



Carnegie Mellon University
Software Engineering Institute

Process Maturity Profile of the Software Community 2000 Year End Update

March 2001

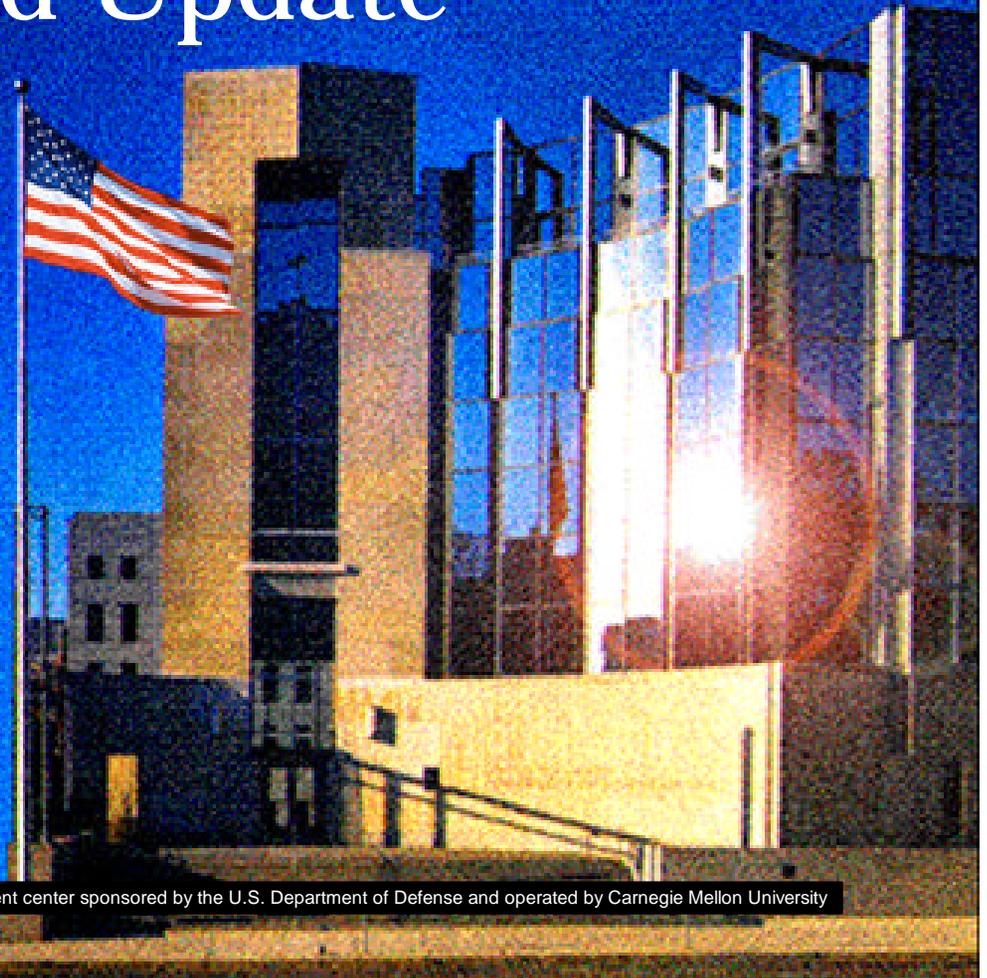
We could not have produced this report without the support of those organizations and lead assessors who have returned their appraisal information to the SEI.

Our gratitude goes to them for their continued cooperation with our data collection and analysis effort.

Software Engineering Measurement and Analysis Team

The Software Engineering Institute is a federally funded research and development center sponsored by the U.S. Department of Defense and operated by Carnegie Mellon University

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Outline

Introduction

Current Status

Community Trends

Organizational Trends

Summary



Introduction -1: Purpose and Source

Characterize the process maturity of the software community

This briefing uses information from reports of CMM[®] Based Appraisals for Internal Process Improvement (CBA IPIs) and Software Process Assessments (SPAs)

© CMM, Capability Maturity Model and Capability Maturity Modeling are registered in the U.S. Patent and Trademark Office.



Introduction -2: Data Description

CBA IPIs and SPAs conducted since 1987 through December 2000 and returned to the SEI by January 2001

- **1798 assessments**
 - 1312 CBA IPIs**
 - 486 SPAs**
- **1380 organizations**
- **371 participating companies**
- **339 reassessed organizations**
- **7393 projects**

Please refer to: Terms Used in this Report on page 29



Introduction -3: Report Contents

This briefing includes three primary sections:

- **Current Status**
 - **Snapshot of the software community based on the most recent assessment, since 1996, of reporting organizations**
- **Community Trends**
 - **Global distribution of assessments**
 - **Growth in the number of assessments performed**
 - **Shifts in the maturity profile over time**
- **Organizational Trends**
 - **Analysis of Key Process Area (KPA) satisfaction**
 - **Time to move up in maturity**



Current Status

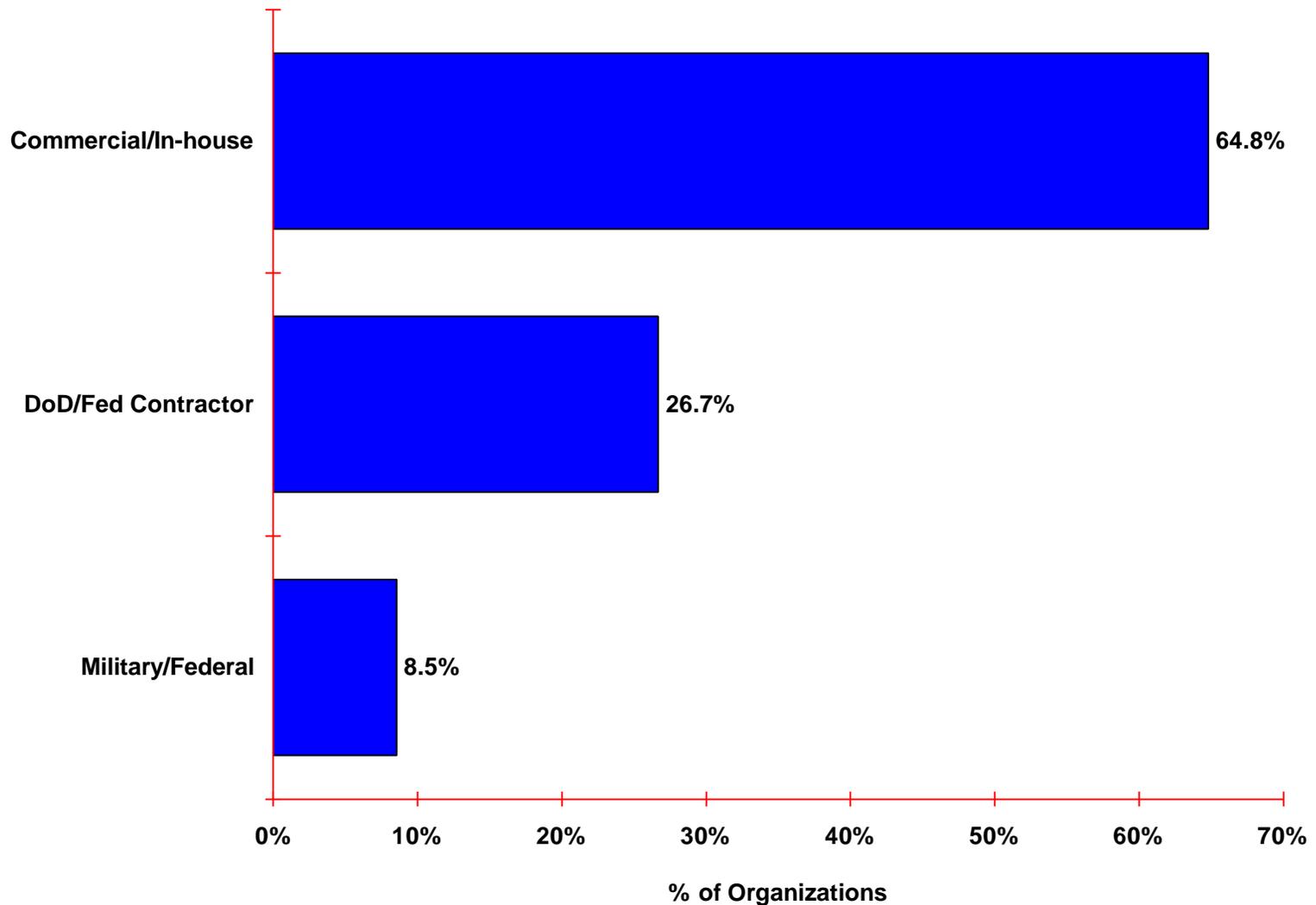
Assessments conducted from 1996 through December 2000

- **1012 organizations**
- **302 participating companies**
- **4783 projects**
- **32.7% offshore organizations**

Please refer to: **Terms Used in this Report on page 29**



Reporting Organization Types

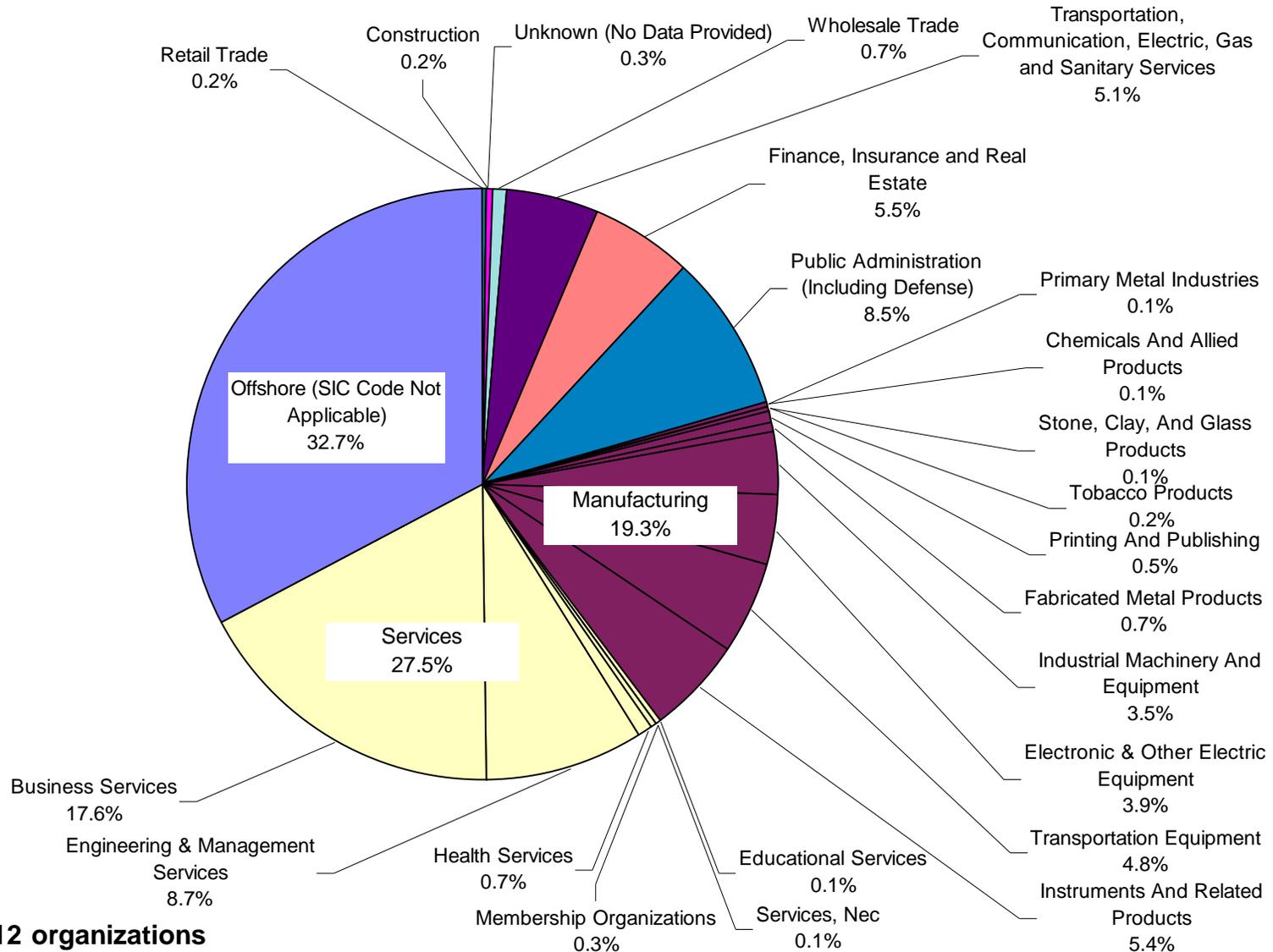


Based on 1012 organizations



Types of Organizations

Based on Primary Standard Industrial Classification (SIC) Code

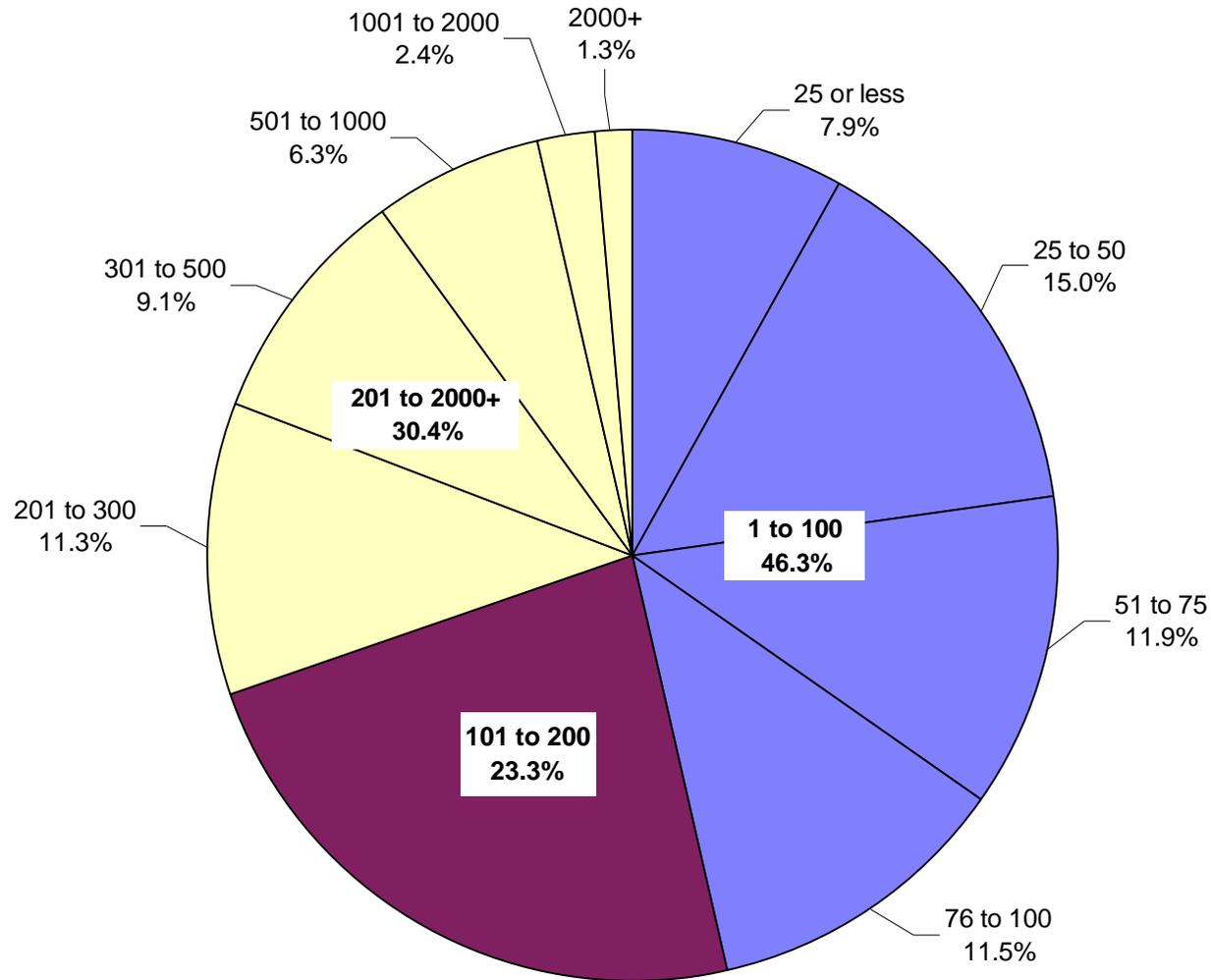


Based on 1012 organizations



Organization Size

Based on the total number of employees primarily engaged in software development/maintenance in the assessed organization

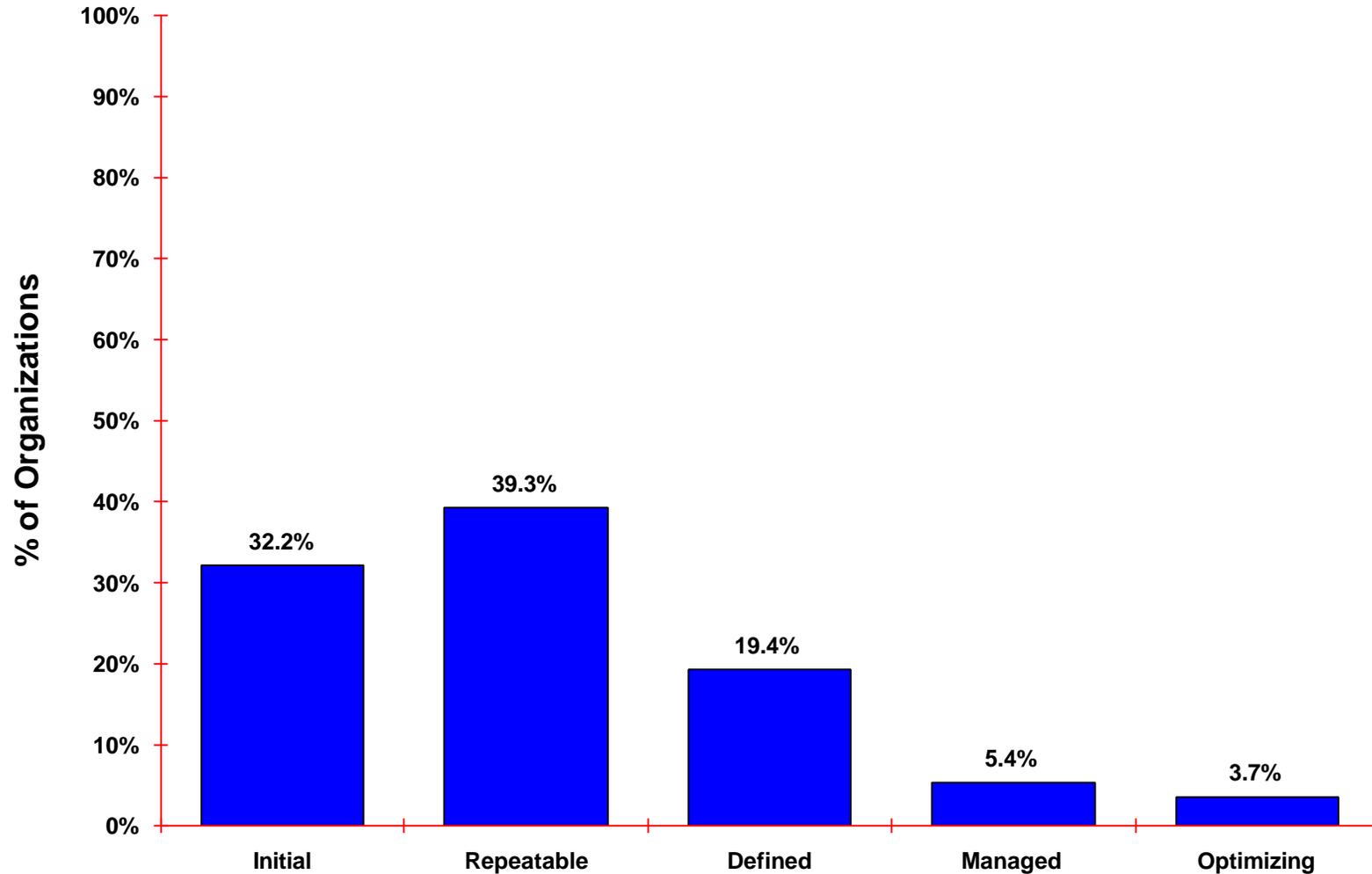


Based on 922 organizations reporting size data



Organization Maturity Profile

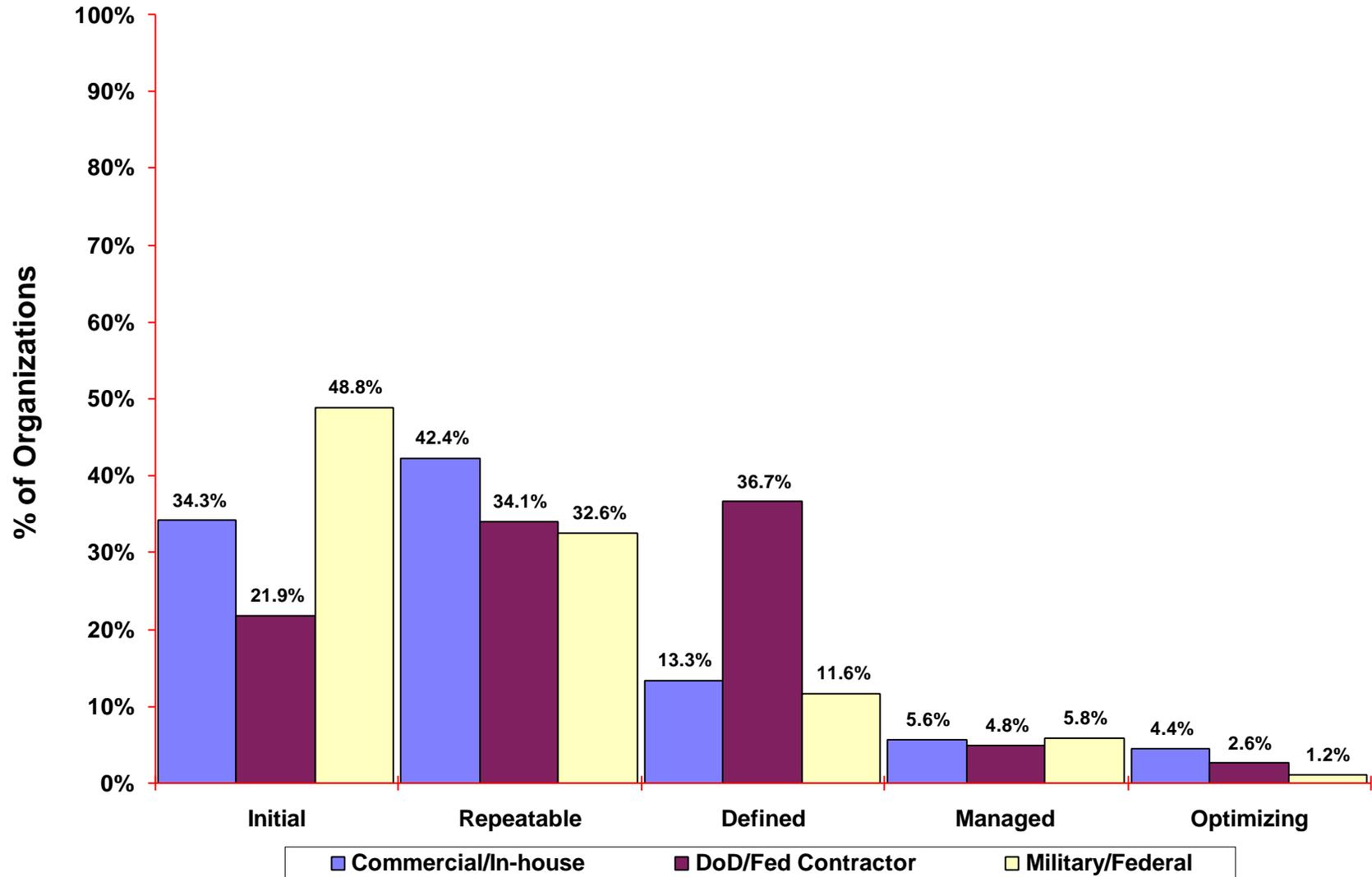
March 2001



Based on most recent assessment, since 1996, of 1012 organizations. For a perspective, please see page 18.



Maturity Profile by Organization Type

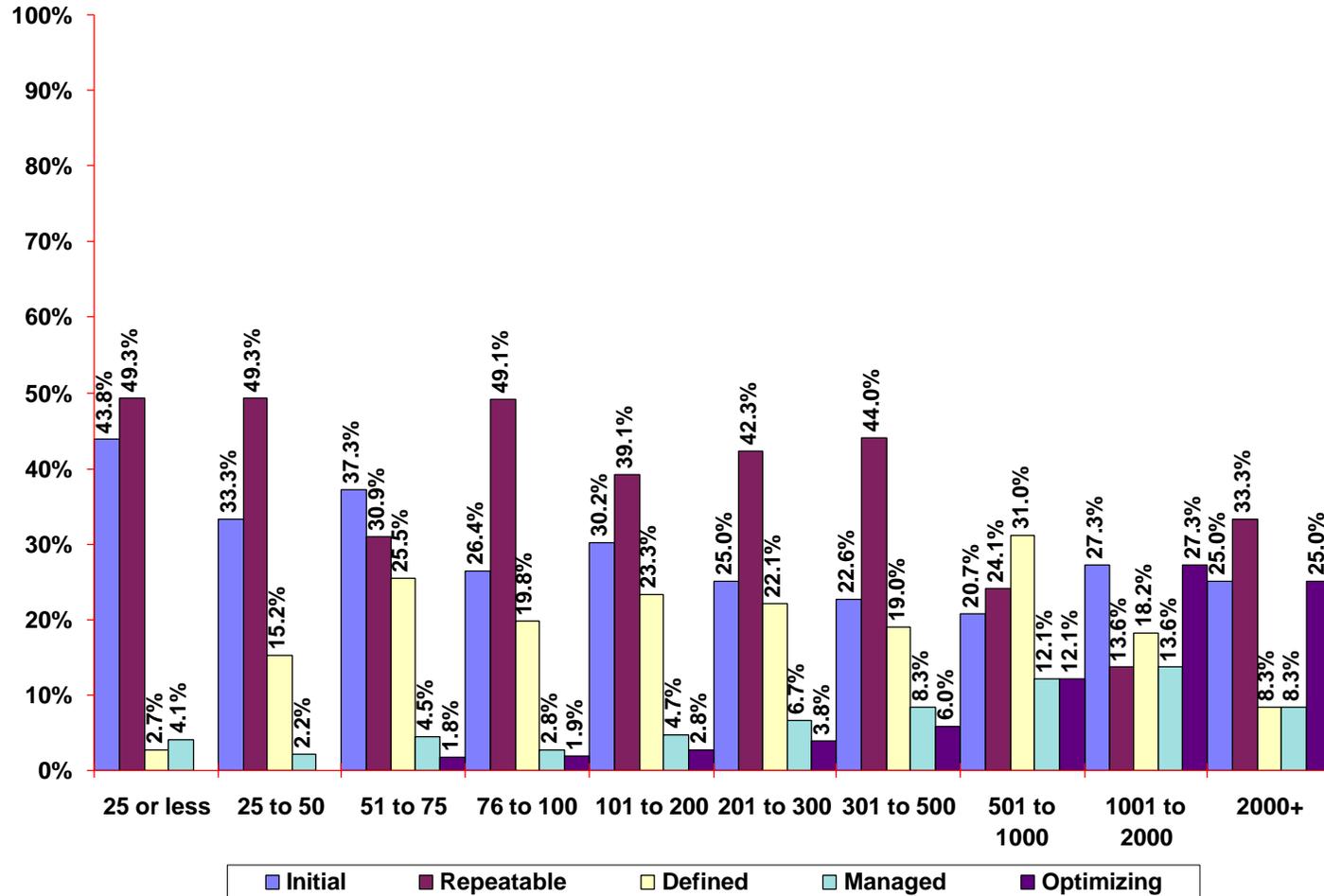


Based on most recent assessment, since 1996, of 1012 organizations



Maturity Profile by Organization Size

Based on the total number of employees primarily engaged in software development/maintenance in the assessed organization

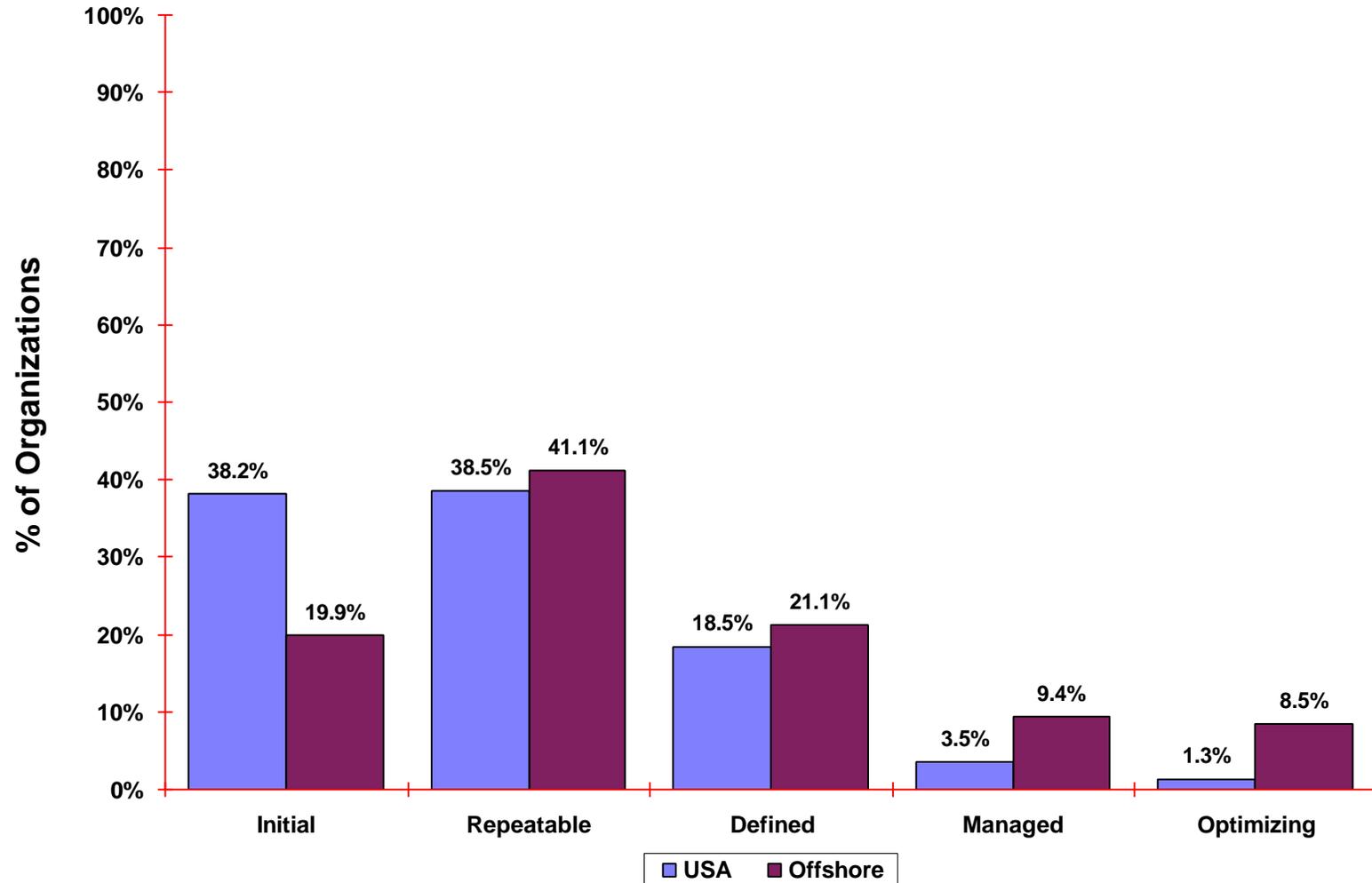


The 1001 to 2000 and 2000+ categories are of a small percentage which will inflate the maturity level bars. Please see page 9 and take this into account. The purpose of this chart is to indicate that all size categories contain most, if not all, maturity levels.

Based on 922 organizations reporting size data



USA and Offshore Organization Maturity Profiles



Based on 681 U.S. organizations and 331 offshore organizations



Community Trends

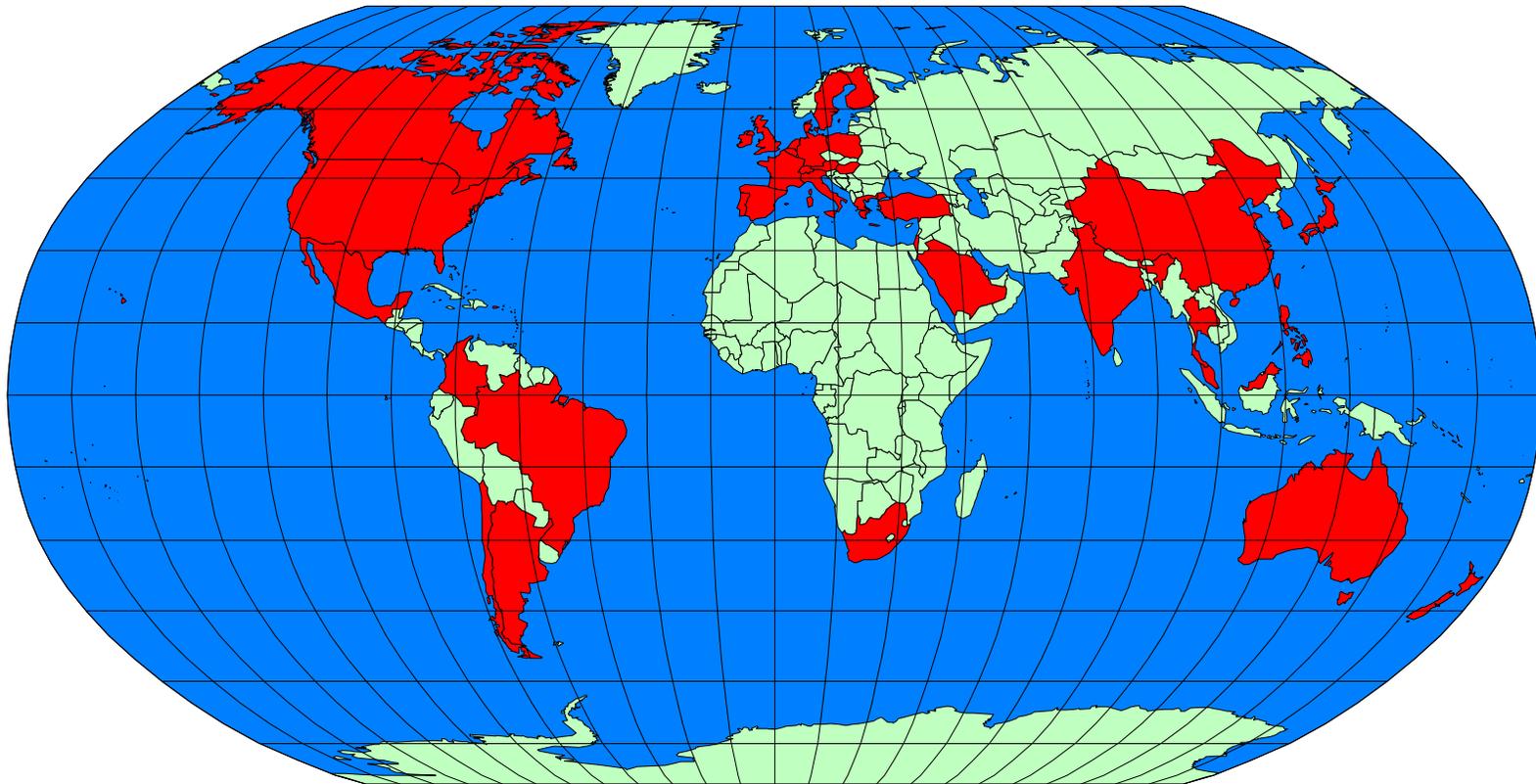
Assessments conducted from 1987 through December 2000

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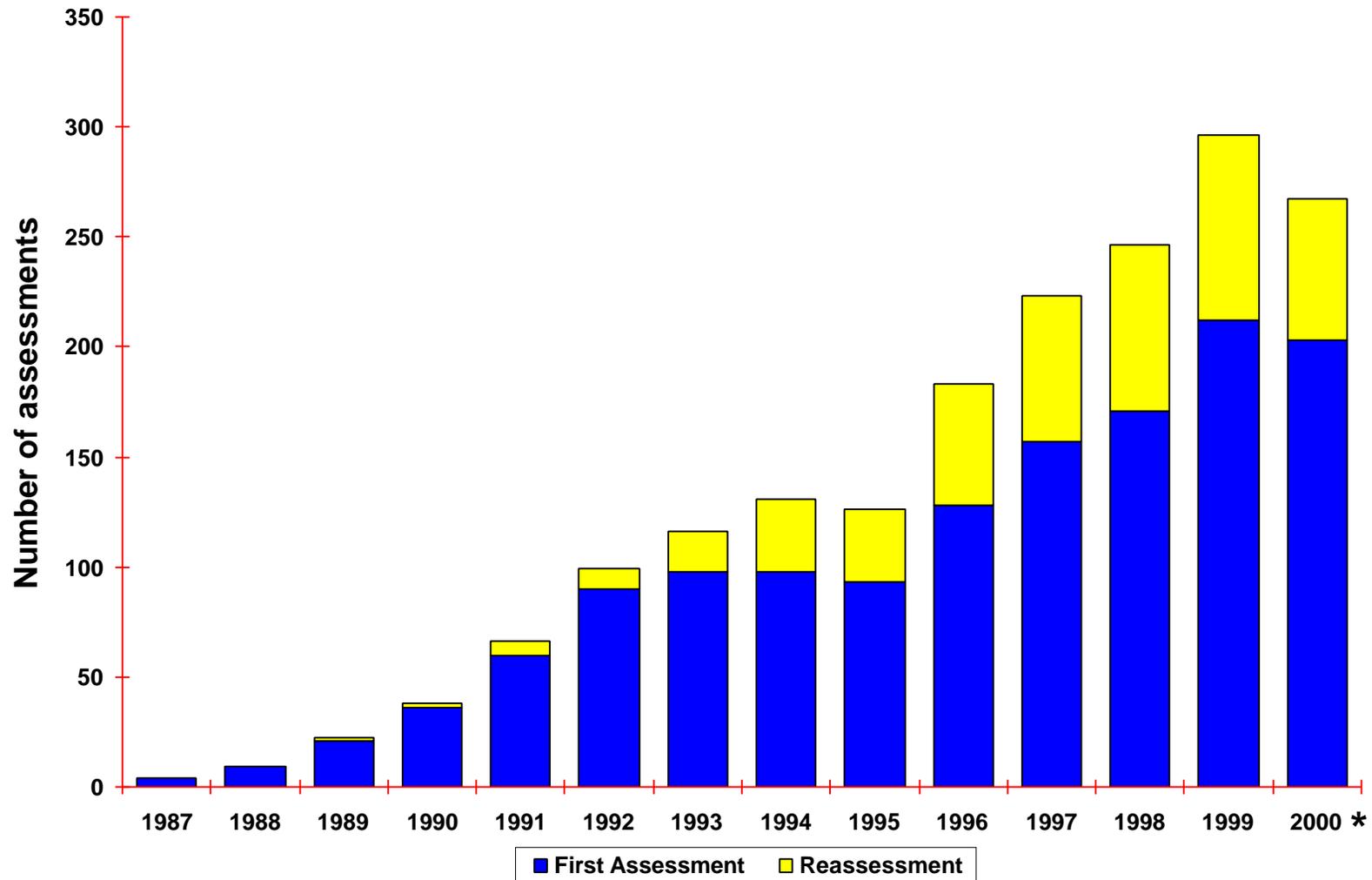
Countries where Assessments have been Performed and Reported to the SEI



Argentina	Australia	Austria	Barbados	Belgium	Brazil	Canada	Chile
China	Colombia	Denmark	Finland	France	Germany	Greece	Hong Kong
Hungary	India	Ireland	Israel	Italy	Japan	Korea, Republic of	Malaysia
Mexico	Netherlands	New Zealand	Philippines	Poland	Portugal	Puerto Rico	Saudi Arabia
Singapore	South Africa	Spain	Sweden	Switzerland	Taiwan	Thailand	Turkey
United Kingdom	United States						



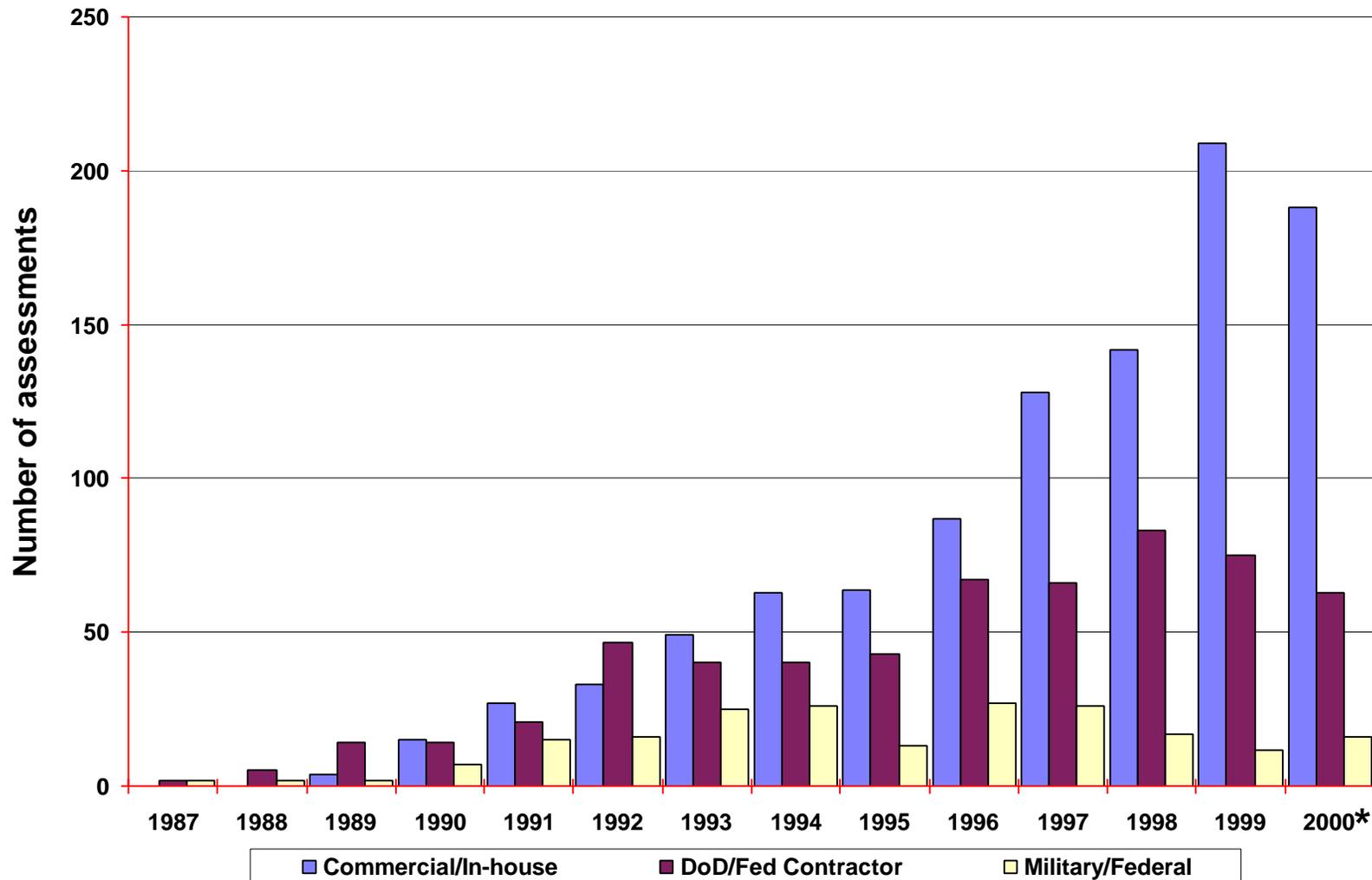
Number of Assessments Reported to the SEI by Year



Based on 1798 assessments conducted through Dec 2000 and reported to the SEI by Jan 2001 *



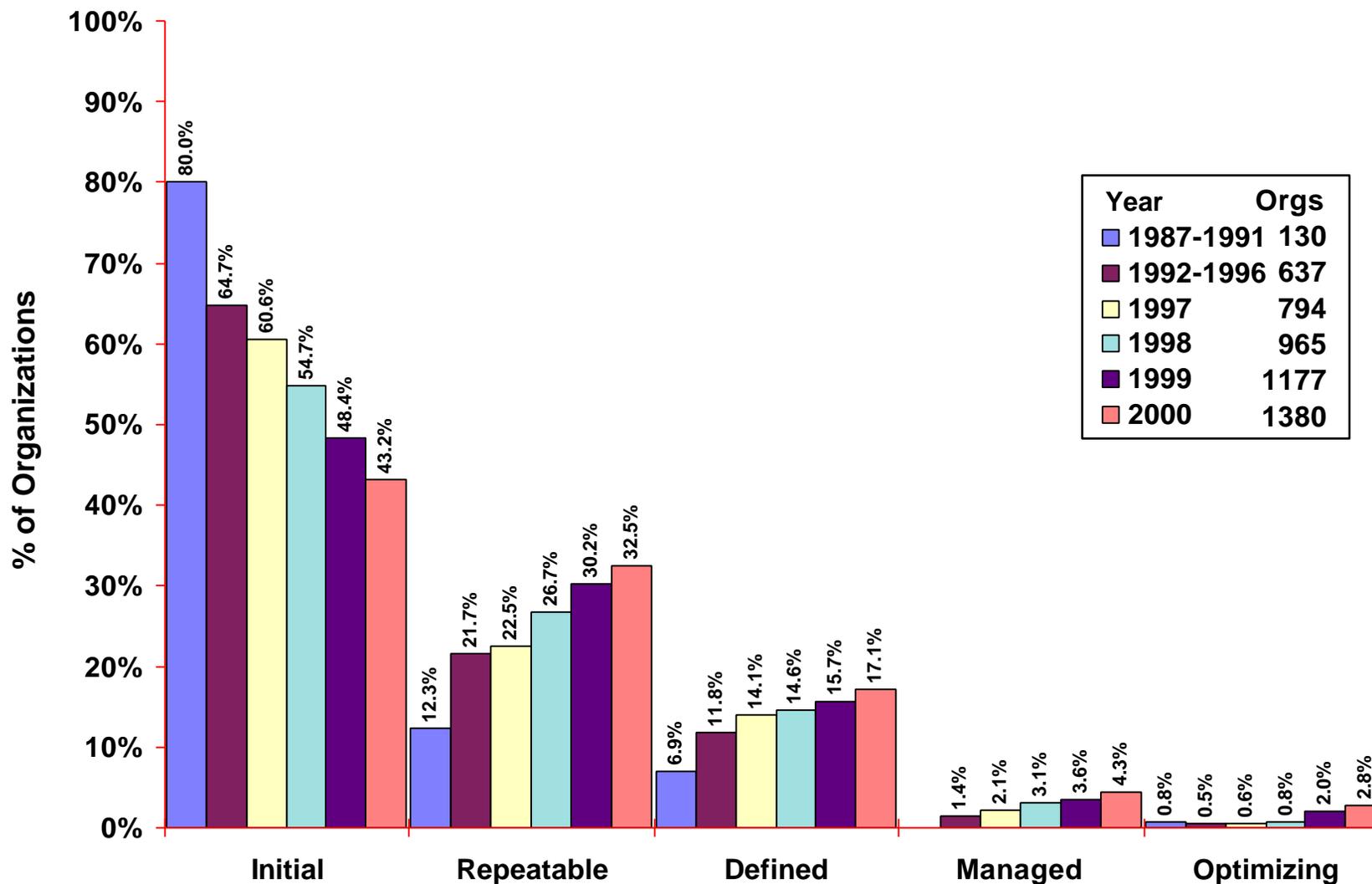
Number of Assessments Reported by Organization Type and Year



Based on 1798 assessments conducted through Dec 2000 and reported to the SEI by Jan 2001 *



Trends in the Community Maturity Profile



Based on a cumulative view of the most recent assessments of organizations up through the year indicated. This accounts for the difference from the figures on page 10.



Organizational Trends

Assessments conducted through December 2000

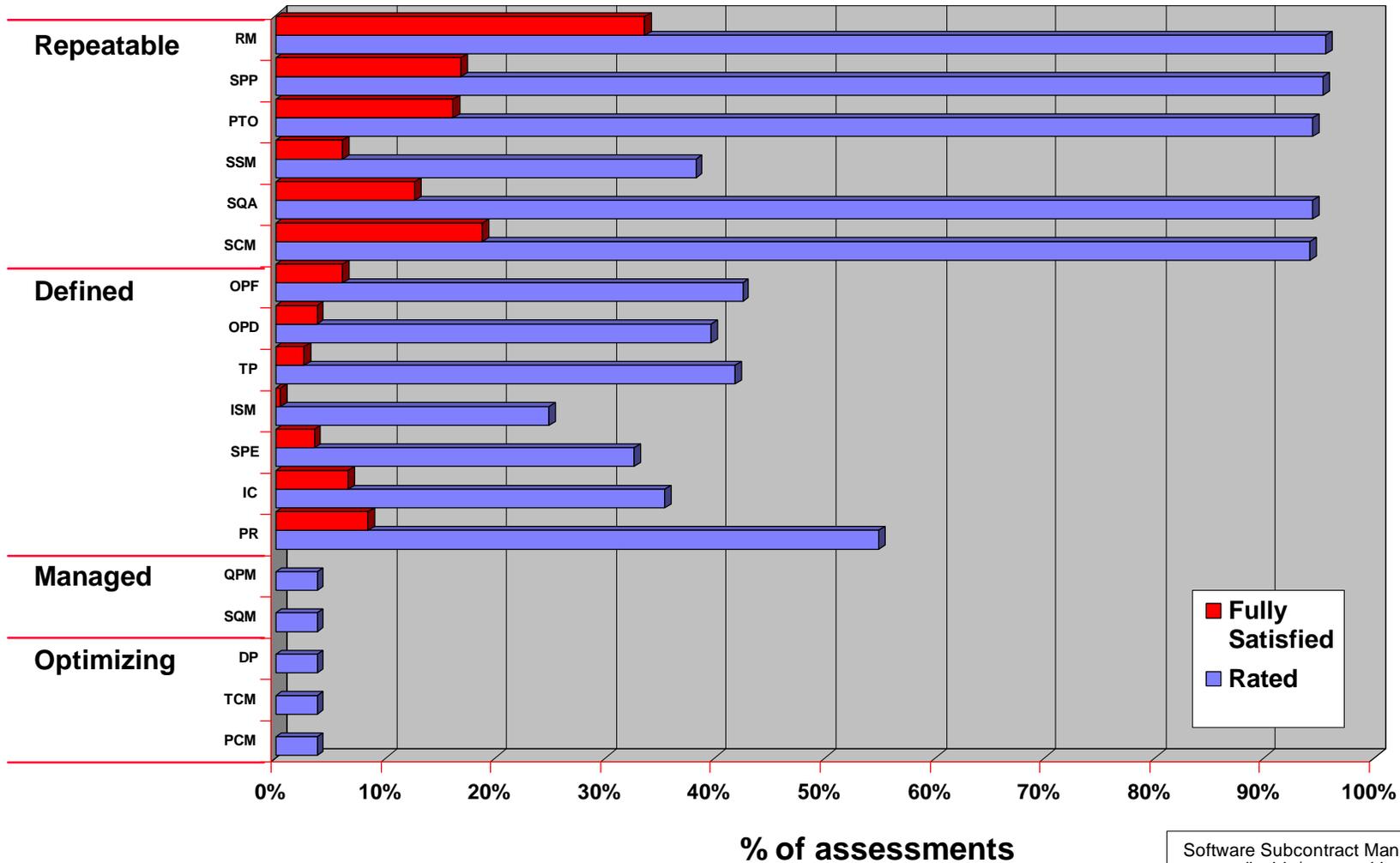
- **929 Key Process Area (KPA) profiles**
 - satisfaction of KPAs by maturity level for organizations assessed at levels 1 and 2
- **339 reassessed organizations**
 - accounting for 766 assessments
 - although some organizations conducted multiple reassessments, only the first and latest assessments were used in creating the charts on pages 22 & 23

Please refer to: Terms Used in this Report on page 29



Key Process Area Profiles -1

Organizations Assessed at Level 1



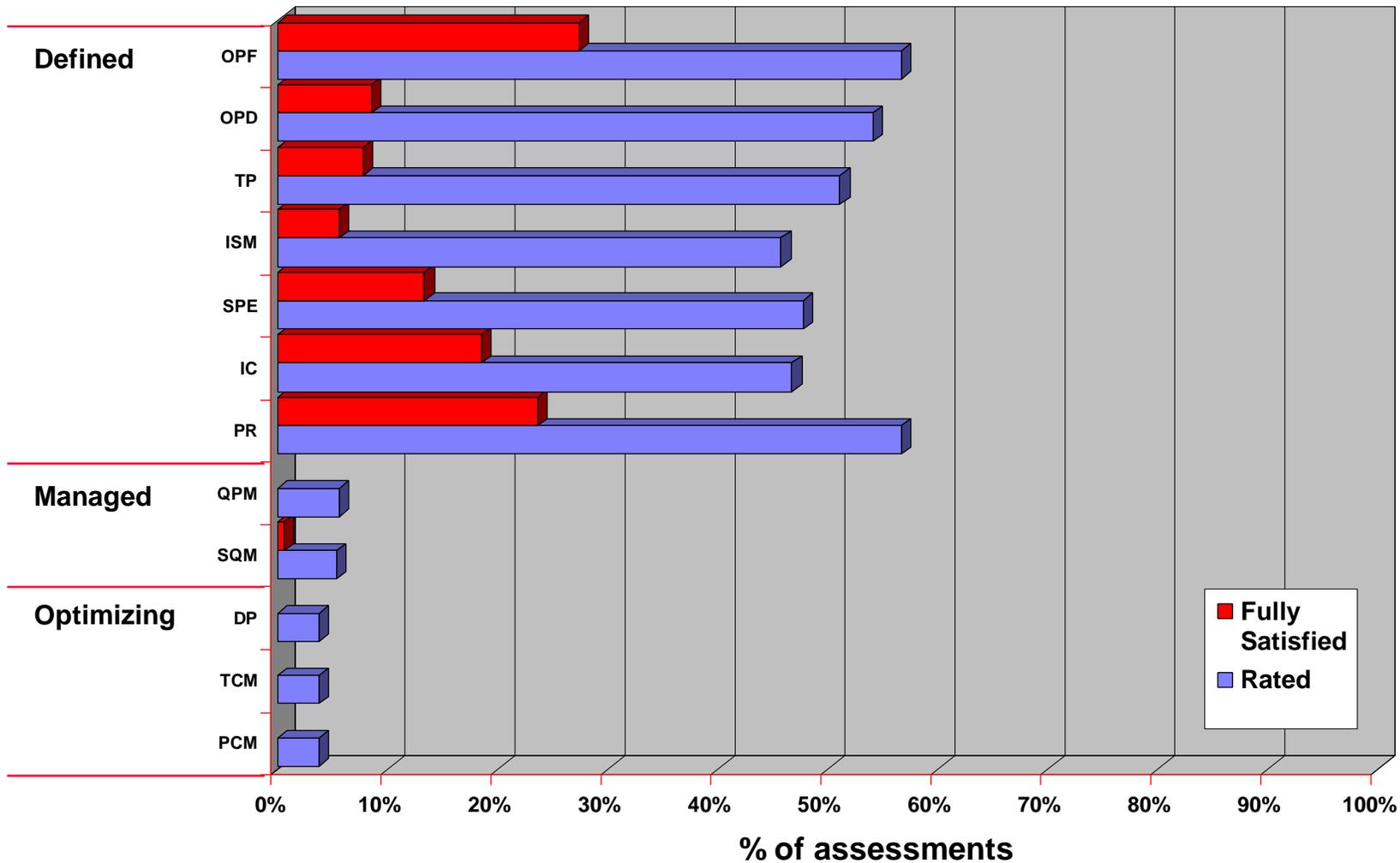
■ Fully Satisfied
■ Rated

Software Subcontract Management (SSM) is not applicable/not rated in many assessments. Please take that into account when interpreting its Fully Satisfied rating.

Based on 426 IPI assessments



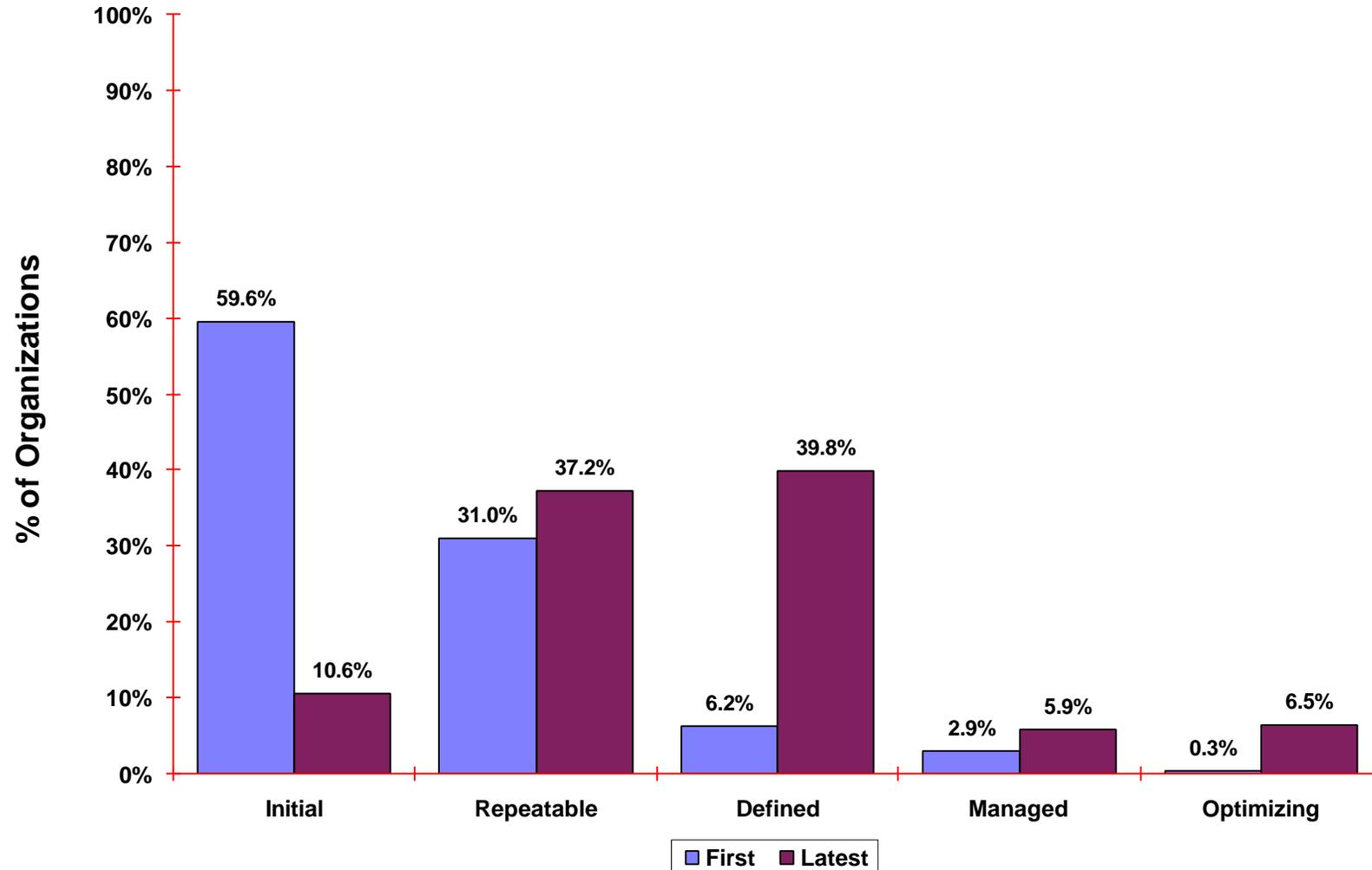
Key Process Area Profiles -2 Organizations Assessed at Level 2



Based on 503 IPI assessments



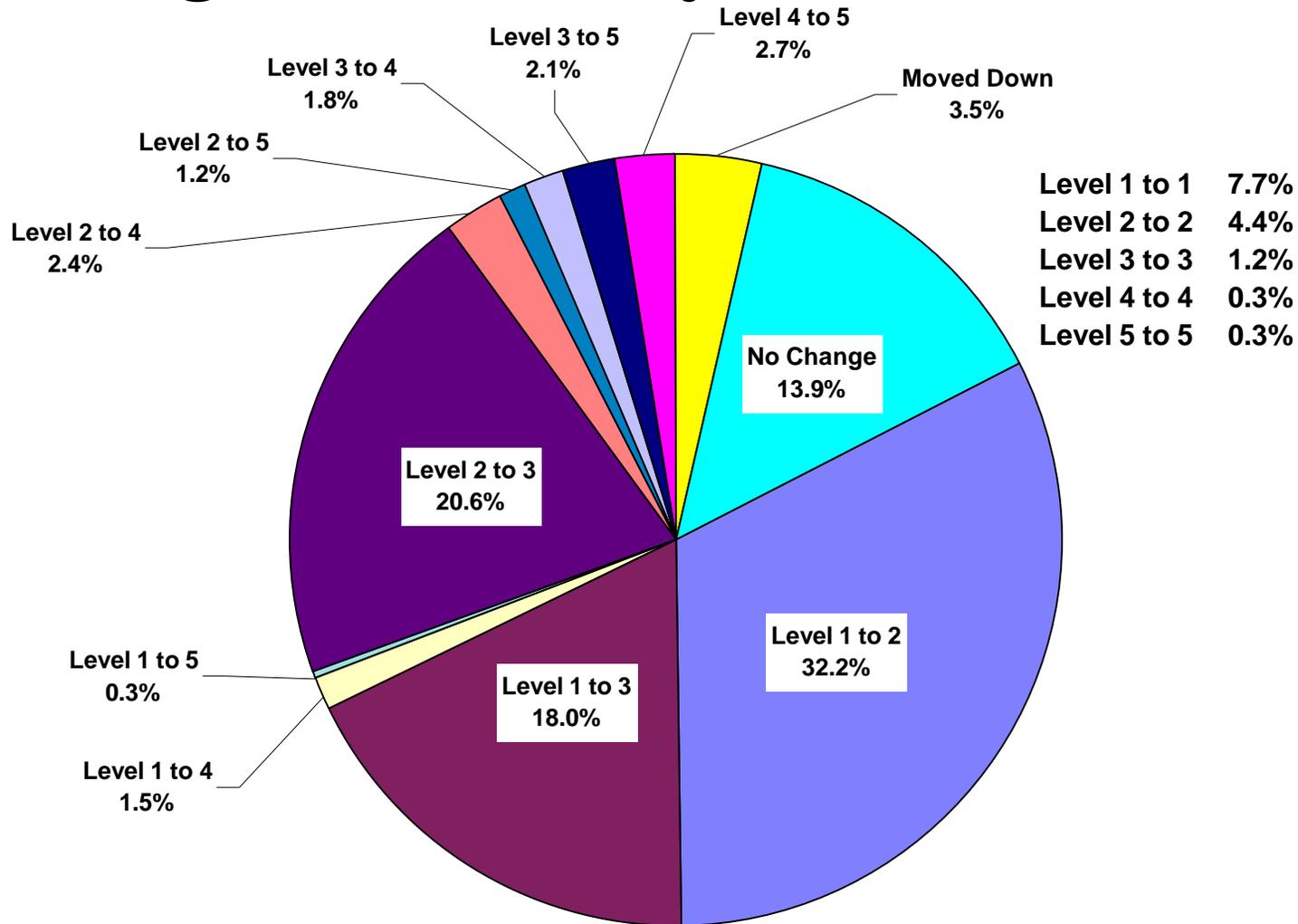
Maturity Level of First and Latest Assessments



Based on 339 reassessed organizations using their first and latest assessment



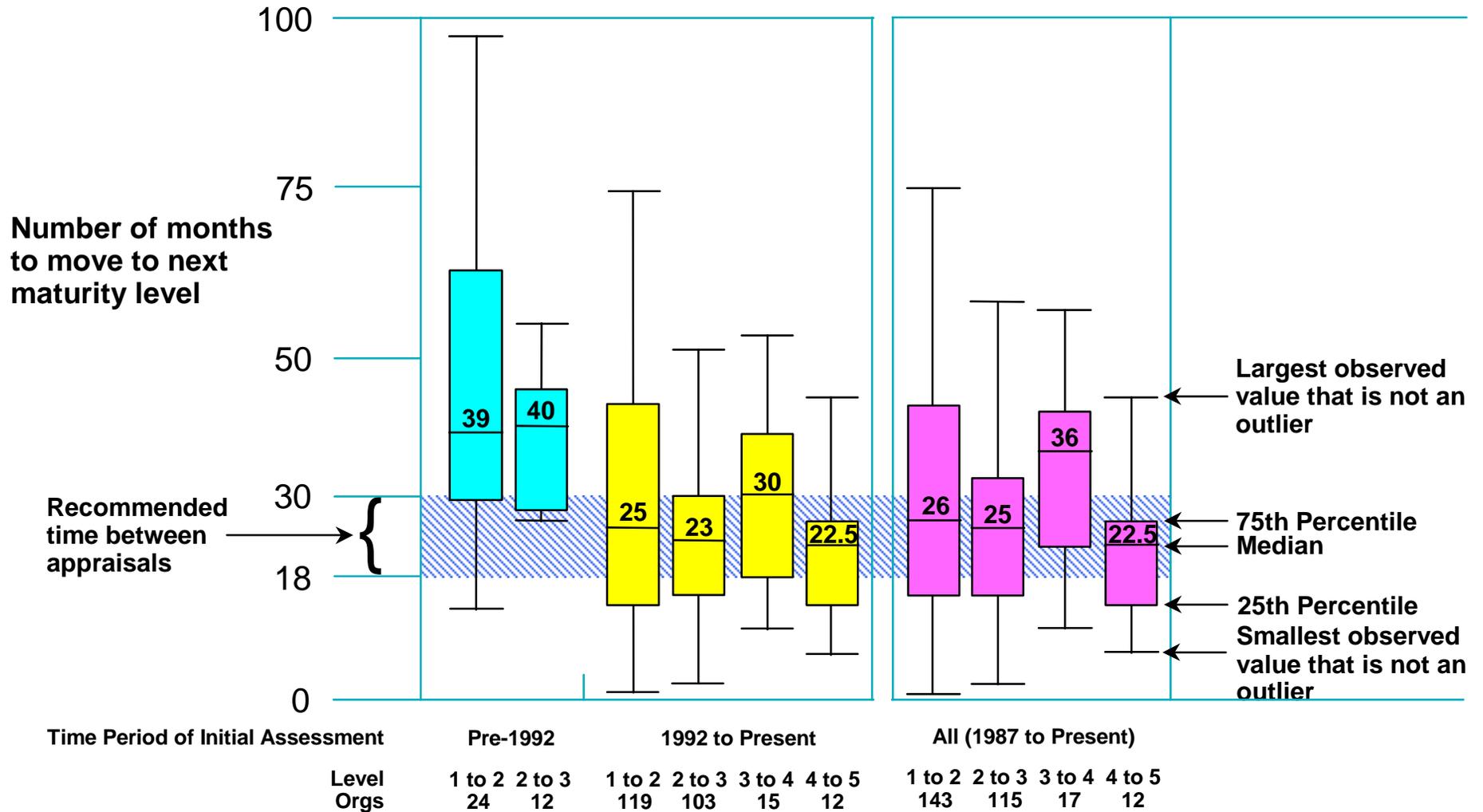
Reassessments Change in Maturity Level



Based on 339 reassessed organizations using their first and latest assessment



Time to Move Up





Maturity Summary - 1

Current Status

Increasing proportion of commercial and in-house organizations

Of U.S. organizations, the services and manufacturing industries are conducting the most software process assessments

Nearly half of the organizations reporting size have 100 or less software personnel



Maturity Summary - 2

Community Trends

Overall community profile continues to shift towards higher maturity

Trend towards higher maturity profile for offshore organizations compared to U.S. organizations continues



Maturity Summary - 3 Organizational Trends

Software Quality Assurance is the least frequently satisfied level 2 KPAs among organizations* assessed at level 1

Integrated Software Management and Training Program are the least frequently satisfied level 3 KPAs among organizations* assessed at level 2

Higher maturity has been reached among those organizations reporting reassessments

*Adjusted for number of organizations rating the KPA.



Maturity Summary - 4

Organizational Trends (continued)

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 25 months**
- **maturity level 2 to 3 is 23 months**
- **maturity level 3 to 4 is 30 months**
- **maturity level 4 to 5 is 22.5 months**



Terms Used in this Report

- Assessments** - The assessment methods used in this report are the **Software Process Assessment (SPA)** and **CMM-Based Appraisal for Internal Process Improvement (CBA IPI)**. 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 organization**
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.
- Offshore** - **An organization whose geographic location is not within the United States**. The parent of the organization may or may not be based within the United States.
- Organization** - **Appraised entity**
The organization unit to which the appraisal results apply. An appraised entity may be any portion of an organization including an entire company, a selected business unit, units supporting a particular product line or service, etc..



Feedback & Questions Welcome

We are always interested in improving the maturity profile to serve you better. To do this, we need to know a little more about you. Please let us know

- 1. How you use the information in this report**
- 2. What additional information would you like to see presented in the maturity profile report**
- 3. If there is a problem in your supplying us with the required data to create the information you would like to see**

As always, if you have questions or comments, we would appreciate hearing them.

Please respond to: **PAIS**
Software Engineering Institute
4500 Fifth Avenue
Pittsburgh, PA 15213

or E-Mail to: **pais@sei.cmu.edu**

Include: **Your Name**
Address
Phone
Fax
E-Mail



Submit Your Appraisal Data

Visit our Web site for forms used to submit data and for future maturity profile reports:

<http://www.sei.cmu.edu/sema/packet.html>

Send the forms and your appraisal data to

PAIS

Software Engineering Institute

4500 Fifth Ave.

Pittsburgh, PA 15213



A Web Based Interactive Maturity Profile is available through the Software Engineering Information Repository

<http://seir.sei.cmu.edu>



- **Create a particular Maturity Profile chart for a more specific segment within the software engineering community**
- **The Interactive Maturity Profile contains all releases of the Maturity Profile. Of the charts within a Maturity Profile, fourteen can be customized.**
- **The segments are from our seven categories (Commercial, In-House, DoD or Federal Contractor, etc.) or from the Standard Industrial Classification Code.**
- **Best of all a chart can be enlarged and/or printed once you create it.**



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