CMMI® Performance Report Summary

How Organizations Leveraged ISACA®'s CMMI Performance Solutions to Consistently Improve Their Performance

JULY 2022





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HIGHLIGHTS

CMMI consistently improves business performance in the following ways.



Reduce defects by 46%

REFER TO PAGE 12



Improve product quality by up to 80%

REFER TO PAGE 12



Improve productivity by up to 77%

REFER TO PAGE 13



Average improvement in defect containment of 54%

REFER TO PAGE 11



Average improvement in reducing schedule variance of 64%

REFER TO PAGE 18

EXECUTIVE SUMMARY:

CMMI Performance Results

CMMI Performance Solutions is a proven, outcome-based performance improvement model providing faster, better, and cheaper results. CMMI is the globally accepted standard that improves and enhances organizational capability and performance. CMMI provides a prioritized pathway to build and implement new capabilities that deliver consistently measurable results and outcomes.

For 25+ years, high-performing organizations have achieved clear, sustainable business results with ISACA®'s Capability Maturity Model Integration (CMMI®) model. Originally created for the U.S. Department of Defense to assess the quality and capability of their software contractors, the CMMI model has expanded beyond software engineering to help organizations around the world, in any industry, understand their current level of capability and performance and offer a guide to optimize business results.

The information contained in this report is based on an analysis of the performance improvement results from just under 5000 approved appraisals from 2019-2021. These appraised organizations reported their "before and after" improvement objectives in the required CMMI Performance Report template with an astounding 81.3% achievement success rate for their targeted improvement objectives and another 3.5% soon to be achieved for a total of almost 85% across

Appraised organizations achieved an astounding

81.3%

Success Rate for their targeted objectives

key areas such as quality, cost management, schedule performance, productivity and more. Each of these results was identified and achieved by the organizations being appraised against CMMI, with the resulting performance improvements independently corroborated by independent CMMI appraisal teams.

"CMMI is a dynamic model with the ability to be updated quickly to include proven new methodologies and practices. By focusing more on meaningful outcomes and linking improvements with organizations' key business goals, CMMI provides value to organizations that extends well beyond appraisals and maturity ratings."

DR. BIN CONG

CMMI High Maturity Lead Appraiser and Instructor





Make a Shift

Help organizations shift from a compliance and processbased improvement model to a flexible framework of best practices that provides demonstrable and measurable capability performance improvement results.



Understanding

Help organizations understand how CMMI Performance Solutions can help them dramatically and consistently improve their business and address their critical pain points in secure product development, service delivery and operations, and supply chain management.



Show Results

Show CMMI benchmark results for different industries, geographies, types of work, and organizations.

Real-world data corroborated by independent CMMI appraisal teams.



Establish a Baseline

Establish a baseline for ongoing performance analysis and reporting and set the stage for an outcomes-based Key Performance Indicator and reporting capability.

"The CMMI journey has helped us develop a culture of process transformation with predictable delivery."

DEVENDER MALHORTA

Vice President and Global Head of Quality and Enterprise Risk Management, Wipro

THE ROLE OF THE CMMI PERFORMANCE REPORT:

Assess, Capture and Corroborate CMMI Capability and Performance Results

An integral component of CMMI, the Performance Report is completed by each appraisal team during the appraisal based on the objectives and measurement data the organization provides, and is corroborated with the organization appraised. The Performance Report is NOT just an appraisal artifact. It is a performance planning, data collection, and cross-checking performance improvement tool to verify business performance improvement before, during, and after the appraisal.

- While it cannot be used alone to determine a
 maturity or capability level rating, the Performance
 Report is used to verify if the appraisal findings and
 performance improvement results are consistent with
 the Performance Report
- The Performance Report provides a mechanism to assess tangible and measurable improvement along with meeting model Practice Area intent and value statements
- Enables the "self-raising bar" in the model and appraisal method for performance and High Maturity; appraisal teams must see and corroborate the performance improvements; this also becomes critical to understand previous performance improvement when doing re-appraisals
- Helps to identify critical performance weaknesses and improvement opportunity "anchor points" and makes performance improvement clear, transparent, intentional, and consistent
- For organizations pursuing High Maturity or who have already attained High Maturity, populating the Performance Report is the "Easy" button

"The CEO of Hangzhou Pailie
Technology noted that it was one of the
most valuable outputs of the overall
appraisal process because it helped
validate his organization's business
objectives and alignment to them, from
the QPPOs, baselines, and models. He
saw so much value in the Performance
Report following the appraisal, that it's
become part of the company's process
and process assets."

PASCAL RABBATH

Benchmarked Pty Ltd, CMMI Lead Appraiser

Shift to Continual Performance Improvements vs. Compliance

The CMMI model has successfully shifted the framework and product suite from a process compliance model to a business performance improvement model. A compliance-only focus typically assumes that quality/performance is a guaranteed outcome—this is typically NOT true.

Governance by senior management is critical for consistent improvement and innovation—it must be directed and purposeful. There must be a balance struck between performance improvement and compliance. Performance should drive compliance.

Performance practices and expected outcomes emphasize and focus on improving organizational performance to recognize a more visible return on investment (ROI). This reflects the modern business climate where performance is key to the success of every organization—no matter their maturity level. With performance built in at every level, organizations can plan a more methodical and step-by-step path to achieve better performance and High Maturity.

"Innovation and performance improvement requires discipline. Each aspect must be counterbalanced by tougher behavior that's less fun...rigorous discipline, a high level of individual accountability, and strong leadership."

SOURCE:

The Hard Truth About Innovative Cultures, Pisano, Gary, Harvard Business Review, Issue 97, Jan/Feb, 2019

Comparison of Compliance vs. Performance-Based Approach Fosters lasting organizational innovation, agility, and performance improvement Tendency to inflexibility puts long-term change, innovation and improvement at risk Tendency to become an additional level of administrative overhead without clear value to performance or bottom line Qualitative as well as quantitative indicators COMPLIANCE PERFORMANCE

Results

These results are based on over 16,000 performance objectives* appraised to CMMI Performance Solutions, reported, and registered with ISACA, and independently corroborated by CMMI Certified Appraisal Teams.

- Primary adoption in the United States, China, India, Mexico, and Spain
- Organizational Size: Most organizations had 1-100 staff, with the vast majority small businesses (50 full time employees [FTEs] or less)
- Types of Businesses: Information Technology,
 Professional Activities, Financial, Manufacturing,
 Transportation, and Commercial—not just Defense and Government Contracting
- Remarkable Results: 81.3% of reported objectives were met or exceeded; another 3.5% have the capabilities to meet in the future. All categories of business performance objectives showed significant performance improvement results
- Performance Results in Several Categories: quality, productivity, schedule performance, and customer satisfaction were the biggest categories of improvement

Demographics of Appraised Organizations

Countries

91.9% of appraisals recorded came from China, the United States, India, Mexico, and Spain See p. 21 in appendix for complete breakdown.





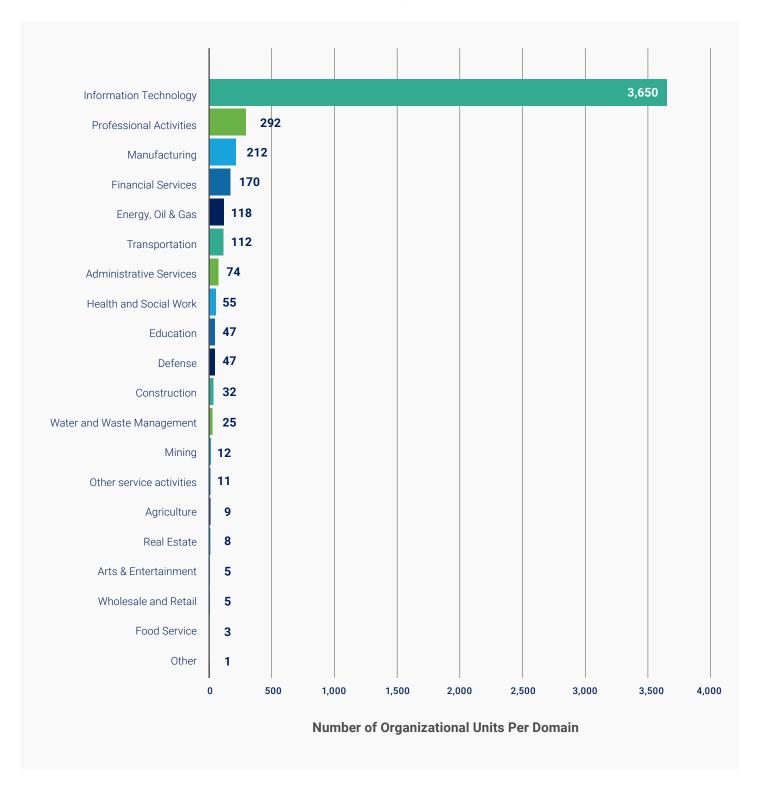
Business Size

A frequent misconception about CMMI is that it can only be adopted by large organizations. However, most organizations conducting appraisals can be described as Small- or Medium-sized Enterprises. Only 3% of the appraised organizations had over 500 FTEs.

^{* 4709} organizations conducted 4889 appraisals with a total of 16,567 performance objectives. Several organizations conducted more than one appraisal resulting in a larger number of appraisals compared to the number of organizations.

CMMI Adaptable to Multiple Industries

One of the exciting features of the impact of CMMI is the general breadth of its adoption. The model is used across a wide range of business domains. This chart illustrates the variety of business domains for the reported appraisals.



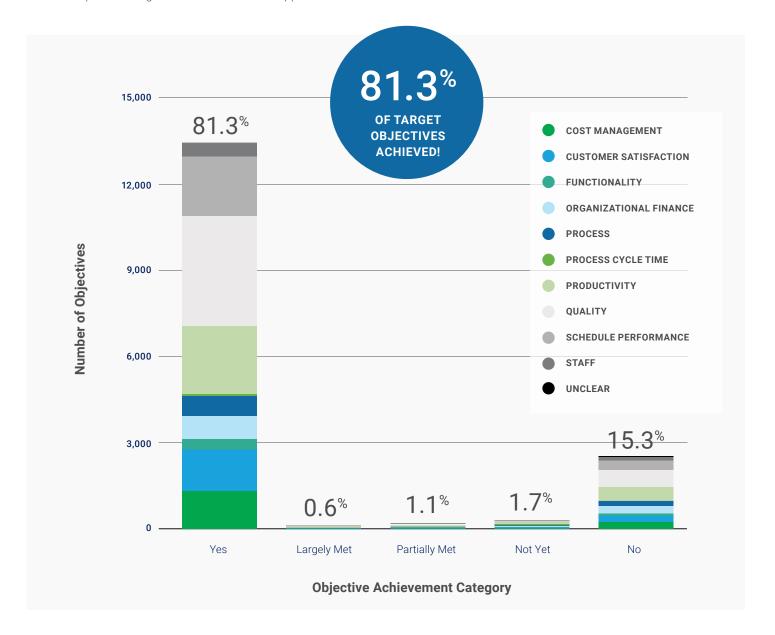
Goal Achievement

CMMI consistently enables and promotes organizational business performance achievement.

81.3% of reported objectives were met or exceeded; for the 18.7% not achieved, data shows 3.5% were on track to be achieved after the appraisal.

CMMI is a versatile tool for helping organizations improve in whatever areas are important to them. All categories of business performance objectives showed significant performance improvement results. All the improvement goals examined in these appraisals have

been set by the organizations themselves. This is an important distinction compared to more compliance-based improvement approaches. In a compliance-based approach, the evaluating body is not necessarily interested in whether the organization derives any benefits from adopting the relevant framework. But with CMMI, the key driver of improving performance is using the model.



Improvement Objective Categories

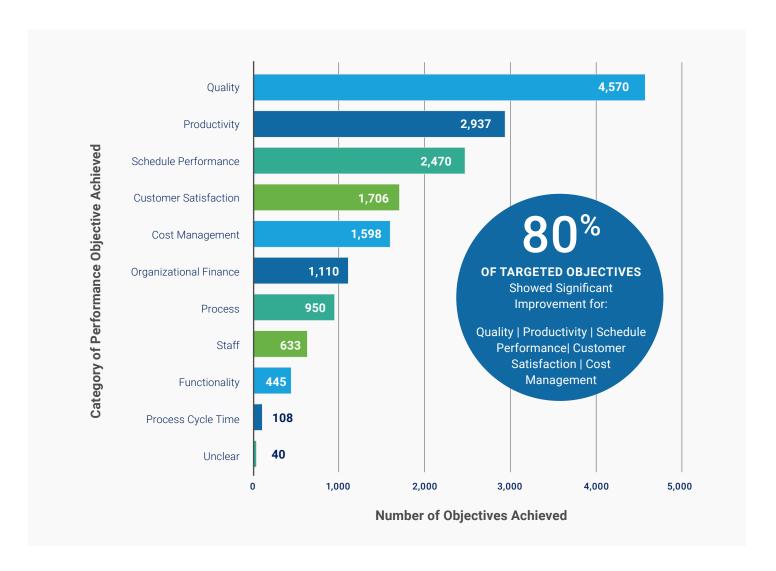
Organizations that implement CMMI consistently realize tangible performance improvements in multiple aspects and areas of their business.

The most popular improvement categories by a large margin are Quality and Productivity. Together they constitute 45% of all the stated improvement objectives. Refer to appendix p. 22 for definitions of reported improvement categories. The top six improvement categories (including Cost Management, Schedule Management, Process Adherence and Customer Satisfaction) account for 87% of the stated improvement objectives.

"everis Centers now has the need for continuous performance improvement embedded in its DNA."

GUISEPPE SATRIANI

Certified CMMI Lead Appraiser



Quality Objectives

Quality-related objectives represent the biggest targeted area for performance improvement, with significant reductions in defect rate/density, delivered product/ service quality and defect containment. These categories of quality performance objectives are critical for methods like DevSecOps, and Agile, which can propagate a defect as rapidly as it does a new version of software. Not only did quality performance improve, but the ability to detect and prevent defects also improved consistently for those organizations that targeted this area. Refer to appendix p. 23 for additional detail.

"Quality, like integrity, is simply non-negotiable."

AZIM PREMJIChairman, Wipro

3,000 2,516 2,500 Performance Objectives Achieved Number of Quality-Related 2,000 1,500 1,000 649 500 170 100 85 82 7 45 43 40 31 31 14 9 7 0 **Defect Rate/Density** Quality **Defect Injection Rate** Service Quality **Peer Review Defect Closure Test Pass Rate Defect Resolution Ratio** Test Coverage **Fest Effectiveness Testing Activities** Supplier Quality **Delivered Product/** Peer Review Efficiency **Defect Containment Defect Detection**

Type of Quality Objective

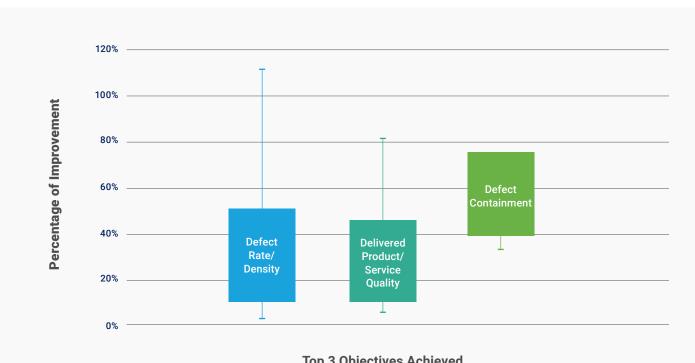
Quality Improvements

- The improvement mean for Defect Rate/Density improvements was 46%, the upper range for improvements was 112%, with some organizations achieving even higher improvement rates.
- Delivered Product/Service Quality improvement mean was almost 28%. The upper range for improvements was over 80%.
- Defect Containment improvement mean was 54%. The upper range for improvements was 75%.

"Our processes are one of the most valuable assets for our company, and CMMI guides us to improve and institutionalize these assets throughout the organization."

DR. HALIDUN FILDIŞ

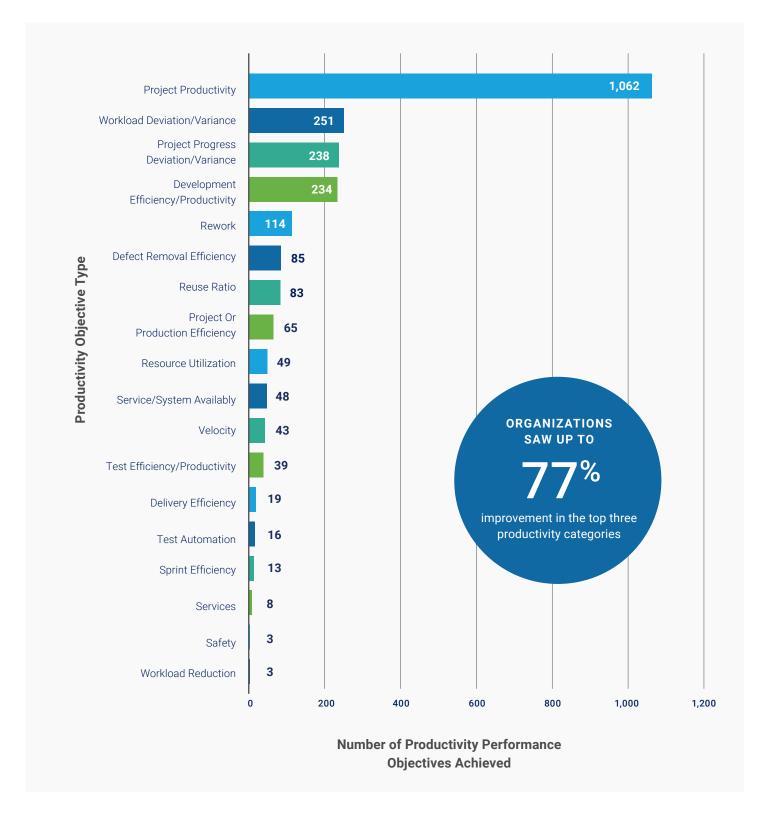
MGEO Quality Management Director



Top 3 Objectives Achieved

Productivity Objectives

These 18 productivity objectives are directly related to streamlining critical development process performance and process automation, e.g., automated testing and development processes, DevSecOps. Refer to p. 23 in appendix for definitions and additional information.



Productivity Improvements

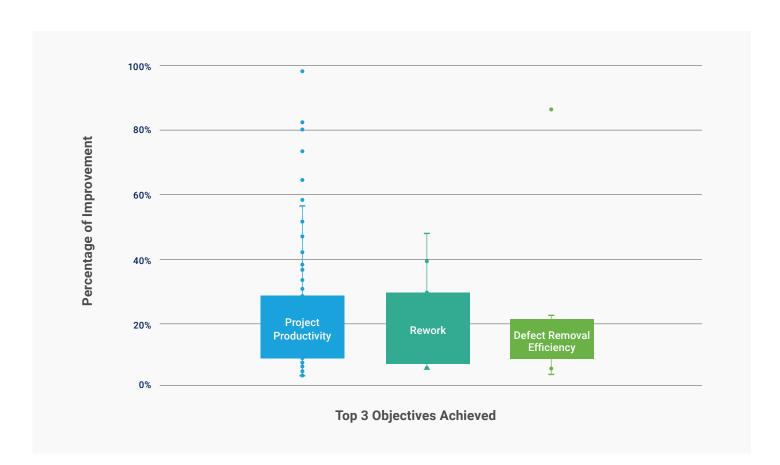
Development rate or velocity improvement and overall productivity improvement are as high as 30% and 55% respectively, with the mean for both at 13-14% for development and nearly 20% for overall productivity gains.

- The improvement mean for Project Productivity improvements was 27%, the upper range for improvements was 100%, with some organizations achieving even higher improvement rates.
- The Rework improvement mean was almost 18%.
 The upper range for improvements was over 46%.
- Defect Removal Efficiency improvement mean was 17%. The upper range for improvements was 85%.

"Through our years of CMMI adoption, our company built a quality management and process improvement system. CMMI now guides us to pay more attention to the realization of customer value while ensuring quality and process continuous improvement."

ZHONGJUN BAO

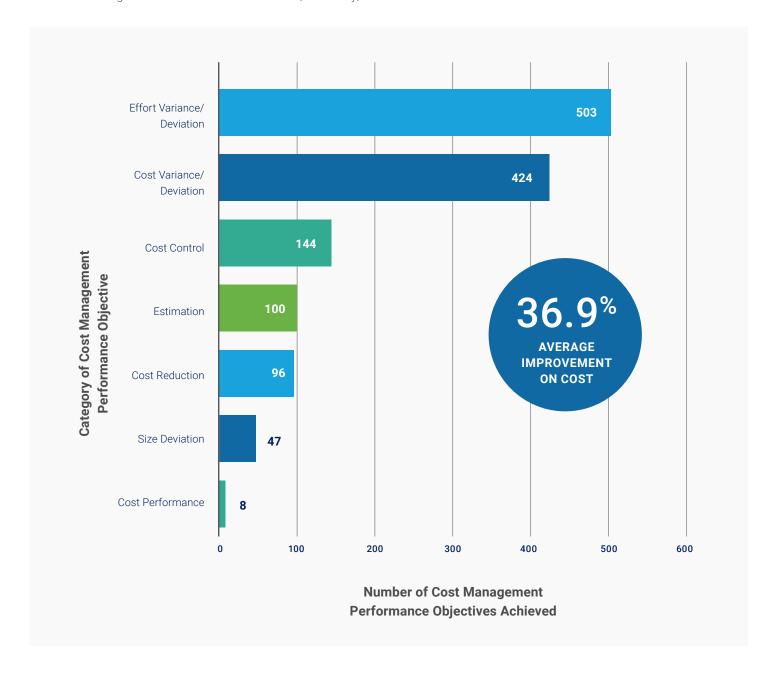
Chief Operating Officer, Whale Cloud



Cost Management Objectives

70% of objectives included effort variance/deviation and cost variance deviation. The objectives include various types of cost management performance improvements, including reduced cost and effort variance, efficiency,

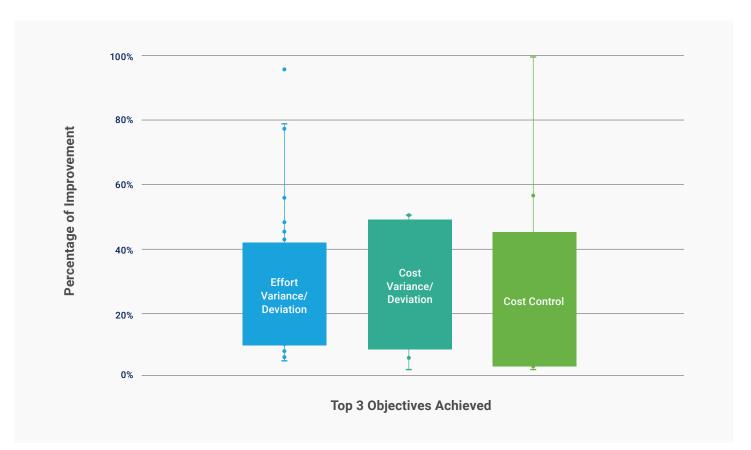
and reduction. High predictability and consistency of cost management results make CMMI a no-brainer for any organization. Refer to appendix p. 25 for definitions and additional details.



Cost Management Improvements

Cost Management improvements are as impressive as they are consistent across multiple types of industries.

- The improvement mean for Effort Variance/
 Deviation improvements was 33%, the upper range
 for improvements was 78%, with some organizations
 achieving even higher improvement rates.
- The Cost Variance/Deviation improvement mean was almost 18%. The upper range for improvements was 50%.
- Cost Control improvement mean was 23%. The upper range for improvements was 100%.



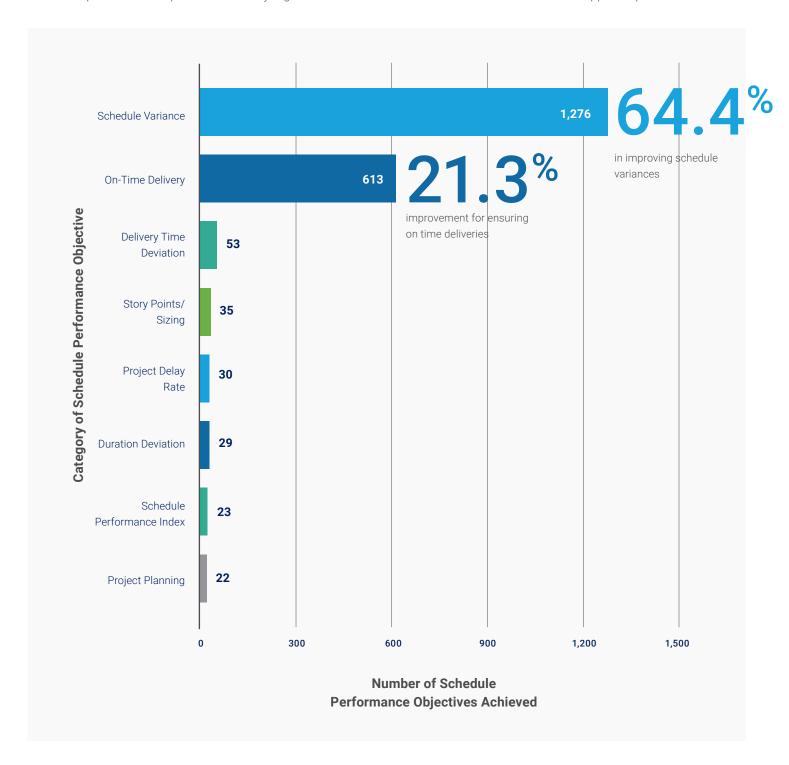
"With this journey, we built a culture of quality with the guidance of CMMI's best practices. In recognition of CMMI's valuable contribution to our processes, we achieved tool-based process management as well as the improvement of our well-structured processes. Quality improvement is a never-ending process for ASELSAN MGEO."

MUSTAFA KAVAL

ASELSAN MGEO, Vice President and President Business Sector

Schedule Performance Objectives

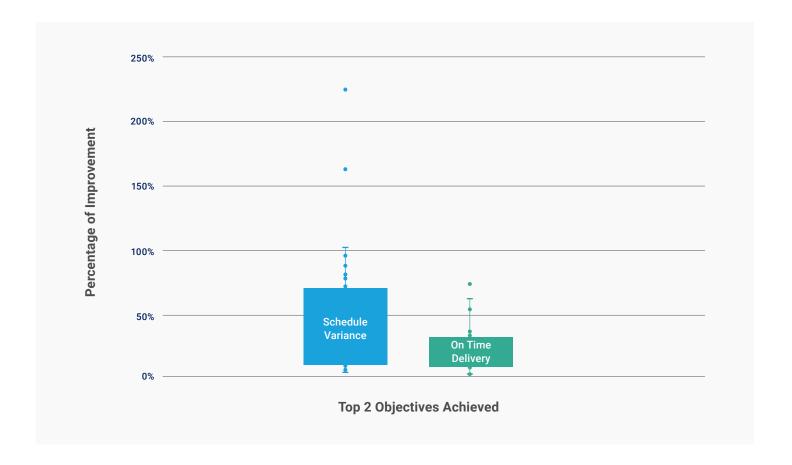
Results from appraised organizations show an average of 84% of performance objectives were achieved—an impressive accomplishment that any organization would want to achieve. Refer to definitions in Appendix p. 26.



Schedule Performance Improvements

The improvement mean for Schedule Variance improvements was 64%, with some organizations achieving even higher improvement rates.

The On Time Delivery improvement mean was almost 22%. The upper range for improvements was 60%.



"The CMMI model has proven to be a winning choice over time because it allowed us to prioritize our work more quickly and have effective indicators to swiftly manage and solve problems. What has helped us the most is a dedicated and centralized management and support team, a single management tool used in all locations in the same way, and team alignment around common objectives."

JESÚS VICENTE GONZÁLEZ MARTÍNEZ

Head of everis Centers



The data is very clear—adopting CMMI Performance Solutions yields tangible and consistent performance results across multiple types of industries, organizations, and geographies.

Exceed Performance Expectations with CMMI Performance Solutions

- CMMI enables a proven, and effective approach for performance-based improvement and enables innovation, digital transformation, and other complementary methods such as Agile and DevSecOps
- CMMI's focus on persistent and habitual performance improvement sets it apart from any other standard or model
- Flexible content architecture and online/digital experience allow for fitting content to customer pain points, customizable views, and integration with other frameworks, such as ISO and COBIT

Best Practices: CMMI Addresses Sustaining Habit and Persistence

With CMMI, processes and performance improvement become habit. CMMI contains an entire Capability Area of best practices for sustaining habit and persistence. CMMI enables consistent performance improvement and over time and between appraisals, the model contains a "self-raising bar" for performance. Appraisals become more critical to demonstrate and corroborate that improvement. Processes become habitual when:

- Processes are not abandoned under stress
- There is visible and active senior management support
- Processes apply to everyone in the organization
- There are consequences for following or not following established processes



Major Upcoming Content Releases:

Major planned changes include over 100 improvements based on CMMI community comments.

- Addition of People domain
- Addition of Data domain
- Addition of DevSecOps Context Specific information
- Address domain simplification changes



Who Uses CMMI?

For more than 25 years, thousands of highperforming organizations have achieved sustainable business success through CMMI adoption and demonstrated their ability as capable business partners and suppliers.





12
NATIONAL
GOVERNMENTS



106



10



4,889
APPROVED APPRAISALS

SOME OF THE WORLD'S MOST RESPECTED ORGANIZATIONS USE CMMI

2019-2021









Booz | Allen | Hamilton®













SECTION FOUR:

Appendix

Who Uses CMMI Performance Solutions

Country/Region Breakdown



American Samoa
Andorra
Angola
Argentina
Australia
Austria
Bahrain
Bangladesh
Belarus
Belgium
Bolivia
Brazil
Brunei
Bulgaria
Cambodia
Canada
Chile

Colombia Comoros Costa Rica Côte d'Ivoire Cuba Cyprus Czechia Denmark Dominican Republic Ecuador Egypt El Salvador Estonia Finland France Germany Greece

Guyana Honduras Hong Kong SAR China Hungary India Indonesia Ireland Israel Italy Jamaica Japan Jordan Kazakhstan Kenya Kuwait Latvia Lebanon

Luxembourg

Macedonia Malaysia Mali Malta Marshall Islands Mauritius Mexico Moldova Mongolia Morocco Mozambique Nepal Netherlands New Zealand Nigeria Norway Oman Pakistan

Paraguay Peru Philippines Poland Portugal Puerto Rico Qatar Romania Russia Saudi Arabia Singapore Slovakia Somalia South Africa South Korea Spain Sri Lanka

Panama

Sweden Switzerland Syria Taiwan Thailand Trinidad & Tobago Tunisia Turkey U.S. Outlying Islands U.S. Virgin Islands Ukraine United Arab **Emirates** United Kingdom **United States** Uruguay Venezuela Vietnam

China

Guatemala

Results

Reported Improvement Goal Categories

Definitions

Refer to p. 10 for additional information.

IMPROVEMENT CATEGORY	DESCRIPTION
Quality	Delivered solution, product or service performs as required per defect parameters
Productivity	An evaluation of resource effectiveness for delivering solutions, products, or services
Cost Management	Managing the cost of developing and delivering solutions, products, or services
Schedule Management	Managing the activities and milestones for developing and delivering solutions, products, or services
Process Adherence	An indication of activities based on standard procedures
Customer Satisfaction	Customer's perception of value
Staff Development	An indication of workforce knowledge, skills, capacity, and readiness to deliver solutions, products, and services
Process Cycle Time	Improving the speed of the organizational processes.
Organizational Financials	Revenue and profitability targets
Functionality	Operational intent of products, solutions, or services
Unclear	Not clear in terms of tangible targeted and achieved results

Improvements in Quality Performance

Refer to p. 12 for additional information.

	DEFECT RATE/DENSITY	DELIVERED PRODUCT OR SERVICE QUALITY	DEFECT CONTAINMENT
Min. Improvement	2.01%	4.97%	32.53%
Max. Improvement	530.00%	81.59%	75.00%
Mean Improvement	44.43%	27.90%	53.51%
Standard Deviation of Improvement	71.26%	24.06%	17.90%
Median Improvement	20.54%	16.05%	45.25%

Productivity Improvement Category Definitions

Refer to p. 14 for additional information.

CATEGORY DEFINITIONS	DESCRIPTION	
Defect Removal Efficiency	Proportion of defects found internally vs the defects found externally	
Delivery Efficiency	Proportion of planned work completed	
Development Efficiency/Productivity	Amount of software developed or produced per unit of resources	
Project or Production Efficiency	Amount of work completed per time measured	
Project Productivity	Amount of work completed per unit of time	
Project Progress Deviation/Variance	Amount the project deviates from planned performance	
Resource Utilization	The proportion of total time or effort that a resource is gainfully employed	
Reuse Ratio	The proportion of code reused for a project	
Rework	The proportion of total time or effort rework consumes	
Safety	Amount of injuries per unit time or effort	
Service/System Availability	Amount of service delivered per unit time or effort	

continued >

Productivity Improvement Category Definitions Con't

Refer to p. 14 for additional information.

CATEGORY DEFINITIONS	DESCRIPTION
Sprint Efficiency	Amount of work completed per sprint
Test Automation	Amount of testing automated
Test Efficiency/Productivity	Proportion of planned testing work completed
Velocity	Amount of product or work product produced per unit effort or time
Workload Deviation/Variance	Amount of variation of the work
Workload Reduction	Amount a workload is reduced

Productivity Improvements

Refer to p. 14 for additional information.

	PROJECT PRODUCTIVITY	REWORK	DEFECT REMOVAL EFFICIENCY
Min. Improvement	0.53%	2.55%	1.00%
Max. Improvement	220.00%	46.04%	85.00%
Mean Improvement	27.09%	17.73%	17.16%
Standard Deviation of Improvement	40.95%	14.93%	24.57%
Median Improvement	13.00%	16.00%	9.00%

Cost Management Category Definitions

Refer to p. 15 for additional information.

CATEGORY DEFINITIONS	
Effort Variance/Deviation	Difference in planned and actual effort as a percentage of planned effort
Cost Control	Actual costs compared to estimated or budgeted costs
Estimation	Estimated costs of activities
Cost Variance/ Deviation	Difference in planned and actual costs as a percentage of planned costs
Cost Performance	Amount of completed work for every unit of cost spent
Cost Reduction	The degree to which actual costs are reduced

Cost Management Improvements

Refer to p. 16 for additional information.

	EFFORT VARIANCE/ DEVIATION	COST VARIANCE	COST CONTROL
Min. Improvement	5.14%	2.00%	2.00%
Max. Improvement	176.19%	245.71%	100.00%
Mean Improvement	33.09%	54.68%	22.94%
Standard Deviation of Improvement	36.62%	74.09%	36.15%
Median Improvement	16.00%	38.00%	3.00%

Schedule Performance Definitions

Refer to p. 17 for additional information.

SCHEDULE VARIANCE	DIFFERENCE IN PLANNED AND ACTUAL DATES AS A PERCENTAGE OF PLANNED DATE
On-Time Delivery	Proportion of target dates (e.g., milestones or delivery dates) that are achieved
Delivery Time Deviation	Difference between the stated delivery time and the actual delivery time
Story Points/Sizing	Schedule indicators related to story points or task sizing in agile projects.
Project Delay Rate	Number of days delayed (difference between target and actual)
Duration Deviation	Difference between the baseline duration of a task and the total duration of a task
Schedule Performance Index	Earned value/planned value
Project Planning	Any measure related to the planning activities of a project

Schedule Performance Improvements

Refer to p. 18 for additional information.

	SCHEDULE VARIANCE	ON TIME DELIVERY
Min. Improvement	1.97%	0.43%
Max. Improvement	661.50%	71.48%
Mean Improvement	64.43%	21.34%
Standard Deviation of Improvement	114.22%	20.18%
Median Improvement	41.92%	10.86%

Why CMMI?

CMMI Performance Solutions helps organizations quickly understand their current level of capability and performance in the context of their own business objectives and compared to similar organizations. CMMI's performance improvement model has helped thousands of globally recognized companies—including many Fortune 500 organizations. Click the logos below to read how companies have used CMMI to improve their performance.







Integrated Product Suite

CMMI offers an integrated product suite consisting of five components, that when used together provide a clear and proven path to achieving your business objectives.

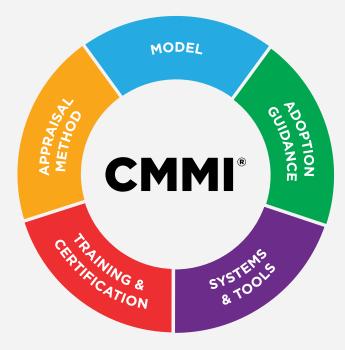
Training and Certification: Training has modular components with virtual and in-person models. Provides performance-focused content and exercises. More learner-focused and learning objective oriented.

Appraisal Method: The appraisal method helps to increase reliability while reducing overall cost and disruption to organization appraised. Standard Performance Report template integrated into the appraisal method.

Model: Clear pathway to performance improvement. Simplified for accelerated adoption. Built-in value statements for Practice Areas and Practices to target performance improvement.

Adoption Guidance: Easy onboarding for new adopters to get started with CMMI.

Systems and Tools: System provides interactive user experience with model, appraisal method and performance reporting resources.



About ISACA

ISACA® (www.isaca.org) is a global community advancing individuals and organizations in their pursuit of digital trust. For more than 50 years, ISACA has equipped individuals and enterprises with the knowledge, credentials, education, training, and community to progress their careers, transform their organizations, and build a more trusted and ethical digital world. ISACA is a global professional association and learning organization that leverages the expertise of its more than 165,000 members who work in digital trust fields such as information security, governance, assurance, risk, privacy, and quality. It has a presence in 188 countries, including 225 chapters worldwide. Through its foundation One In Tech, ISACA supports IT education and career pathways for underresourced and underrepresented populations.



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