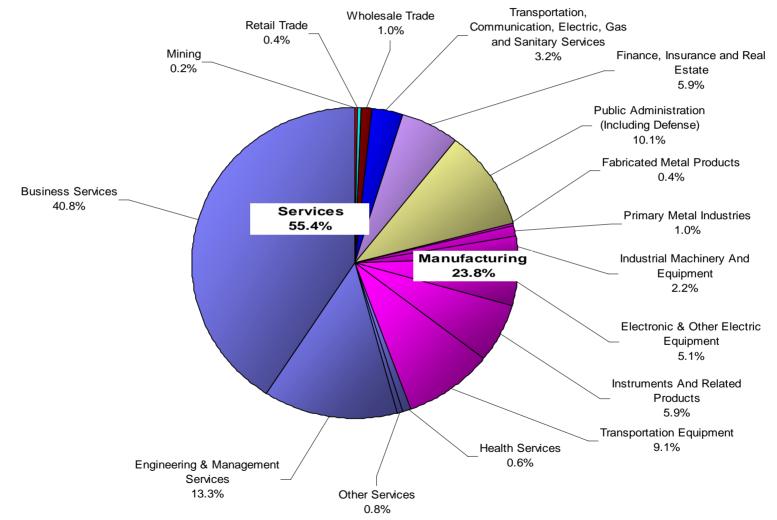- **Product Suite V1.2 Improvements**
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Appraisal Synopsis as of 6/30/06

- **Based on SCAMPI v1.1 Class A appraisals conducted since April 2002 release through June 2006 and reported to the SEI by July 2006.**
  - 1,581 appraisals
  - 1,377 organizations
  - 840 participating companies
  - 109 reappraised organizations
  - 6,001 projects
  - 63.8% non-USA organizations
- *** Organizations previously appraised against CMMI v1.0 and who have not reappraised against v1.1 are not included in this report.**
- **Please visit http://www.sei.cmu.edu/appraisal-program/profile/about.html, for additional information or to find answers to questions you may have about this briefing.**

Organizational Type
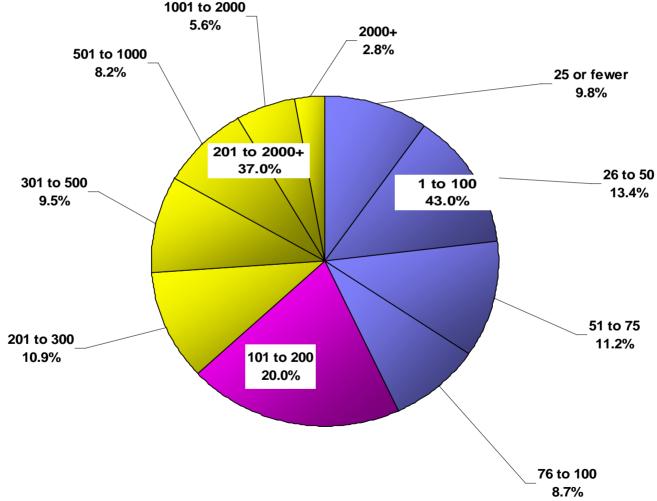## Based on Primary Standard Industrial Classification (SIC) Code

Retail Trade 0.4%

Wholesale Trade 1.0%

Transportation, Communication, Electric, Gas and Sanitary Services 3.2%

Finance, Insurance and Real Estate 5.9%

Mining 0.2%

Public Administration (Including Defense) 10.1%

Fabricated Metal Products 0.4%

Business Services 40.8%

Services 55.4%

Primary Metal Industries 1.0%

Manufacturing 23.8%

Industrial Machinery And Equipment 2.2%

Electronic & Other Electric Equipment 5.1%

Instruments And Related Products 5.9%

Transportation Equipment 9.1%

Health Services 0.6%

Engineering & Management Services 13.3%

Other Services 0.8%

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**Based on 505 organizations reporting SIC code. For more information visit:
http://www.osha.gov/oshstats/sicser.html**

Organizational Size
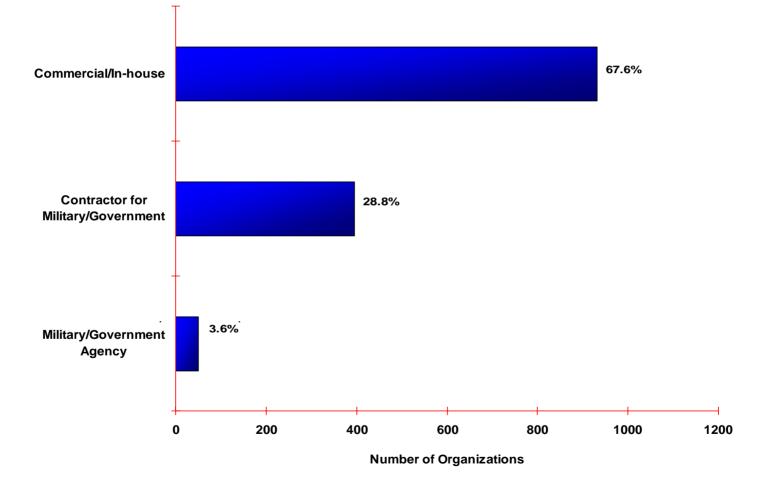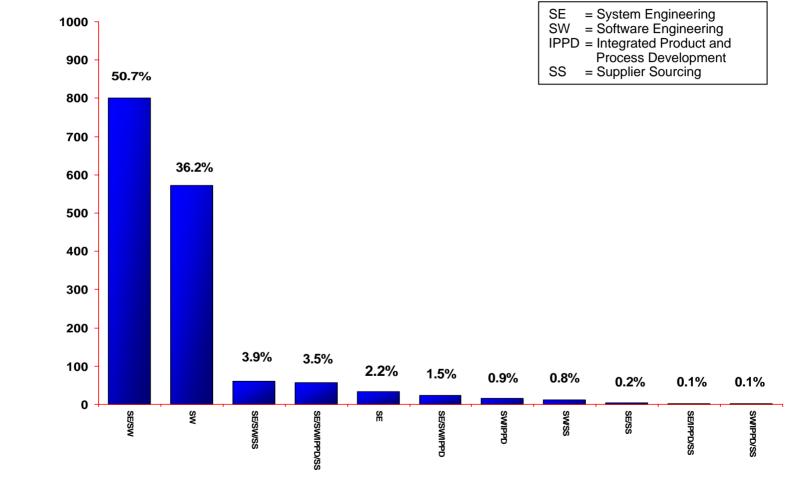## Based on total employees within area of appraised organization

1001 to 2000
5.6%

2000+
2.8%

501 to 1000
8.2%

25 or fewer
9.8%

201 to 2000+
37.0%

26 to 50
13.4%

1 to 100
43.0%

301 to 500
9.5%

201 to 300
10.9%

51 to 75
11.2%

101 to 200
20.0%

76 to 100
8.7%

Based on 1,348 organizations reporting size data

Reporting Organizational Types

Commercial/In-house — 67.6%

Contractor for Military/Government — 28.8%

Military/Government Agency — 3.6%

Number of Organizations
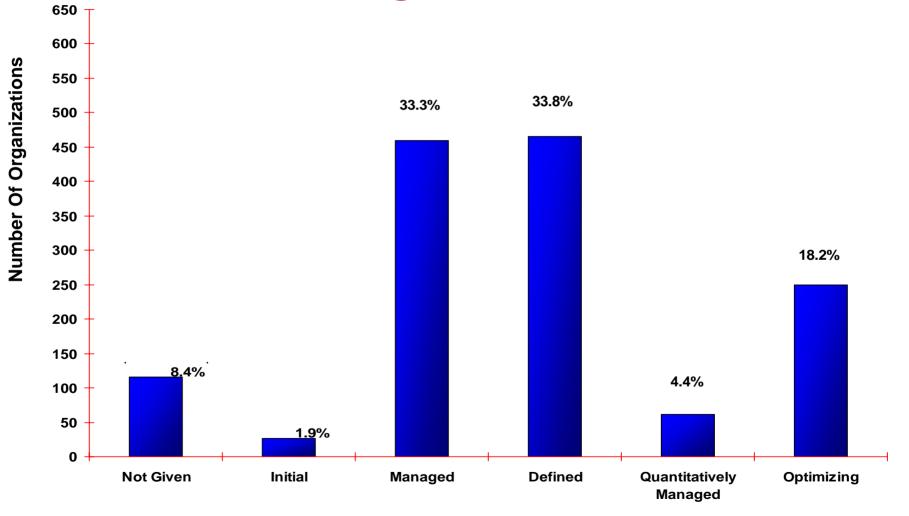
Based on 1377 organizations

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Disciplines Selected for Appraisals

Based on 1,581 appraisals

For more information about Allowable Models & Combinations, visit: http://www.sei.cmu.edu/cmmi/background/aspec.html
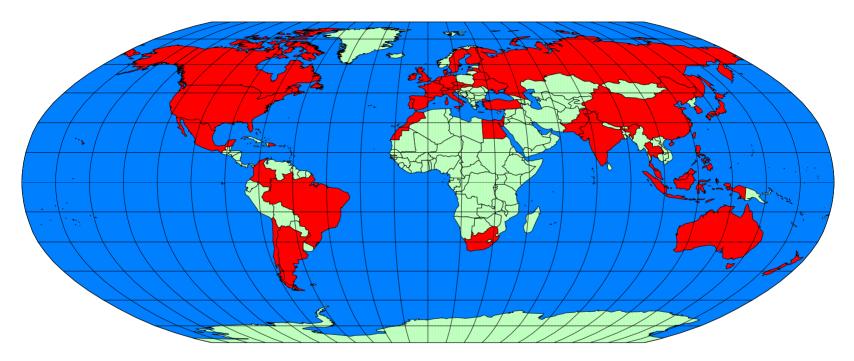
Maturity Profile by All Reporting Organizations

Based on most recent appraisal of 1,377 organizations

Countries Where Appraisals Have Been Performed and Reported to the SEI

Argentina	Australia	Austria	**Bahrain**	Belarus	Belgium	Brazil	Canada
Chile	China	Colombia	Czech Republic	Denmark	**Dominican Republic**	Egypt	Finland
France	Germany	Hong Kong	India	**Indonesia**	Ireland	Israel	Italy
Japan	Korea, Republic of	Latvia	Malaysia	Mauritius	Mexico	**Morocco**	Netherlands
New Zealand	**Pakistan**		Philippines	Portugal	Russia	Singapore	Slovakia	South Africa
Spain	Sweden		Switzerland	Taiwan	Thailand	Turkey	Ukraine	United Kingdom
United States	Vietnam						

Red country name: New additions with this reporting

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Maturity Profile by All Reporting USA and Non-USA Organizations

Legend:
- USA: 100 % = 498
- Non-USA: 100 % = 879

Data labels by category:
- Not Given: USA 74, Non-USA 42
- Initial: USA 12, Non-USA 14
- Managed: USA 188, Non-USA 271
- Defined: USA 149, Non-USA 316
- Quantitatively Managed: USA 9, Non-USA 52
- Optimizing: USA 66, Non-USA 184

Y-axis: % of Organizations

Based on 498 USA organizations and 879 Non-USA organizations

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Number of Appraisals Conducted by Year, as of 10/31/06

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Appraisal Results Summary

- 1,581 SCAMPI A appraisals have been reported to the SEI in 52 months; 744 of these were reported in the last 12 months.

- We believe that there are a significant number of non-SCAMPI appraisals being conducted.

- Commercial/In-House, Government/Military, and Government/Military Contractor organizations reporting appraisals are increasing at a stable and consistent rate.

- Comparing early reports of the SW-CMM maturity profile with early CMMI data reflects a more mature CMMI profile.

- CMMI adoption continues to grow worldwide.

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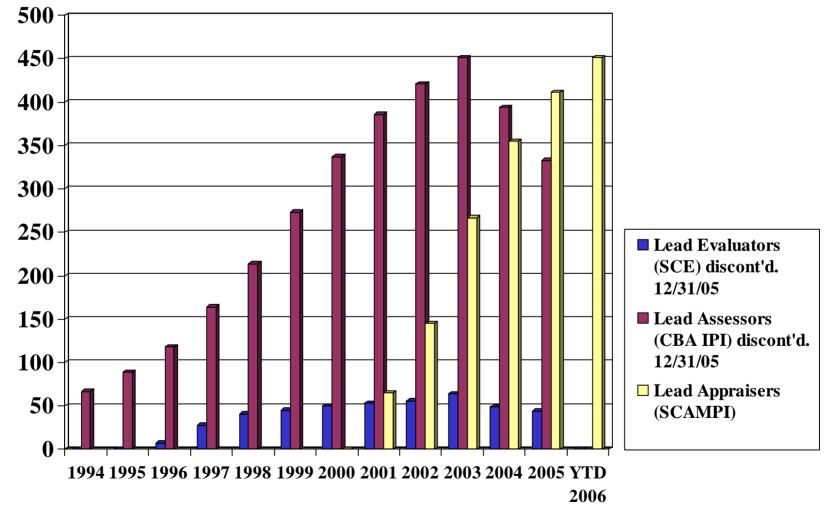- **Product Suite V1.2 Improvements**
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CMMI Transition Status, 10/31/06

- **Training**
  - **Introduction to CMMI – 58,178**
  - **Intermediate CMMI – 2,280**
- **Authorized**
  - **Introduction to CMMI v1.1 Instructors – 404**
  - **SCAMPI v1.1 Lead Appraisers – 451**
- **Partners**
  - **Introduction to CMMI Training Services – 238**
  - **SCAMPI Appraisal Services – 259**

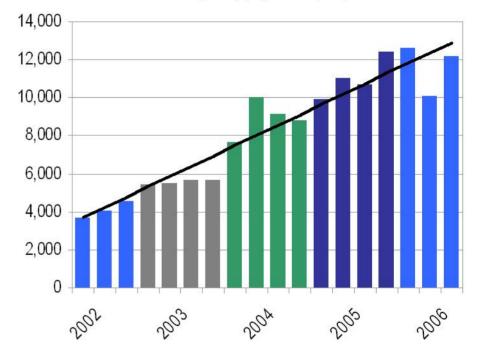# Number of Lead Appraisers Authorized (Cumulative), 10/31/06

CMMI Adoption Trends, Web Page Views, as of 9/30/06

- **CMMI Web pages views in September 2006**
  - **360K/month**
  - **Exceeded 24K views on 27 September 2006**
- **The following were the most downloaded files on the SEI Web site in September 2006:**
  - **CMMI-DEV, V1.2**
  - **CMMI V1.2 Overview Presentation**
  - **"CMMI V1.2 Model Changes" Presentation**
  - **"Extreme Programming (XP), Six Sigma, & CMMI: How They Can Work Together" Presentation**
  - **Comparison of Version 1.2 PAs to Version 1.1 PAs**

Average daily page views per quarter

Performance Results Summary -1
as of 8/30/06

Improvements	Median	# of data points		Low	High
Cost	34%	29		3%	87%
Schedule	50%	22		2%	95%
Productivity	61%	20		11%	329%
Quality	48%	34		2%	132%
Customer Satisfaction	14%	7		-4%	55%
Return on Investment	4.0 : 1	22		1.7 : 1	27.7 : 1

30 Organizations with results expressed as changes over time

Performance Results Summary -2

- **For more information on CMMI performance results, see**
  - An August 2006 SEI technical report titled Performance Results of CMMI-Based Process Improvement (CMU/SEI-2006-TR-004)
    - It is available on the SEI Web site at http://www.sei.cmu.edu/publications/documents/06.reports/06tr004.html.
  - The CMMI Performance Results Web site at http://www.sei.cmu.edu/cmmi/results.html

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  - **Identification of Issues**
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  - **Next Steps**
- **Summary**

Surfacing of Problems with Use of CMMI Ratings

- **Problems presented by OSD at the 2004 NDIA CMMI Technology Conference**
  - **When achieving a level replaces the focus on continuous improvement, we've lost sight of the goal**
  - **We created "level-mania" instead of continuous improvement**
- **NDIA Workshop and Summit on CMMI Use in DoD Programs, Sept 2005**
  - **Explored issues, and identified a set of recommendations**
- **Spring 2006 Government Review and Assessment**
  - **Validated Workshop findings**
  - **Refined and augmented issues, developed recommended actions**
  - **Reported to CMMI SG and Sponsors**
- **Ongoing: DCMA data call on CMMI implementation. Initial assessment confirms problems**

Issue Areas

- **Issue Area 1: High Maturity/Level 4 & 5**
  - **Lack of agreement on what constitutes Levels 4 and 5**
  - **High-maturity practices are not consistently applied at the project level after contract award**

- **Issue Area 2: Integrity of Appraisal Results**
  - **Appraiser training, consistency, independence**
  - **Content of Appraisal Disclosure Statement (ADS) is not representative of CMMI appraisal data**
  - **Appraisal sampling inconsistent and influenced by appraised organization**

- **Issue Area 3: Organizational Commitment**
  - **Concern that new projects are not incorporating standard processes**

- **Issue Area 4: CMMI Guidance for Acquirers**
  - **Inadequate training and education for acquirers resulting in misrepresentation and misuse of CMMI**

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Issue Area Resolutions -a

- **Issue Area 1: High Maturity/Level 4 & 5**
  - **Initial certification of high-maturity appraisers**
    - **July 06 workshop on high maturity training determined the requirements lead appraisers have to have in order to do high maturity appraisals**
    - **Application review and oral exam**
  - **Body of Knowledge on leading appraisals will be available by October 2007**
  - **Lead Appraisers must certify that level 4 and 5 appraised subprocesses map to organization's business objectives**

Issue Area Resolutions -b

- **Issue Area 2: Integrity of Appraisal Results**
  - CMMI v1.2 upgrade training, proctored exam, and face-to-face training
  - Eliminated "level for life"—now three-year limit
  - DCMA developed a survey related to CMMI appraisal ratings and program performance to begin to measure the problem
  - CMMI v1.2 updates to the ADS and to Sampling

Issue Area Resolutions -c

- **Issue Area 2: Integrity of Appraisal Results - continued**
  - **Precise definition of the appraisal sampling**
    - **Organizational scope: name, type, location**
    - **Organizational Unit Coverage: size, application domain, geographical breadth, project type expressed in percentages of total organizational unit**
    - **Projects excluded and rationale**
  - **Lead Appraiser certification that focus and non-focus projects are representative of organization**
  - **Lead Appraisers must come from an organization other than the business unit being appraised**

Issue Area Resolution -d

- **Issue Area 2: Integrity of Appraisal Results - continued**
  - **v1.2 ADS requires improved level of detail**
    - **Provides details on appraisal sample**
      - **Organizational unit, projects, domains**
    - **Provides Lead Appraiser certifications**
      - **Project sampling is representative**
      - **Level 4/5 certifications are based upon practices that represent organizational business goals**
    - **All appraisals beginning after 1 November 2006 must use and fully populate ADS v1.2 (includes CMMI v1.1-based appraisals)**
    - **ADS for all DoD contractors will be posted (government Web site TBD) for Government acquirer review**

Issue Area Resolutions -e

- **Issue Area 3: Organizational Commitment**
  - **Added new goal and two practices to Operational Process Focus (OPF) PA to stress deployment of processes to projects.**
  - **Added text in Integrated Project Management (IPM) PA to emphasize having a defined process at project start-up**
  - **CMMI Guidebook for Acquirers will discuss need to address project level implementation with developers**

Issue Area Resolutions -f

- **Issue Area 4: CMMI Guidance for Acquirers**
  - **CMMI Guidebook for Acquirers**
    - **Will address how CMMI should be used by acquirers, how to interpret appraisal results, how to treat CMMI throughout the lifecycle**
    - **Due out after the first of the year**
  - **Development of the CMMI-Acquisition Constellation**

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Reduced Model Complexity & Size

- **Eliminated the concepts of advanced practices and common features**

- **Incorporated ISM into SAM; eliminated Supplier Sourcing (SS) addition**

- **Consolidated and simplified the IPPD material; eliminated two process areas (OEI, IT)**

- **Consolidated all definitions in the glossary**

- **Adopted a single book approach**

- **Reduced size 15%**

Increased Model Coverage

- *CMMI always covered hardware design, but the naming (CMMI-SE/SW/etc) didn't reflect this*

- **Added hardware amplifications**

- **Added two work environment practices (i.e., one in OPD and one in IPM)**

- **Added goal and two practices in OPF to emphasize importance of project startup**

- **Updated notes on service development and acquisition of critical product elements**

- **Updated name to CMMI for Development (CMMI-DEV) to reflect the expanded coverage**

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Appraisal Method Changes to Improve Integrity

- **Method implementation clarifications**
  - interviews in "virtual" organizations
  - practice characterization rules
  - organizational unit sampling options
- **Appraisal Disclosure Statement (ADS) improvements**
  - improve usability for sponsor and government
  - require sponsor's signature on the ADS
  - require all team members to show agreement on findings via signature
  - *Both v1.1 and v1.2 ADS reflect these changes now*
- **Appraisal team will have responsibility for determination of "applicability" for SAM; no other process area exceptions will be accepted for maturity level achievement**

Appraiser Qualification Changes to Improve Integrity

- **All v1.2 Lead Appraisers must do the following:**
    - pass upgrade and refresher testing
    - attend "face-to-face" sessions on appraisal quality
    - pass an additional oral exam before conducting a high maturity (HiMat) appraisal

- **All v1.2 Appraisal Team Members must accomplish upgrade training and be registered at SEI**

- **All v1.2 high maturity appraisals must be led by a certified high maturity Lead Appraiser**

CMMI Training v1.2

- **Introduction to CMMI**
  - **Updated for v1.2**
  - **Phased in this fall**
- **Intermediate Concepts of CMMI**
  - **Updated for v1.2**
  - **Will better prepare students for SCAMPI training**
- **CMMI Instructor training**
  - **Updated to reflect v1.2 changes**

"Delta" training from v1.1 to 1.2
  - **Available online for free**
  - **More extensive upgrade course for fee**
    - **Appraisal Team Members**
    - **Lead Appraisers, instructors, candidates**

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CMMI V1.2 Schedule

- **Version 1.2 CMMI Product Suite release**

- **Update material available**

- **Upgrade course available on-line**

- **First Lead Appraiser "face to face"**

- **V1.2 ADS required for all SCAMPIs (on-site starts)**

- **Last v1.1 Intro training**

- **First expiration of v1.1 appraisals (3 year validity)**

- **Last v1.1 appraisal (on-site starts)**

- **August 25, 2006**

- **August 25, 2006**

- **August 25, 2006**

- **October 16, 2006**

- **November 1, 2006**

- **December 31, 2006**

- **August 25, 2007**

- **August 31, 2007**

CMMI "v2.0"

- **Sponsors and CMMI SG beginning discussions on CMMI v2.0**

- **Plan on series of focused NDIA/SEI Workshops in 2007 to dialog strategies on both models and appraisal methods**
  - **Need to see effects of v1.2 changes**
  - **Need to see how we can improve efficiency and reduce CMMI adoption costs**
  - **Need to determine if any better methods can be implemented**
  - **Need to continue the analysis of CMMI integrity**

Summary

- **CMMI has clearly reached far more users than ever envisioned.**
  - **We need to be sensitive to this as we move forward**
- **CMMI Adopters are reporting increased performance.**
- **CMMI v1.2 has made substantial improvements to address integrity issues:**
  - **Model**
  - **Appraisal Method**
  - **Appraisal Reporting**
  - *We will continue to monitor the integrity-driven improvements for effectiveness, and react accordingly*
- **We welcome your feedback.**