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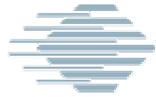
# MISC PMT

## Combining TSP and CMMI Should Mean More Than Just an Anagram

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September 18, 2006

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With thanks to SEPM Leadership Team and Jim McHale.



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# Topics

**CMMI Adoption: The Good**

**CMMI Adoption: The Bad**

**CMMI Practitioners Need TSP**

**TSP Practitioners Need CMMI**

**Our Joint Challenge**



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# Topics

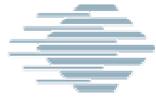
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# **CMMI Adoption: The Good News**

## **CMMI adoption is:**

- **having impact**
- **broad**
- **increasing**

## **Adoption is NOT limited to:**

- **DoD contractors (or US Government agencies)**
- **IT organizations (or embedded software developers)**
- **Large enterprises**
- **US (or India)**

## CMMI Performance Results

<u>Performance Category</u>	<u>Median Imp'vt</u>	<u># Data Points</u>	<u>Min</u>	<u>Max</u>
Cost	34 %	29	3 %	87%
Schedule	50 %	22	2 %	95%
Productivity	61 %	20	11%	329%
Quality	48 %	34	2 %	132%
Customer Satis'fn	14 %	7	-4 %	55%
Return on Inv'mnt	4.0:1	22	1.7:1	27.7:1

**Note:** The performance results in this table express change over varying periods of time.

These results are taken from the recent report, *Performance Results of CMMI-Based Process Improvement*, that can be found at:

<http://www.sei.cmu.edu/publications/documents/06.reports/06tr004.html>

Also, see: <http://www.sei.cmu.edu/cmmil/results>



## **CMMI Adoption: Numbers Trained**

**Introduction to CMMI course – 55,547 trained as of 8/31/06**

- **Over 50,000 in the past four and half years alone (vs. eleven years for 19,000 trained in Software CMM)**
- **Growth has been about 10% every 6 months**

### **Authorized**

- **Introduction to CMMI V1.1 Instructors – 392**
- **SCAMPI V1.1 Lead Appraisers – 435**
- **SCAMPI B&C V1.1 Team Leads – 432**

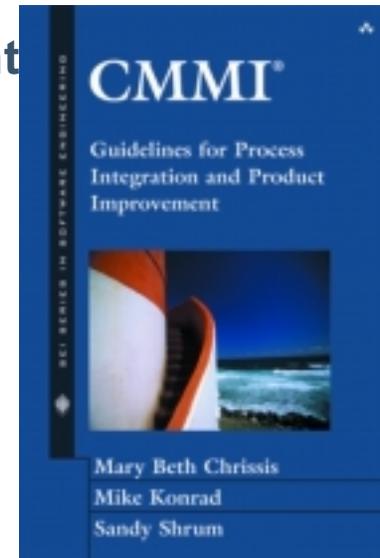


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## **CMMI in Books**

The Addison-Wesley SEI Series book at right appears in English, Japanese, Chinese, etc. There are also:

- A Guide to the CMMI
- CMMI: A Framework...
- CMMI Assessments
- CMMI Distilled: Second Edition
- CMMI SCAMPI Distilled
- CMMI: Un Itinéraire Fléché
- De kleine CMMI
- Interpreting the CMMI
- Making Process Improvement Work
- Practical Insight into CMMI
- Real Process Improvement Using the CMMI
- Systematic Process Improvement Using ISO 9001:2000 and CMMI
- Balancing Agility and Discipline





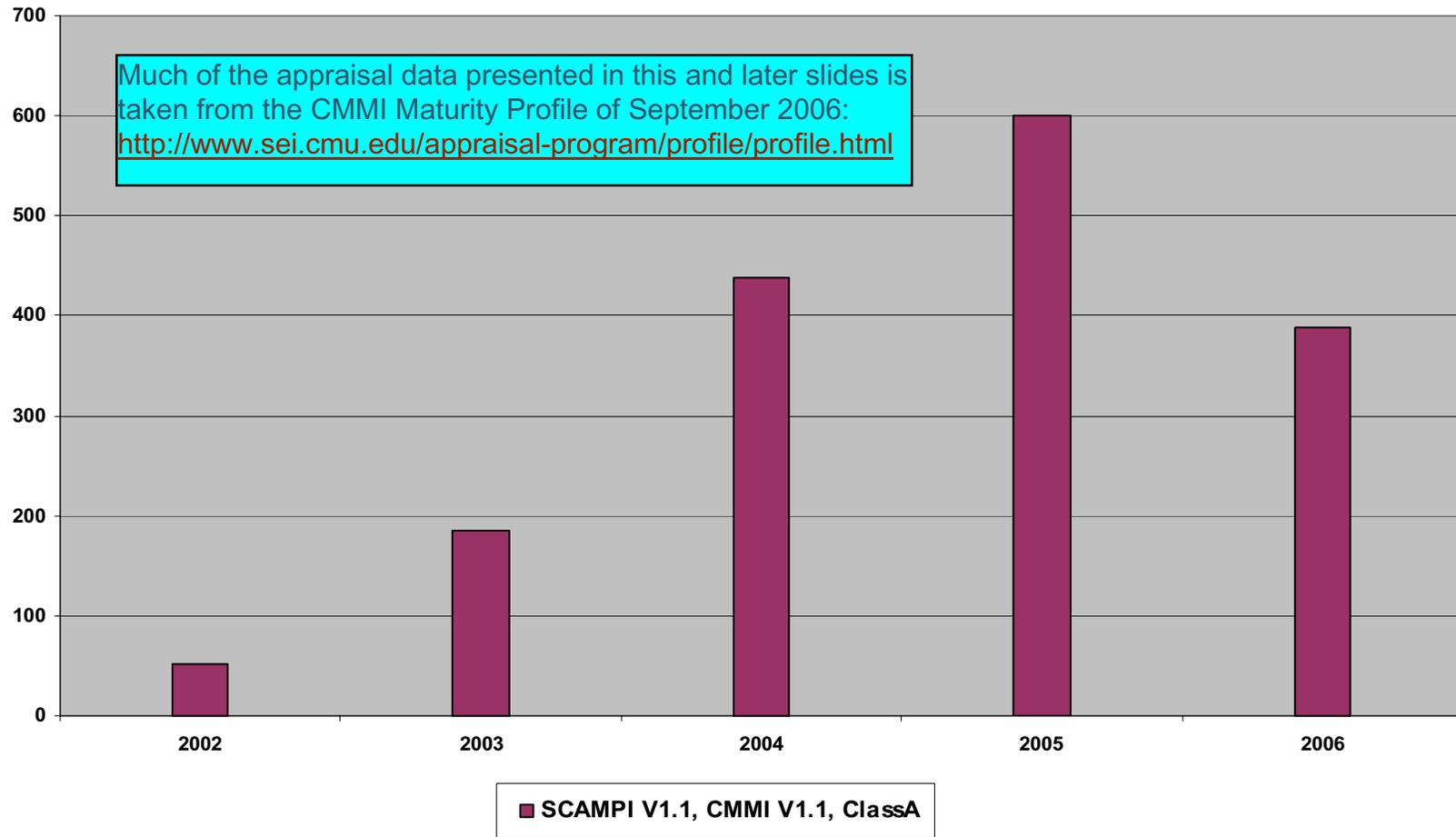
## **CMMI in SEI Publications**

**Technical reports, technical notes, and special reports:**

- **Initial Draft CMMI for Acquisition (CMMI-ACQ)**
- **CMMI and Product Line Practices**
- **CMMI and Earned Value Management**
- **Interpreting CMMI for Operational Organizations**
- **Interpreting CMMI for COTS Based Systems**
- **Interpreting CMMI for Service Organizations**
- **CMMI and Six Sigma**
- **Interpreting CMMI for Business Development Org's (in progress)**



**Number of SCAMPI V1.1, CMMI V1.1, Class A Appraisals Conducted by Year  
Reported as of 31 August 2006**





## **CMMI Website Visits**

**CMMI web pages hits: 12K/day (and increasing)**

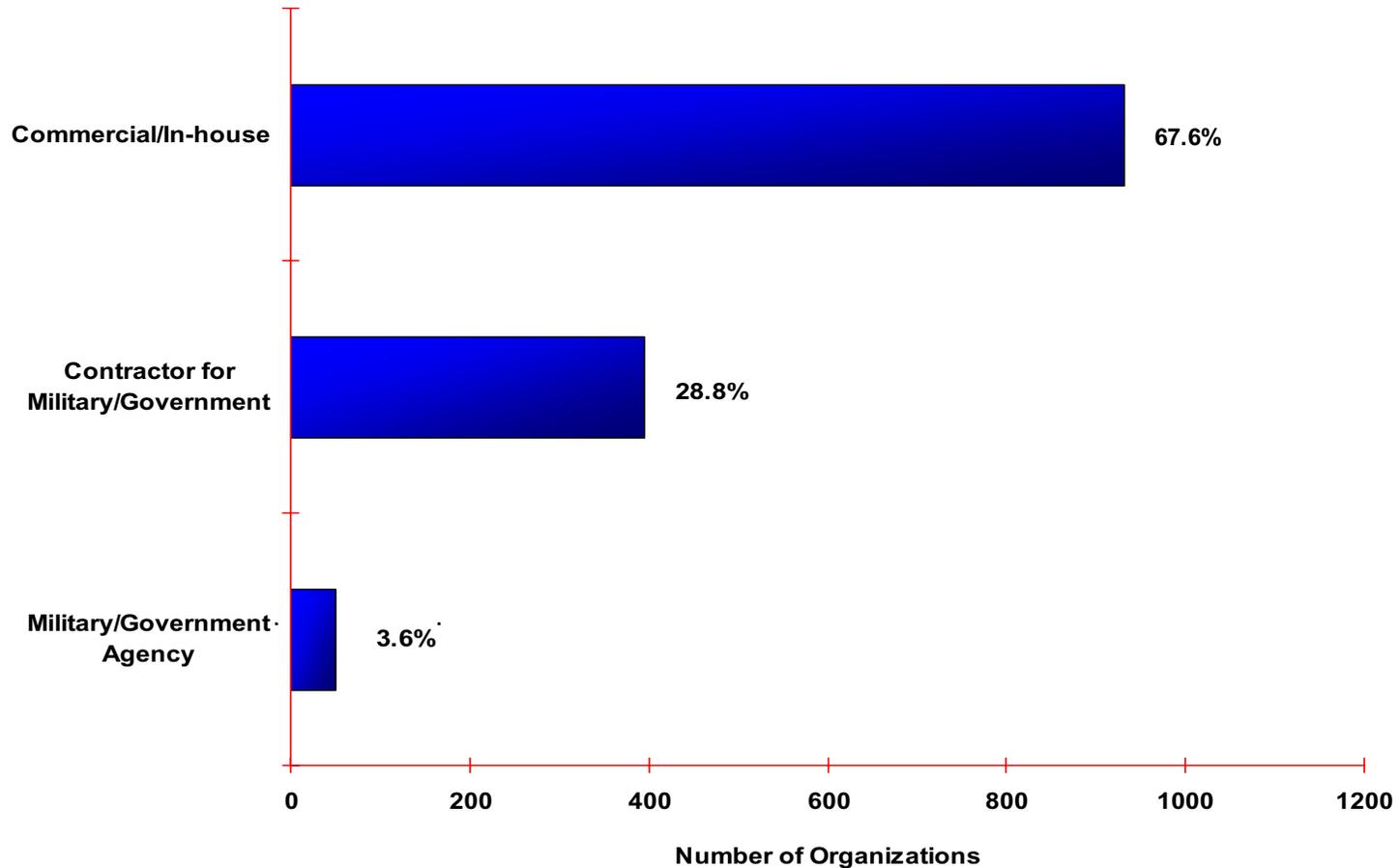
**Those who visited the CMMI Website during September 2005 **two hundred** or more times include:**

- **29 Defense contractor organizations**
- **12 DoD organizations**
- **25 Non-DoD government agencies**

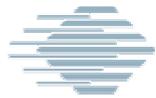
**But also include:**

- **49 Universities**
- **328 Commercial companies**

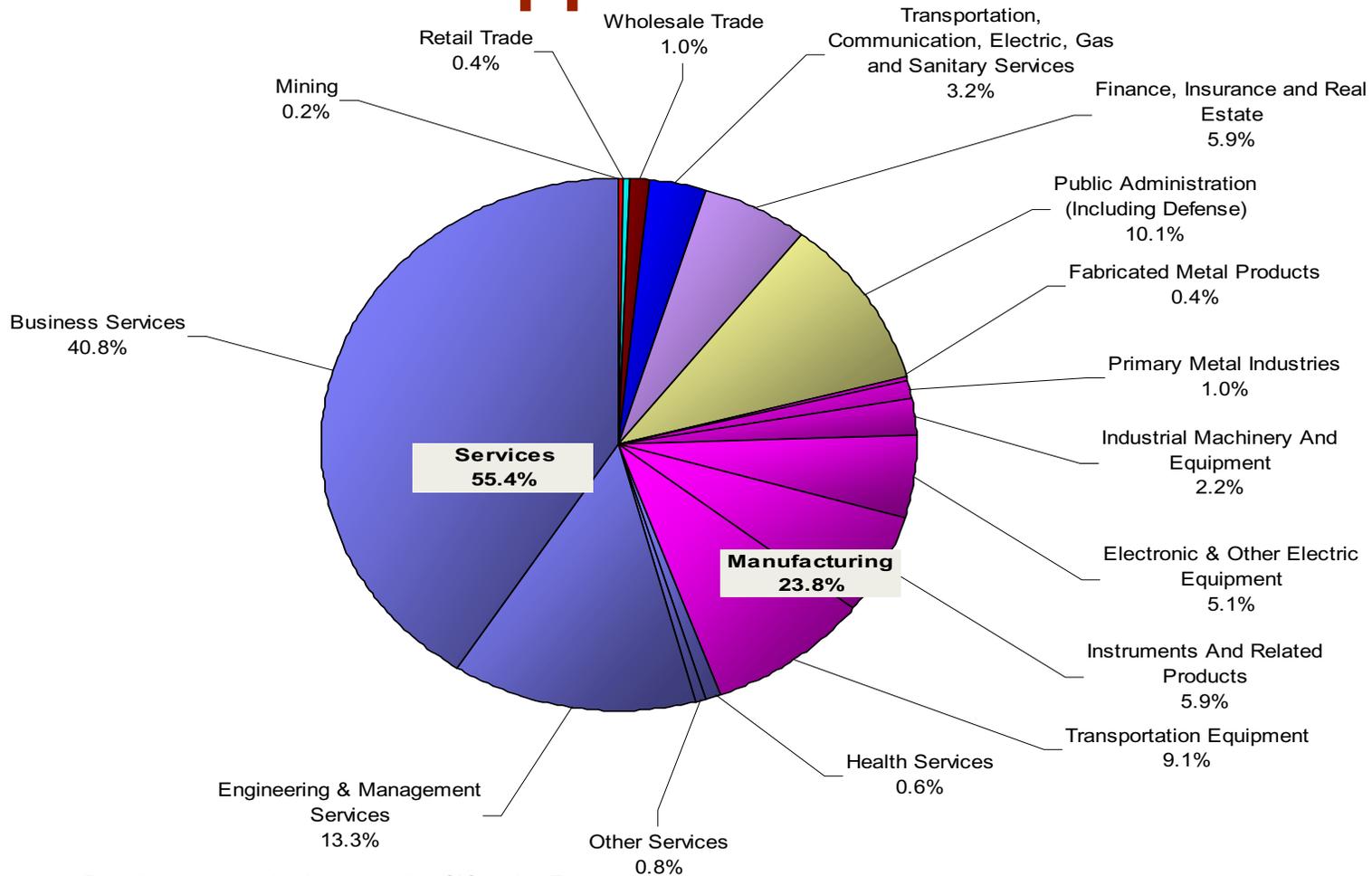
# Who Gets Appraised?<sup>1</sup>



Based on 1,377 organizations



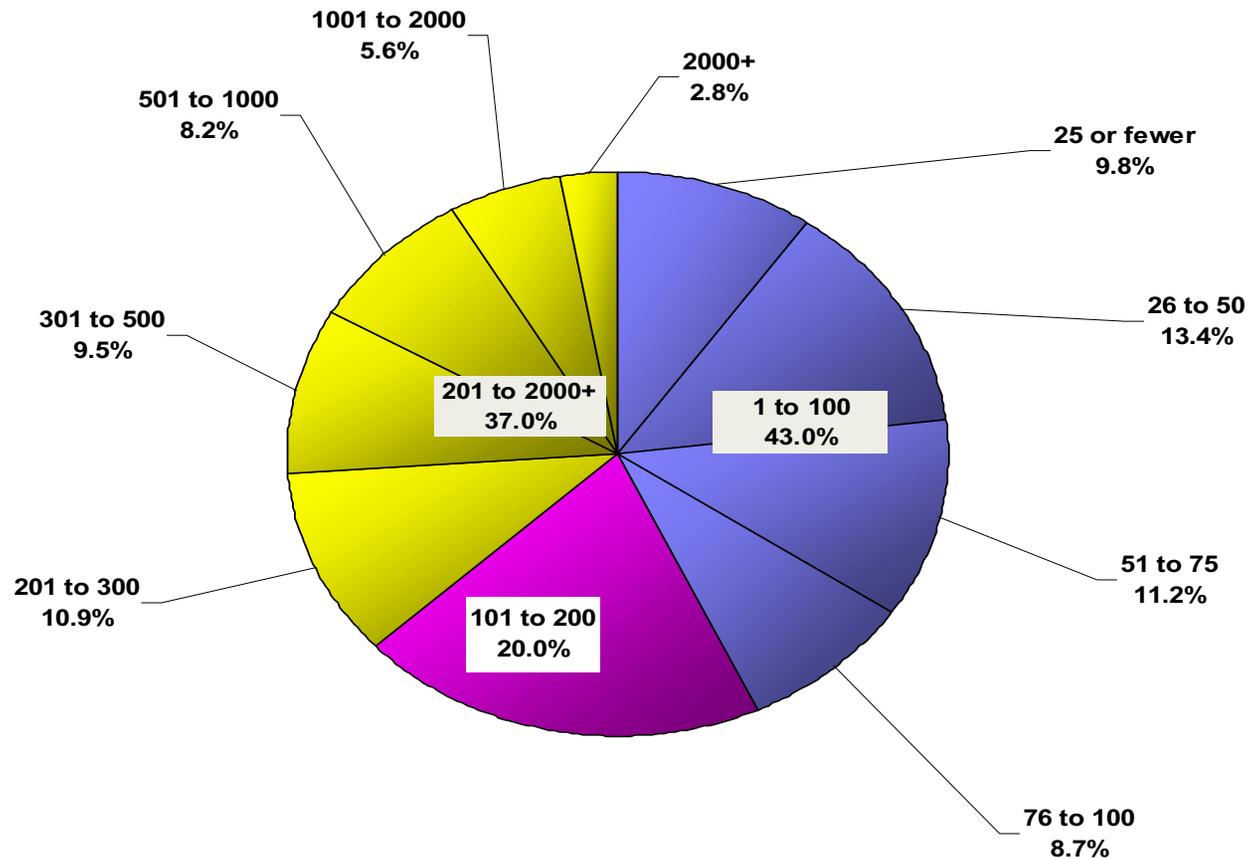
# Who Gets Appraised?<sup>2</sup>



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

# Size of the Appraised Organization

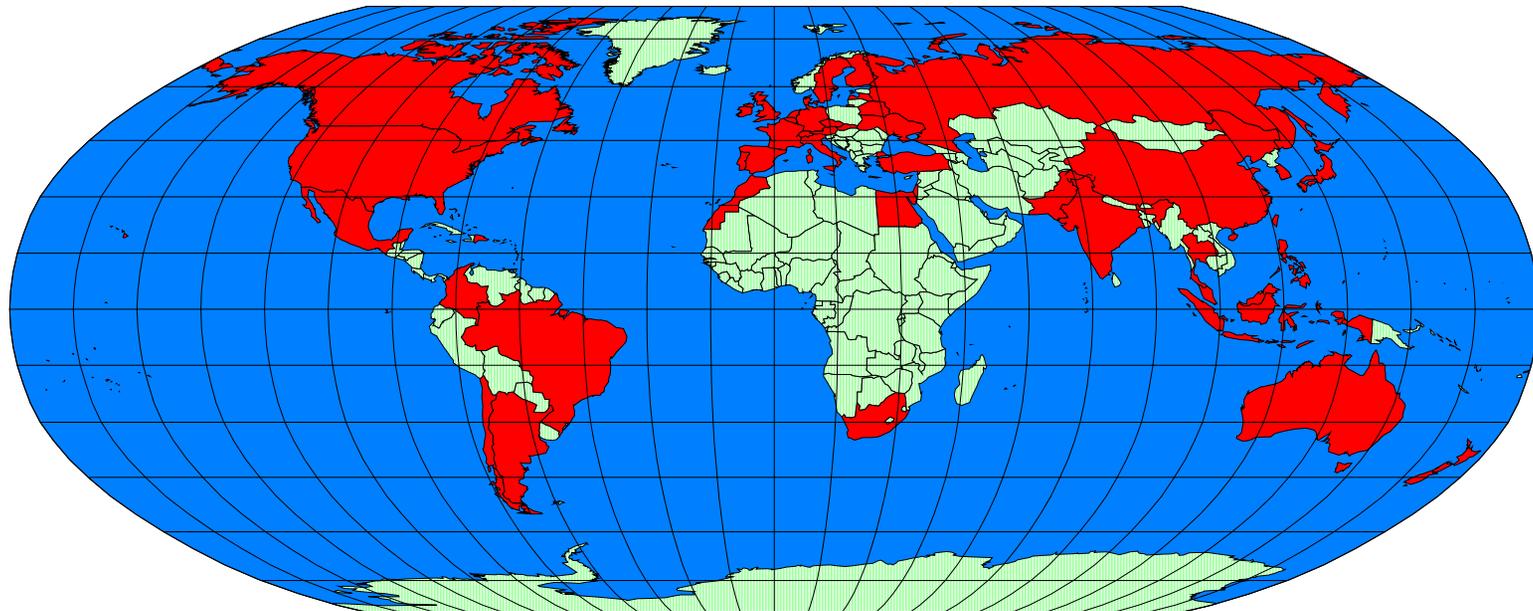
Based on the total # of employees within area of the org'n that was appraised



Based on 1,348 organizations reporting size data

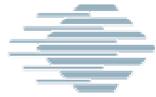


## Not Only in US and India: Countries where Appraisals have been Reported



Argentina	Australia	Austria	<b>Bahrain</b>	Belarus	Belgium	Brazil	Canada
Chile	China	Colombia	<b>Czech Republic</b>	Denmark	<b>Dominican Republic</b>	Egypt	Finland
France	Germany	Hong Kong	India	<b>Indonesia</b>	Ireland	Israel	Italy
Japan	Korea, Republic of	Latvia	Malaysia	Mauritius	Mexico	<b>Morocco</b>	Netherlands
New Zealand	<b>Pakistan</b>	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



## How Many Appraisals in Which Countries?

**17 countries with 10 or more appraisals:**

• USA	598	• Germany	28
• India	177	• Spain	25
• China	158	• Australia	23
• Japan	155	• Canada	18
• France	65	• Argentina	15
• Korea, Rep. of	56	• Malaysia	15
• U.K.	42	• Philippines	14
• Brazil	39	• Egypt	10
• Taiwan	31		

And 33 Other countries

**1581** SCAMPI v1.1 Class A appraisals as of July 31, 2006.



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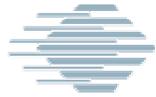
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## **The Current Situation**

**The perception among some CMMI users and lead appraisers and team leaders is**

- **Some aspects of the CMMI models are not uniformly interpreted.**
- **The SCAMPI<sup>SM</sup> appraisal method is not always rigorously implemented.**
- **Some lead appraisers are engaging in unethical business practices.**
- **Some capability level or maturity level 4 or 5 appraisal results are not justified.**



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## **CMMI V1.2**

V1.2, released on Aug. 25, 2006, includes several improvements intended to address these problems.



## Summary of CMMI Model Changes in V1.2

Many changes were made to the CMMI models to improve quality, including:

- process deployment strengthened in OPF and IPM
- examples added for acquisition and services
- amplifications added for hardware engineering
- work environment material added to OPD and IPM
- overview and glossary improved
- IPPD material simplified and consolidated
- SS addition eliminated; ISM brought into SAM
- SAM is the only “NA-able” process area
- both representations simplified and combined into one document
- name changed to “**CMMI for Development**”



## **Summary of SCAMPI Changes in V1.2**

Practice characterization and rating **rules** were clarified.

Organizational unit **sampling requirements** for organizational sampling were strengthened.

The **Appraisal Disclosure Statement (ADS)** now requires:

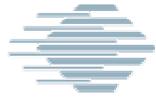
- Organizational sampling criteria and decisions (e.g., projects included, excluded; percentage of organization represented)
- Basis for maturity/capability level 4 and 5 appraisal results

V1.2 appraisal results are valid for a **maximum of 3 years** from the date of the ADS.

## A More Rigorous Transition to SCAMPI V1.2

The following actions are being implemented:

- The SEI continues to investigate all potential incidents of abuse of the **SCAMPI appraisal method** or **Code of Professional Conduct** and is taking appropriate action.
- Appraisal sponsors will be required to sign **Appraisal Disclosure Statements** authorizing the SEI to perform any required audits of appraisal results.
- All authorized and candidate lead appraisers (LAs) must complete a **proctored exam** and attend a **Face-to-Face Workshop** held by the SEI Appraisal Program.
- For **level 4 or 5** appraisals, the LA must also be **certified**, which includes completion of an **oral exam**.



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## Some Flawed Approaches to CMMI<sup>1</sup>

CMMI implementations are sometimes bureaucratic, heavy-weight, **poor-quality implementations**.

- Satisfy criteria in model, but aren't effective and efficient

Some do it for the **maturity level number**, so may not be getting the real benefits of PI

- Though visible to high levels of organizational management, PI doesn't impact the real work, just the infrastructure
- The "how-to" is seen as EPGs, MSGs, PATs, TWGs, ...

**TSP/PSP can help address this.**



## Some Flawed Approaches to CMMI<sup>2</sup>

Some organizations are not institutionalizing their improvements

- Capability erodes after the appraisal
- Future projects don't use the standard process
  - Want to be more "creative"?
  - Want to "cut corners"?
  - Customer doesn't see the benefit?

In some organizations it takes too long

- Though sold as long term improvement, ROI is too slow to come

TSP/PSP can help address this.

## Some Flawed Approaches to CMMI Levels 4-5

Implement Levels 4-5 like this? Or like this?

- |  |  |
|--|--|
| • For statisticians only                               | • For all practitioners  |
| • Applied retrospectively and at an aggregate level    | • Applied day-to-day as part of one's job  |
| • Processes defined centrally; deployed inconsistently | • Processes deployed and aligned at all levels   |
| • Few improvement suggestions                          | • Effective review of many improvement suggestions   |
| • Data-sparse environment                              | • Data-rich environment  |
| • “Statistical management” of a few subprocesses       | • “Statistical management” in every life cycle phase, by all teams, and often of more than one attribute |

**TSP is among the best implementations of CMMI that we have seen.**



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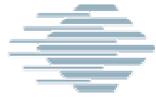
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# TSP and PSP Not Sufficient

As Jim McHale and Dan Wall reported in “**Mapping TSP to CMMI**,” while PSP/TSP cover the engineering and project management process areas generally well, they do not adequately cover all process management and support process areas of CMMI.

**CMMI and People CMM** define the organizational management and support infrastructure needed to **nurture, align, and sustain** the appropriate use of the TSP and PSP.



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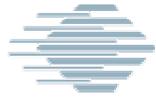
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## TSP and CMMI: Why Not Both?<sup>1</sup>

Both TSP and CMMI have a large and **growing community** of practitioners.

For both, user experiences and **benefits** have been documented in dozens (if not hundreds) of presentations and publications.

Both are from the **same source** – the SEI – and both originated, largely or in part, with Watts Humphrey.

Each includes concepts and tools **not available** in the other.

But **few organizations** are encouraging or using **both**.



## TSP and CMMI: Why Not Both?<sup>2</sup>

To compete successfully today, companies must rapidly mature innovations, uphold the highest standards of quality and service, and operate as “employers of choice.”

Need to know more than management consultants or books can tell them; need to *deeply understand* their business.

CMMI is a “proven” collection of *responsible practices*\* - a minimum set needed to run a business, but organizations today also need to establish a culture capable of *learning* and *empowerment* – the culture of TSP/PSP.

**CMMI and TSP, together, can help achieve these things.**

\*A term of Jim Moore.



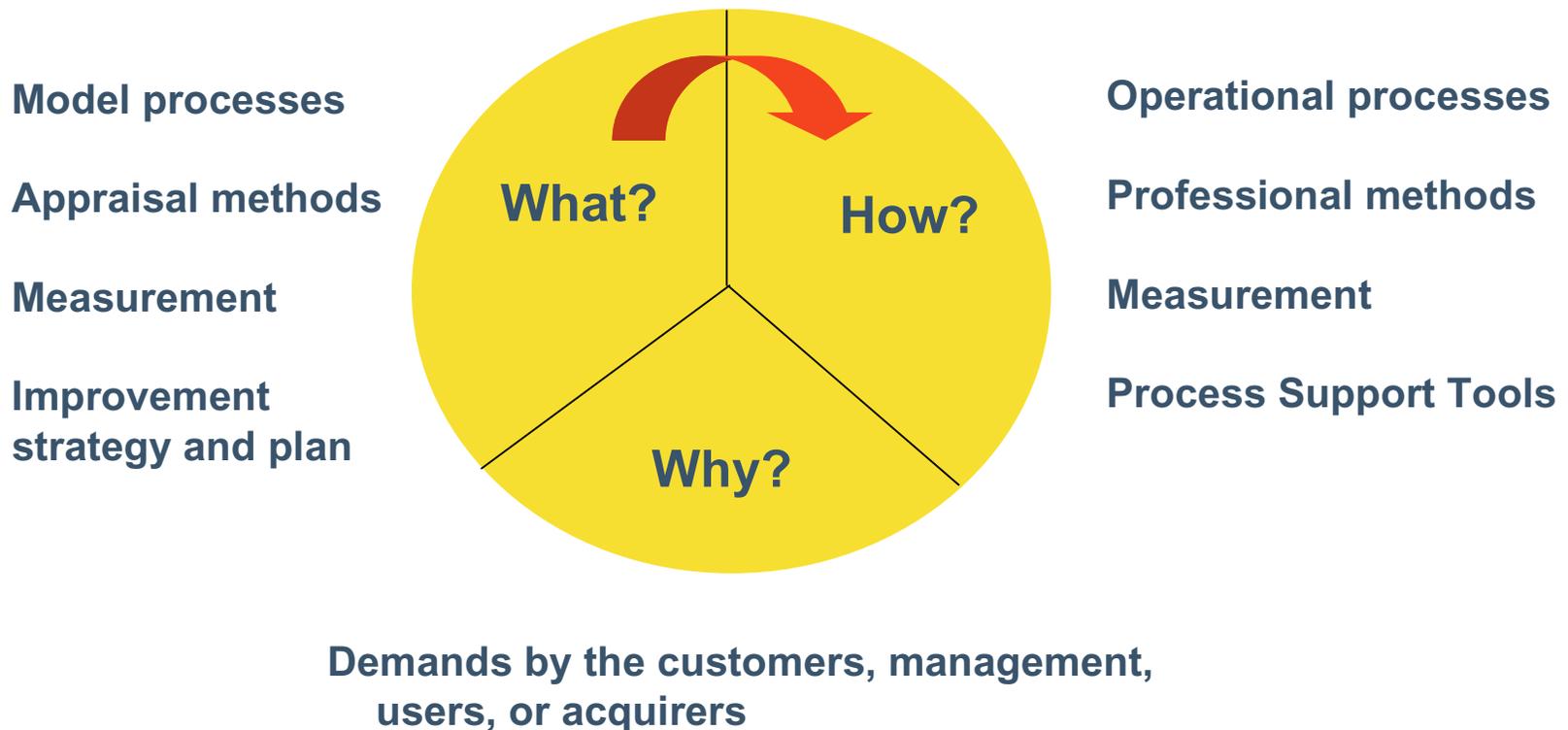
## **SEI Strategy: Link CMMI and TSP**

Our new focus is to assist organizations, projects, teams and individuals in **conquering the “how to”** of Process Improvement, and gaining the **best business results** from doing so, by:

- Characterizing **superior** organizational **performance**
- Increasing their transition and adoption of superior **operational** practices
- Increasing the quality and usefulness of high maturity appraisals
- Providing an integrated measurement framework
- Providing a CMMI **“how to” course** based on TSP
- Executing a process **research agenda** for the future



# SEI's Strategic Process and Measurement Framework Overview





## Summary

CMMI and TSP have proven their value and attained **worldwide recognition**; yet **few** organizations **adopt both**.

CMMI interpretation, implementation, and appraisal are sometimes problematic. **V1.2** includes changes to address these problems.

But many CMMI users cannot establish an environment that supports **learning and empowerment** without TSP/PSP.

TSP/PSP users need an environment that nurtures, aligns, and sustains the best operational practices and professional methods, and thus need **CMMI** (and **People CMM**).

**Therefore**, the longer-term solution lies in encouraging the broader adoption of **both CMMI and TSP/PSP**.



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## For More Information

James McHale and Daniel S. Wall, “Mapping TSP to CMMI,” at:

<http://www.sei.cmu.edu/publications/documents/04.reports/04tr014.html>

More information about CMMI can be found at:

<http://www.sei.cmu.edu/cmmi/>

More information about TSP and PSP can be found at:

<http://www.sei.cmu.edu/tsp/>