



CMMI[®] Current State and Future Plans

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Topics

- **Current Status**
- Appraisal Results
- Transition Status
- “Beyond V1.2” Workshops
- Summary



CMMI-v1.2 focused on Integrity

- **Model improved to require start-up of new projects using appraised processes**
- **Expanded appraisal requirements**
 - Definition of appraised organization
 - More disclosure in ADS
 - Relationship re: business objectives and HiMat subprocesses
 - 3-yr max period of appraisal validity
 - SEI acceptance of appraisal results prior to public disclosure
- **High maturity**
 - Improved definition & understanding
 - New training available
 - Certified high maturity lead appraisers
- **Focus Topics**



Current Status -1

- **New policies announced and implemented for version 1.2 appraisals.**
- **Version 1.2 upgrade training for Appraisal Team Members is available online.**
- **CMMI-ACQ was released on November 1, 2007.**
 - **Training**
 - **Currently a 1-day upgrade for those who have previously completed an Intro. to CMMI, V1.2 course**
 - **Eventually a 3-day and/or an integrated course**
 - **Appraisals**
 - **SCAMPI A's beginning in May, 2008**
- **CMMI adoption continues to grow worldwide.**



Current Status -2

- **New policies for version 1.2 appraisals**
 - **Three year maximum period of validity**
 - **Appraisals must be accepted by the SEI before becoming public record**
 - **High maturity appraisals must be led by a certified high maturity lead appraiser**
 - **Require that level 4/5 appraised subprocesses map to organizational business objectives**
 - **Sampling rules and ADS revised and expanded**
 - **Independence of lead appraiser from the business unit being appraised**
 - **CMMI V1.1 sunset date of August 31, 2007**
 - **Eventual certification of all lead appraisers**



Current Status -3

- **Business Rules for CMMI Focus Topics**
 - Term “Extensions” has been changed to Focus Topics
 - “Extensions” was misleading
 - Some expectation that they were appraisable
 - Promoted as accredited in extension
- **Focus Topics are:**
 - Intended to provide additional guidance
 - Documented as Technical Notes
 - Reviewed and approved prior to release



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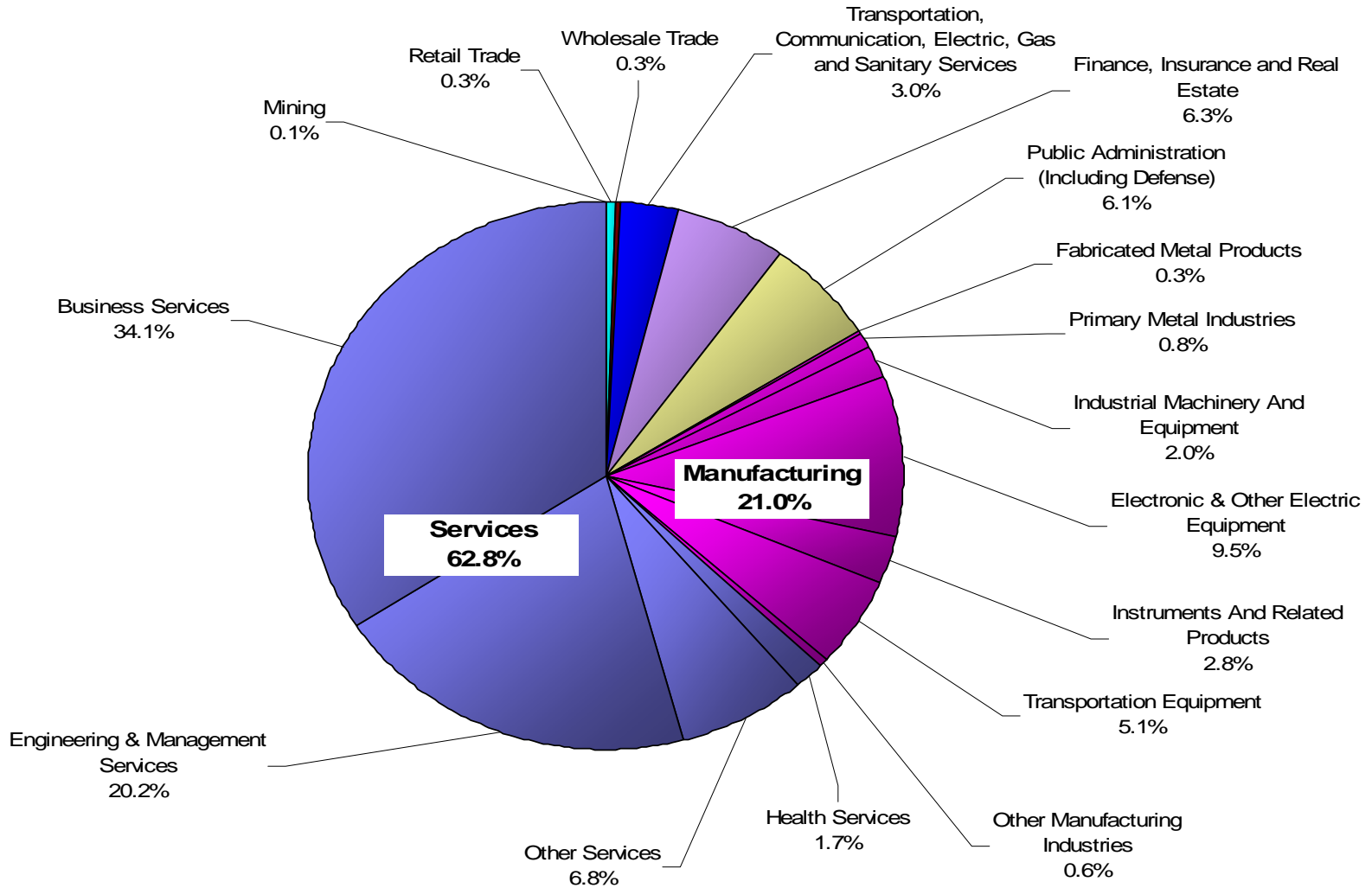
Appraisal Synopsis as of 6/30/07

- **Based on SCAMPI v1.1/v1.2 Class A appraisals conducted since April 2002 release through June 2007 and reported to the SEI by July 2007.**
 - **2,464 appraisals**
 - **2,140 organizations**
 - **1,417 participating companies**
 - **273 reappraised organizations**
 - **10,338 projects**
 - **67.1% non-USA organizations**
- **Please visit <http://www.sei.cmu.edu/appraisal-program/profile/pdf/CMMI/2007sepCMMI.pdf>, for additional information or to find answers to questions you may have about this briefing.**



Organizational Type as of 6/30/07

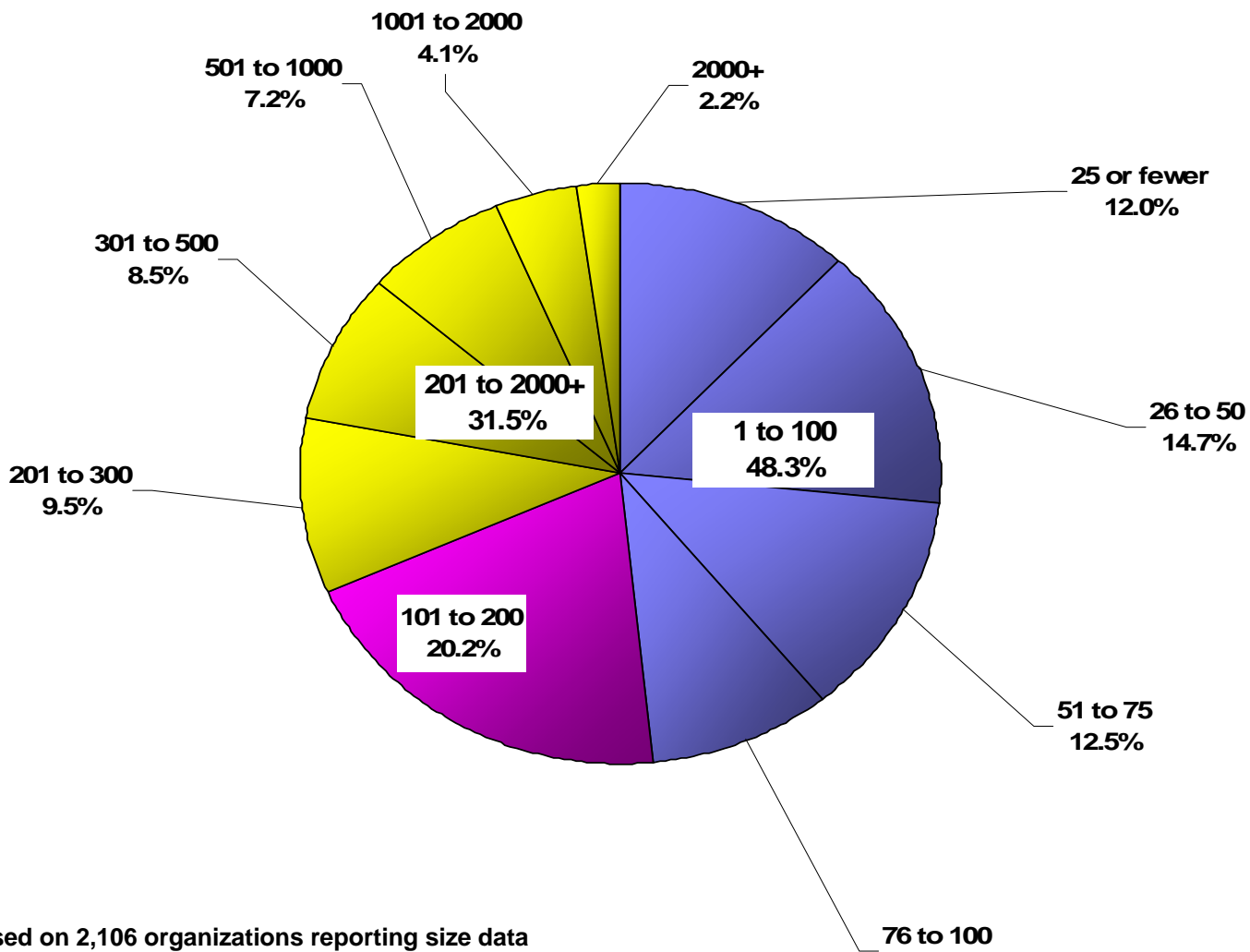
Based on Primary Standard Industrial Classification (SIC) Code





Organizational Size as of 6/30/07

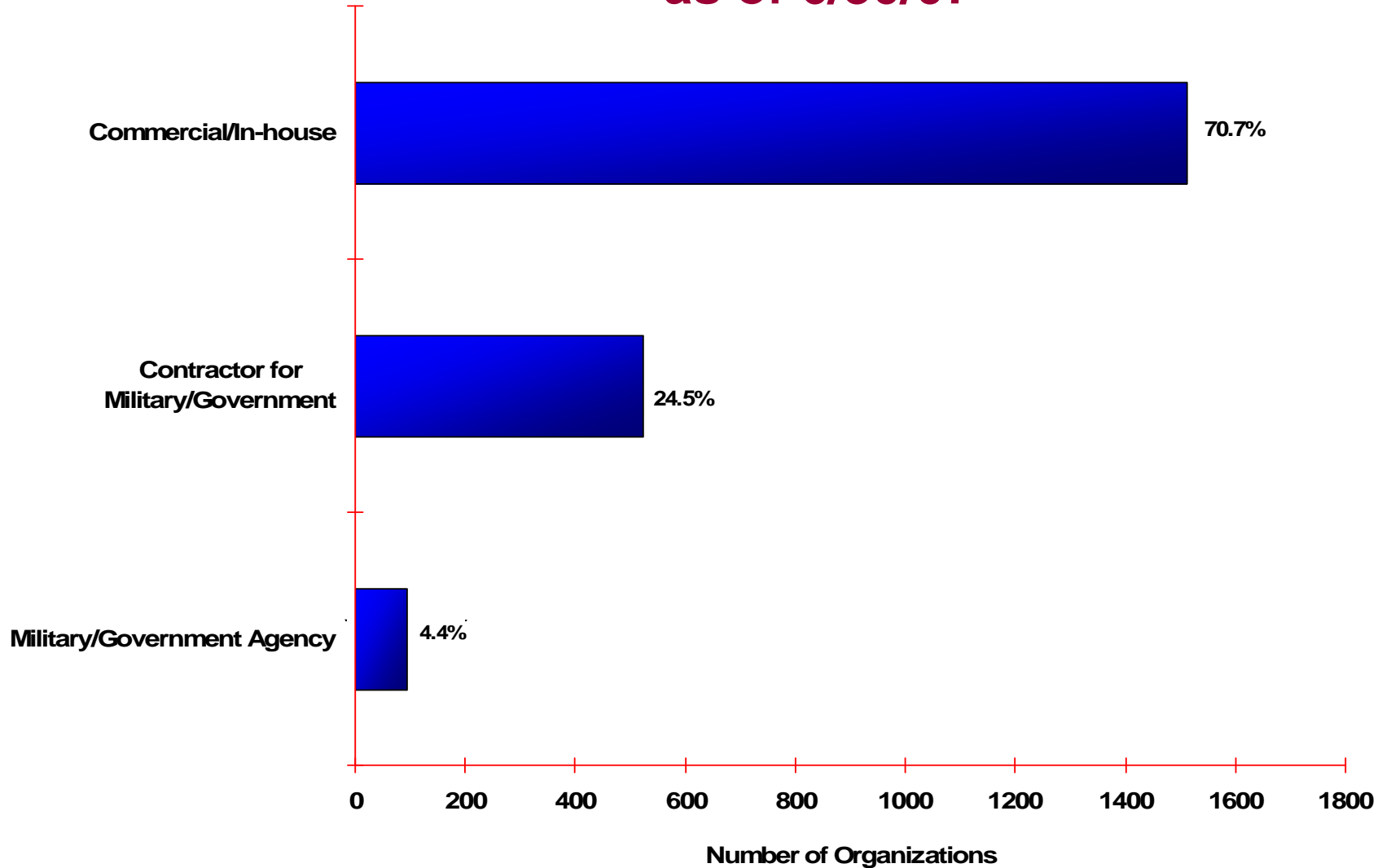
Based on total employees within area of appraised organization



Based on 2,106 organizations reporting size data



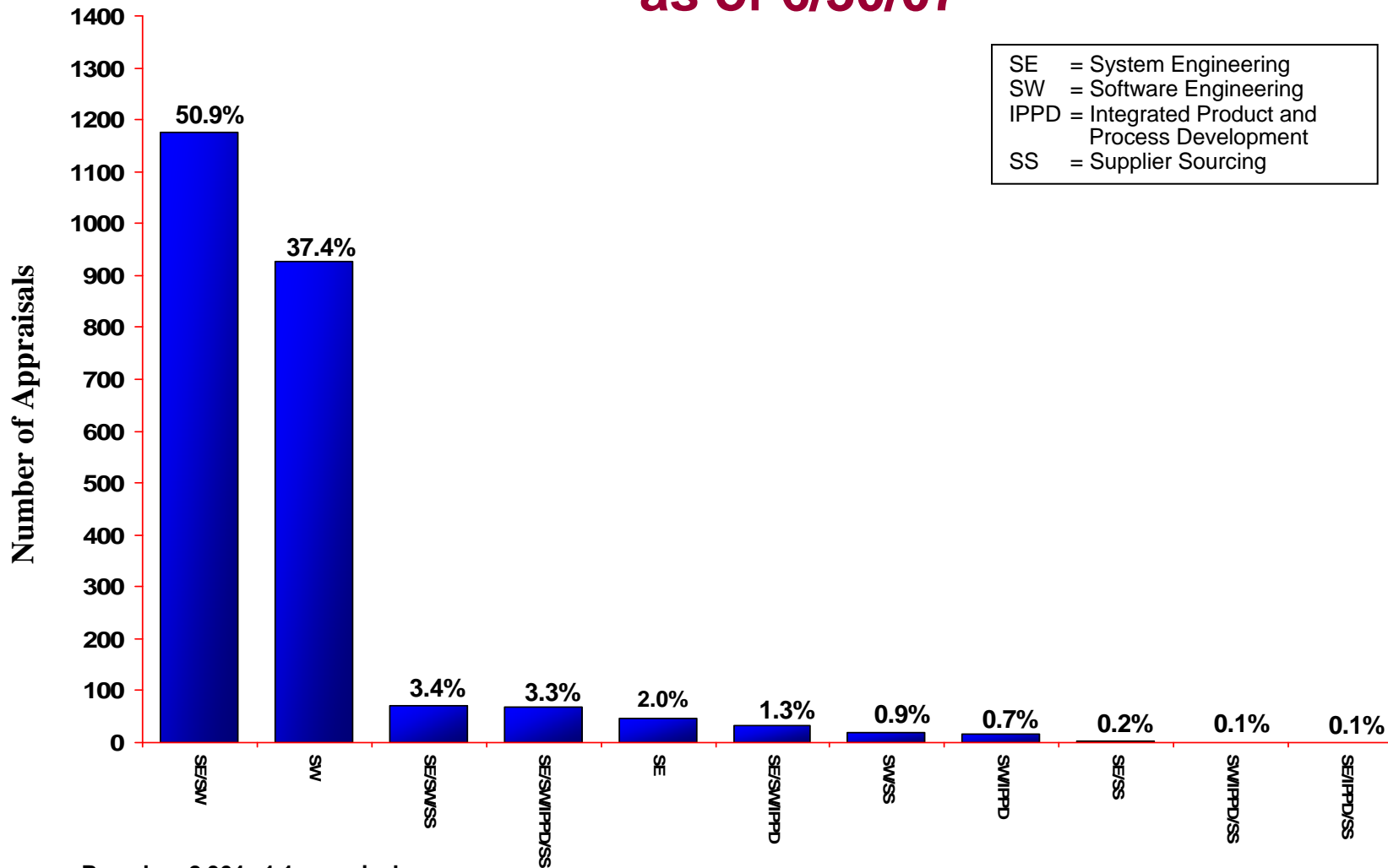
Reporting Organizational Types as of 6/30/07



Based on 2131 organizations



Disciplines Selected for Appraisals as of 6/30/07



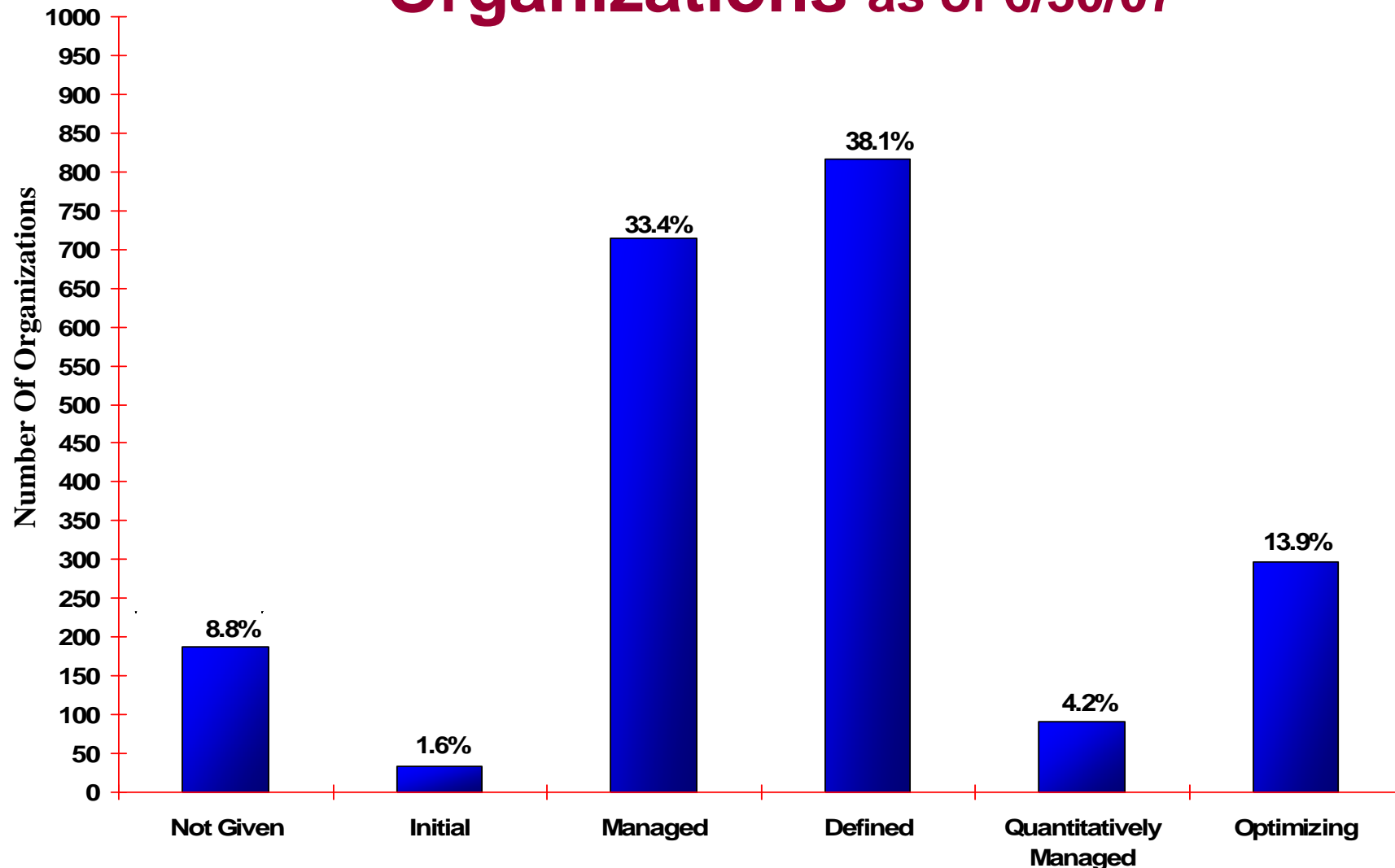
SE = System Engineering
SW = Software Engineering
IPPD = Integrated Product and Process Development
SS = Supplier Sourcing

Based on 2,364 v1.1 appraisals

For more information about Allowable Models & Combinations, visit: <http://www.sei.cmu.edu/cmmi/background/aspec.html> 12



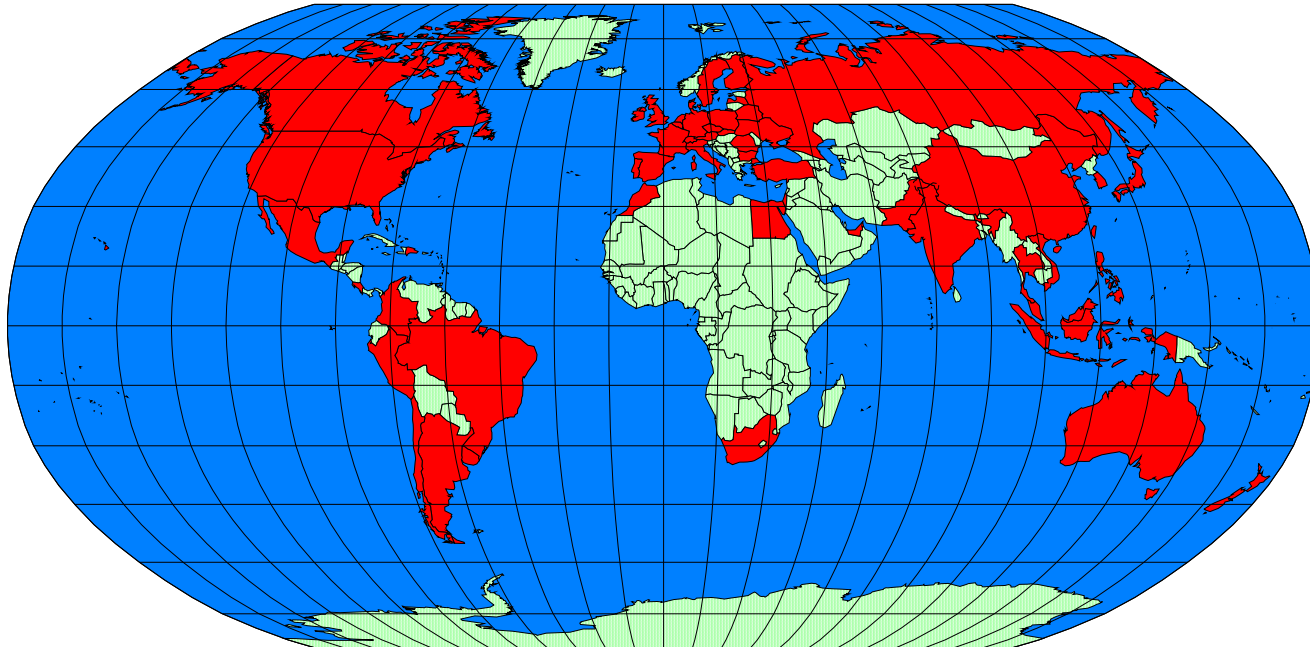
Maturity Profile by All Reporting Organizations as of 6/30/07



Based on most recent appraisal of 2,140 organizations



Countries Where Appraisals Have Been Performed and Reported to the SEI as of 6/30/07

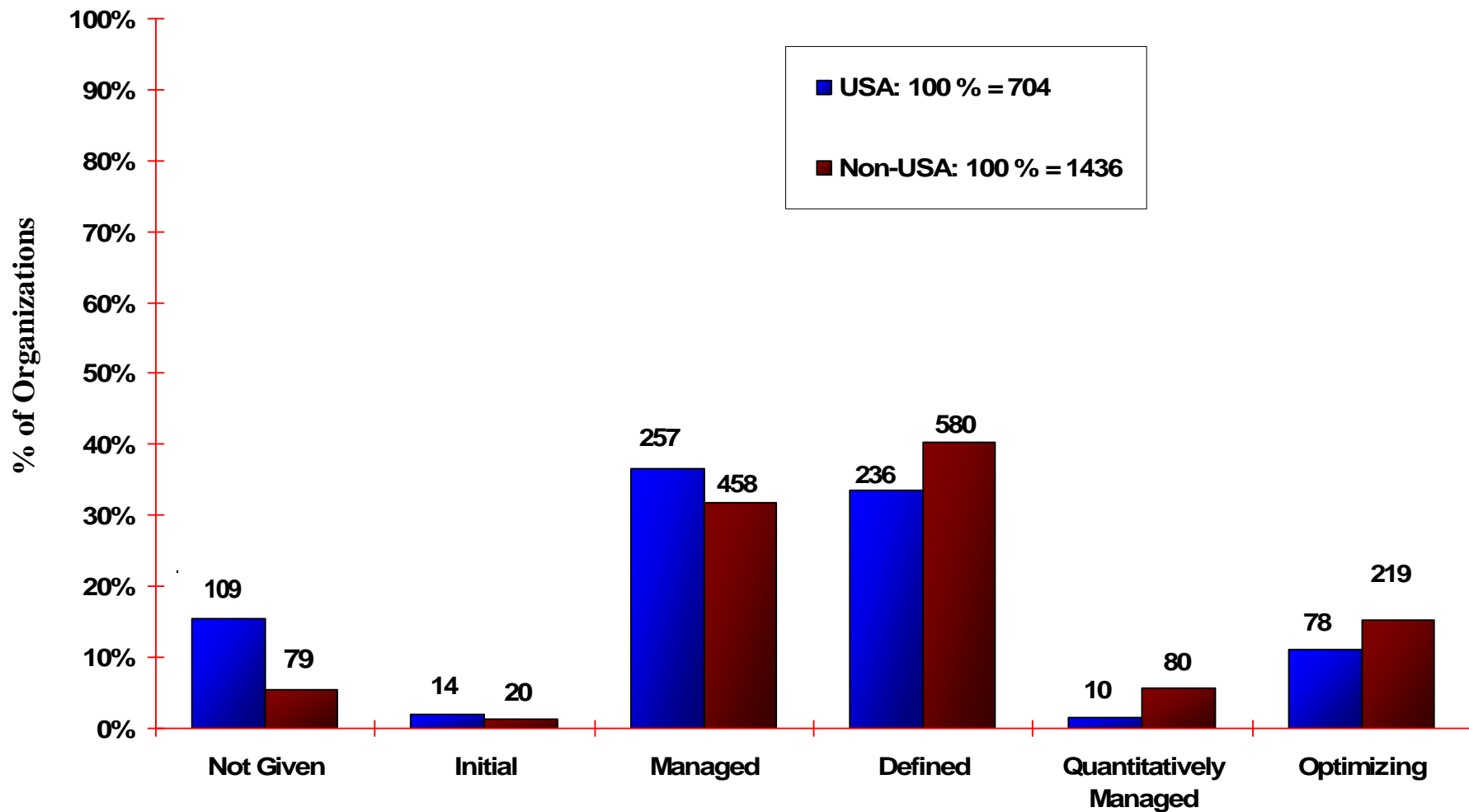


Argentina	Australia	Austria	Bahrain	Belarus	Belgium	Brazil	Bulgaria
Canada	Chile	China	Colombia	Costa Rica	Czech Republic	Denmark	Dominican Republic
Egypt	Finland	France	Germany	Hong Kong	India	Indonesia	Ireland
Israel	Italy	Japan	Korea, Republic Of	Latvia	Malaysia	Mauritius	Mexico
Morocco	Netherlands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

Red country name: New additions with this reporting



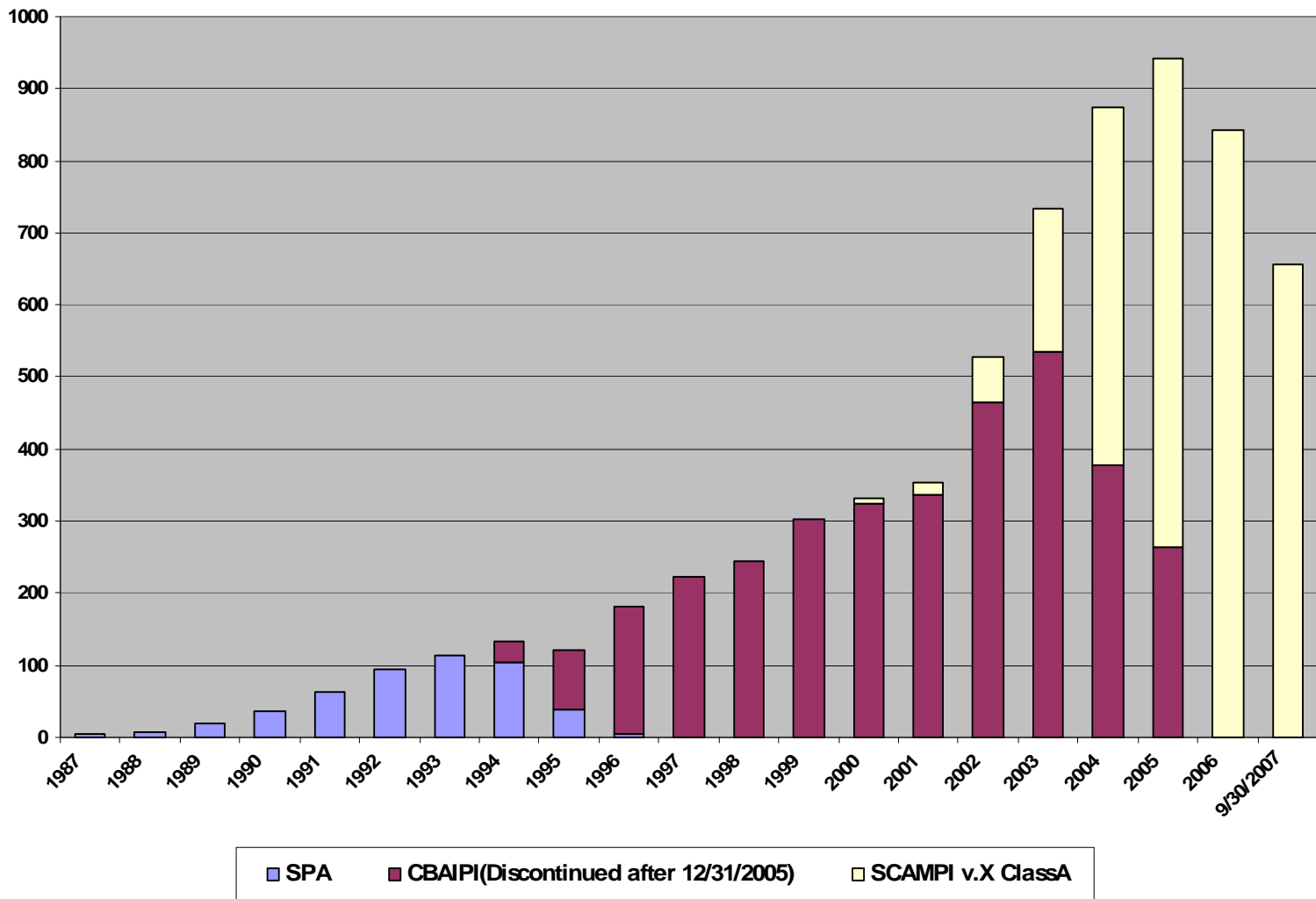
Maturity Profile by All Reporting USA and Non-USA Organizations as of 6/30/07



Based on 704 USA organizations and 1436 Non-USA organizations

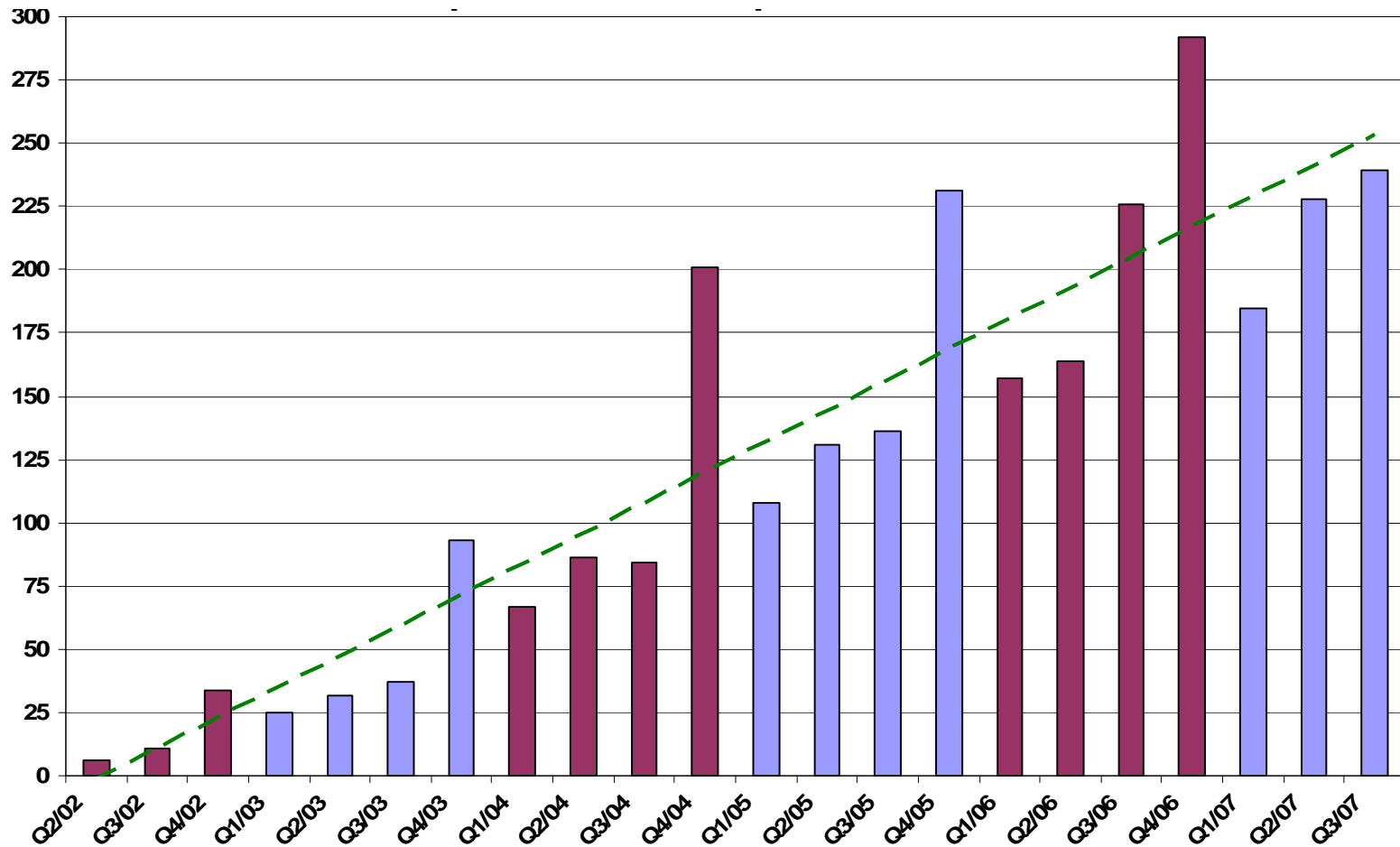


Number of Appraisals Conducted by Year, as of 9/30/07



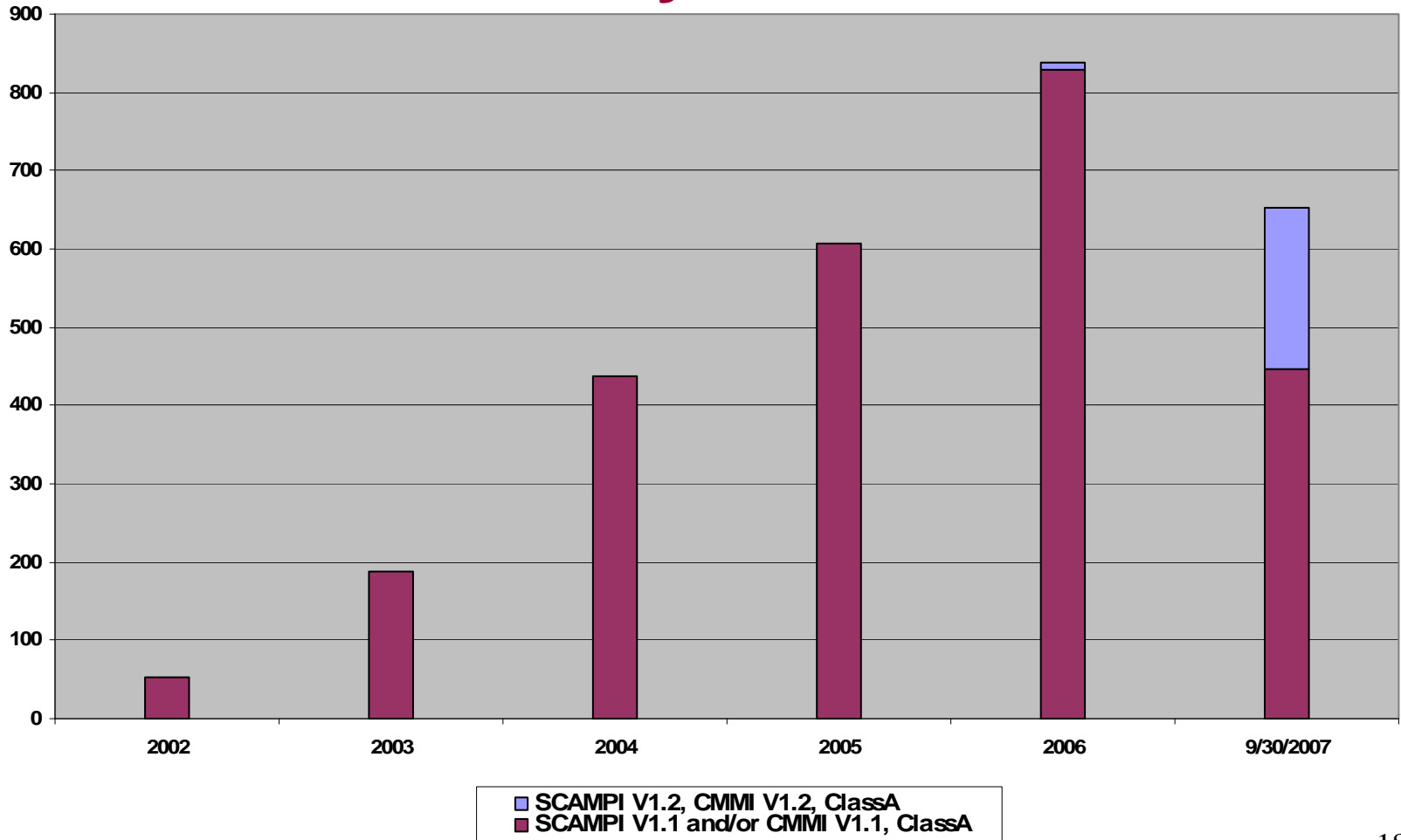


Number of SCAMPI V1.1/1.2 Class A Appraisals Conducted by Quarter, as of 9/30/07





Number of SCAMPI V1.1/1.2, CMMI V1.1/V1.2, Class A Appraisals Conducted by Year, as of 9/30/07





Appraisal Results Summary

- **2,464 appraisals have been reported to the SEI since the release of V1.1 through June 2007**
 - 883 of these were reported in the 12 months from July 2007 to June 2008
- **Commercial/In-house organizations report more of the appraisals than Military/Government Agency organizations**
 - The highest percentage of Commercial/In-house organizations reporting appraisals is from outside the USA
 - The highest percentage of Military/Government Agency organizations reporting appraisals is from the USA
- **China, India, Spain, France and Malaysia are reporting appraisals at particularly increasing rapid rates**
- **CMMI adoption continues to grow worldwide.**



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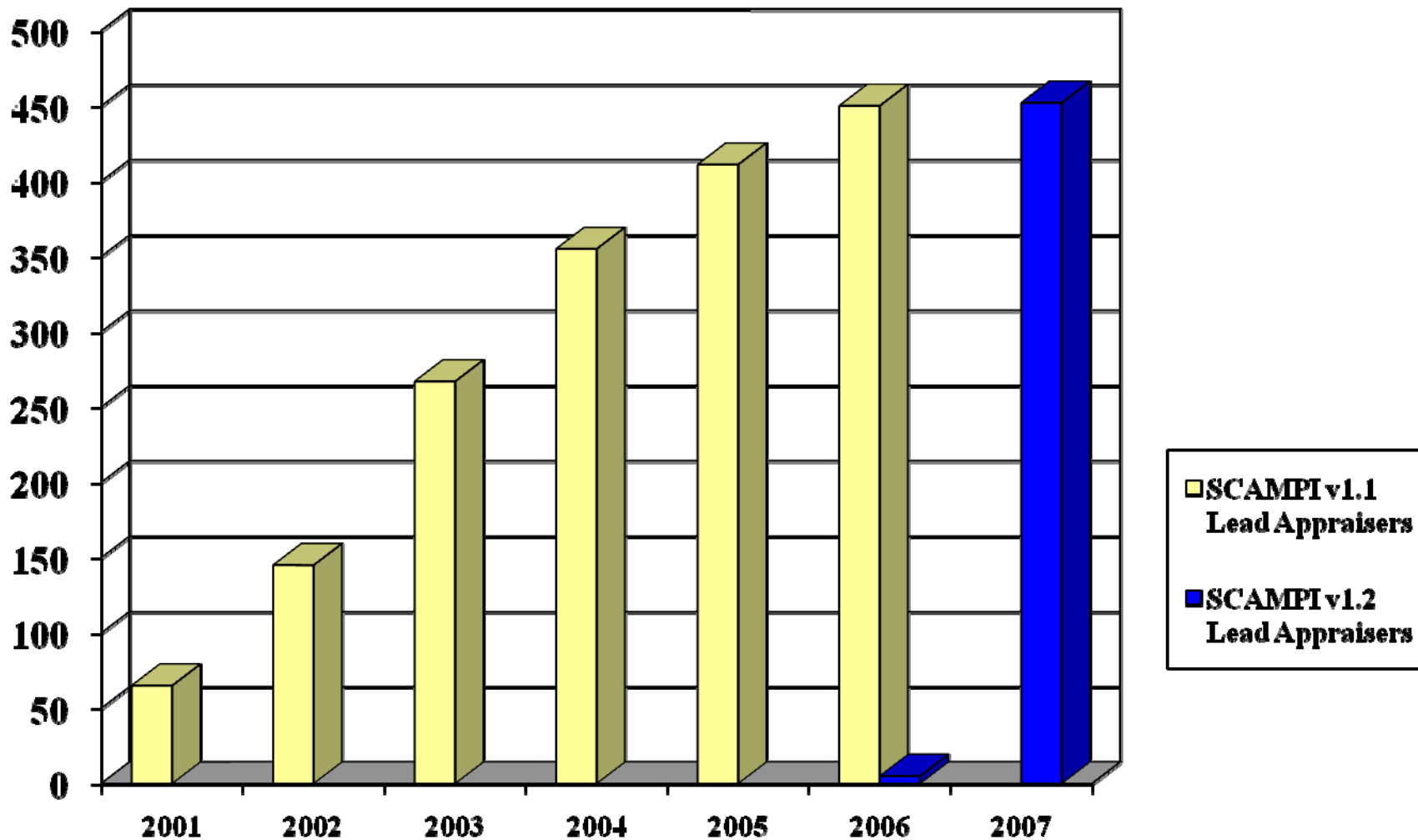


CMMI Transition Status as of 9/30/07

- **Training**
 - Introduction to CMMI – **75,279**
 - Intermediate CMMI – **2,612**
- **Authorized**
 - Introduction to CMMI Instructors – **428**
 - SCAMPI Lead Appraisers – **452**
 - SCAMPI B&C Team Leaders – **466**
 - SCAMPI High Maturity Lead Appraisers – **115**
- **Partners**
 - Introduction to CMMI Training – **279**
 - SCAMPI Appraisal – **285**



Number of Lead Appraisers Authorized (Cumulative) as of 9/30/07





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>
 - The **ROI site at DACS** is at <http://www.thedacs.com/databases/roi/>



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CMMI Beyond-v1.2 Workshops

- **Workshops held during CY 2007**
- **Goals of Workshops were to promote free and open discussion among participants to identify potential new methods to approach Process Improvement and appraisals thereof that can be reflected in CMMI v2.0.**
- **The ultimate goal is to evolve CMMI to a structure that will better support continuous process improvement.**



“Beyond V1.2” Workshops -1

Questions posed to Workshop attendees:

- **Can CMMI be harmonized with other standards and continuous process improvement efforts?**
- **How can we "slim down" the CMMI models while still preserving integrity?**
- **Do we need something different or additional to define High Maturity?**
- **Should CMMI be used in source selection and contract monitoring?**
- **Can repeatability, coverage (scope) and consistency of the model be improved?**
- **Can we identify "next-generation" process improvement methodology? Are there "breakthrough" concepts that we can apply to overall process improvement?**
- **Can we achieve one representation?**
- **Is the CMMI v1.2 Constellation Strategy the right approach?**
- **How do we make training more efficient and effective?**



“Beyond V1.2” Workshops -2

Can CMMI be harmonized with other standards and continuous process improvement efforts?

- **Agree that harmonization should be a goal, but should not slow progress too much**
- **Harmonization efforts take time**
 - **(This may be the only formal harmonization effort)**
Currently, 15288 being harmonized with 12207 (ongoing several years). Recent work in this area to come out soon.
- **Are there “standards” we want to focus on?**
 - **Standards**
 - **Process Improvement Methods**
 - **9001, 14000 (environmental standard), AS 9100, FAA Standard (Aviation Critical Safety Items), 15288, 12207, 15504, ITIL, COBIT, Sarbanes-Oxley, 632 (Systems Engineering), 1220, Malcolm Baldrige, Six Sigma [not all standards here are at the same level of abstraction], PM BOK and OPM3**



“Beyond V1.2” Workshops -3

How can we "slim down" the CMMI models while still preserving integrity?

- **How can we make this more user friendly?**
- **Can we slim down for small projects? Can the model have some scalability according to various factors (e.g., project size, PoP, organization size)?**
- **How do focus topics fit in with the model?**
- **Consider options for packaging (remove redundant stuff or repackage better)**
- **Consider fundamental, intermediate and advanced volumes**
- **Consider architectural views for appropriate for the different using communities**
- **Consider streamlining the generic practices and look at measures for institutionalization**
 - **Consider folding the GPs into PAs [note risk of losing integrity]**



“Beyond V1.2” Workshops -4

Do we need something different or additional to define High Maturity? (Part I)

- **Focus on the best practices, not focus on the high maturity aspects**
- **Consider combining level 4 and 5 into one level because of their close tie**
- **4 and 5 are not adequately elaborated for implementation so these may need more detail to drive proper behavior**
 - **For example, if we tie level 4 and 5 to business objectives this may need to be a practice**
 - **If there are additional requirements for the model these can be turned into practices. E.g., High maturity body of knowledge and high maturity training**
 - **Risk: adds more to the model**



“Beyond V1.2” Workshops -5

Do we need something different or additional to define High Maturity? (Part II)

- **Consider redistributing practices across the levels to even out effort and expectation**
- **Atlas study items that impact the model and results**
- **Consider maturity levels within PAs (e.g., project management PAs for each level)**
- **Consider better interfacing approaches with other methodologies (e.g., six sigma for high maturity)**



“Beyond V1.2” Workshops -6

How can repeatability, coverage (scope) and consistency of the model be improved?

- **Coverage (Scope)**

- **Areas for consideration:**

- **Operations, Support, Transition to operations, Deployment, Disposal, Pre-project, Proposal, sustainment, transition to production, production/manufacturing, training**
- **Better coverage of maintenance and technical reviews**
- **Safety, security, dependability, systems assurance, environmental**
- **Strategic planning, enterprise management, finance**
- **Work force management and development**
- **IR&D, Advanced technology, advanced technology test bed or lab environment**
- **Small settings**
- **Product lines**
- **Business practices**
- **Information management (both enterprise and project)**



“Beyond V1.2” Workshops -7

What are the "next-generation" process improvement methodology? Are there "breakthrough" concepts that we can apply to overall process improvement?

- **Consider how CMMI could interface with other process improvement methodologies (e.g. Lean, six sigma, PMBOK, theory of constraints, next generation IDEAL)**
- **Integration of how people use the various methodologies (same list as above)**
 - **Agile techniques (extreme programming), TSP/PSP**
- **When everyone is level 5, then what?**
 - **Consider optimizing measurements**
- **Consider an emphasis on process performance effectiveness and efficiency, (e.g., effectiveness 6 sigma, efficiency LEAN)**
- **How do we measure program health?**
 - **Need for “leading indicators”**



“Beyond V1.2” Workshops -8

What representation should we have (e.g., Staged, Continuous)? (Part I)

- **Is the question really level-mania? (root cause?)**
 - Level-mania is about doing the minimal work to achieve a level ignoring what you did to achieve the grade
 - Levels are not bad, but we need to get the integrity of the level back up
- **Provides a roadmap for projects to break PI into pieces**
- **Guidance for where improvement is needed**
 - Risk: has 5 been around so long that getting rid of it will have unintended consequences?
- **Maybe we have a 5 level model that only really has 3. Redesign the model to address this**



“Beyond V1.2” Workshops -9

What representation should we have (e.g., Staged, Continuous)? (Part II)

- **How can we make two representations fit the same model?**
- **If the model is expanded to handle additional scope, then we may need to consider changes in the way appraisal results are presented due to sponsor driven time constraints [packaging]**
 - **How do we slim at the same time as providing better understanding and cover all the things that are need?**
 - **As you expand scope, do you need to abstract concepts versus mega model?**
 - **[Scope, slimming] Need a vision and plan for model evolution**
 - **Consider a “fixed size” approach and looking at ways to present the remaining information**
- **Consider pulling out OPF and coupling it with levels 4 and 5**
- **Don’t need to cover everything in the same model (packaging)**



“Beyond V1.2” Workshops -10

Is the CMMI v1.2 Constellation Strategy the right approach?

- **Alternative approach: Start with a CMMI Model Framework (CMF) and add where you need to expand scope (+ concept)**
- **Are there differentiators for constellations?**
- **Instead of creating constellations, encourage projects to do what makes sense with respect to what they are doing using the parent model**
 - **Consider looking at lifecycle and what is needed at each phase**
 - **Can the unsophisticated tailor the parent model for their perspective?**
- **How multiple constellations can be used in an organization for improvement and appraisal?**



“Beyond V1.2” Workshops -11

How can we "slim down" the CMMI appraisals while still preserving integrity? How do we eliminate non-value add in appraisal and appraisal preparation? How do we make appraisals more efficient and effective?

- **Consider making the appraisal be focused on goals**
- **Add an appendix for application practices**
- **Lead Appraiser and the Appraisal Team should have enough experience to review company implementations**
- **Make some assumptions that some processes are in place (e.g., assume project planning has happened, but don't look at PP specifically unless you see something out of place in PMC; similarly, could start with IPM for a level 3, or QPM for a level 4)**
 - **Need more guidance on where and how you might be able to do this**
- **More official or formal mechanisms for sampling coverage**
 - **Consider cost implications...**



“Beyond V1.2” Workshops -12

Can we identify "next-generation" appraisal methodology? Are there "breakthrough" concepts that we can apply to overall appraisals?

- **Delta appraisal, continuous, incremental, using measures to judge satisfaction, leading indicators, process performance measures, program health (versus process health), 15504 (SPICE), EIA 732 (percentage of practices performed, effectiveness of generic attributes)**
- **Data reuse from previous appraisals**
- **Appraisal by parts**
 - **Example, OSP separate from projects**
 - **CMF separate from model components unique to constellations**
 - **Certify processes instead of model (e.g., EV or SEMP)**
 - **Sponsor commits to ongoing process improvement**



“Beyond V1.2” Workshops -13

How do we improve the trust and believability in the results of the appraisals?

- **Process enactment tools can help with approval (workflow management)**
- **Need to define consistent process for OSP tailoring approval**
- **Requiring the appraisal be redone every three years will help with believability (already in place)**
 - **Consider notion of visits or interim steps (like ISO surveillance audits)**
 - **Six month assessments focus on correlation between results and performance (process reviews)**
 - **Doesn't interrupt the program and not as expensive**
 - **What if you could extend the life of your appraisal if you did interim review? What is in it for the organization to provide incentive for the use of reviews?**
 - **Would the customer accept the results of the interim review?**



“Beyond V1.2” Workshops -14

How do we improve the trust and believability in the results of the appraisals?

- **What should the results of a bad review be? Should you lose your level? Could you use the delta appraisal here?**
- **How are organization changes that may impact the process capability tracked?**
 - **Consider adding a practice to the model for these changes**
- **Would interim reviews impact the capability profile**
 - **Might “red flag” the program or organization**
- **What happens if you miss by one practice in the full appraisal?**
 - **Do I get rewarded if I fix it? Consider delta approach**
 - **Consider a more formal mechanism to track changes that may impact the process capability or level**



Next Steps for you...

- **Send us your ideas**
 - Form available on-line from SEI
 - <http://www.sei.cmu.edu/cmmi>
 - Submit like a Change Request
- **Watch for further opportunities to participate...**
 - NDIA and SEI intend to conduct more Workshops in the near future
 - Announcements will be made by NDIA and SEI



Services Content for CMMI

- **Draft CMMI-SVC started in 2006**
 - Material was sent to stakeholder group for review/comment
 - Work halted in April 2007 to focus on integrity and CMMI-ACQ
- **In June 2007 issues on viability and need for services content were posed**
 - Business case justification
 - Usefulness for small businesses
 - Need within Department of Defense
 - Intended usage
 - Content options
- **Nov 12, 2007 CMMI-SG discussed all issues; voted to proceed to add Services content to CMMI Product Suite**
 - 1st step is to address all review comments provided prior to work halt
 - 2nd step is address options for including the content



Summary

- **CMMI has clearly reached far more users than ever envisioned.**
- **Continuing to focus on appraisal quality and integrity.**
- **CMMI-ACQ model released**
 - **2nd constellation in the CMMI Product Suite**
- **CMMI “Beyond v1.2” Planning & Strategy is underway**
- **Services Content effort is underway**

We welcome your feedback