2019 CMMI V2.0 Performance Report Summary

How Early-Adopters Leveraged CMMI V2.0 to Consistently Improve Their Performance
Executive Summary

The information contained in this presentation is based on analysis of the performance improvement results from just under 100 appraisals that were the very first-ever registered CMMI V2.0 appraisals to be conducted in 2019.

These appraised organizations reported their “before and after” improvement objectives (a total of 735 objectives across the 95 organizations appraised) in the required CMMI V2.0 Performance Report template with an astounding 79% achievement success rate for their accomplished improvement objectives and another 20% soon to be achieved for a total of 90% across key areas such as quality, cost and schedule performance, productivity and more.

Each of these results were identified and achieved by the organizations being appraised against CMMI V2.0, with the resulting performance improvements independently verified by Certified CMMI Appraisals teams.

This report is organized by sections for multi-use purposes with marketing, messaging, social media and similar communications channels.
Report Roadmap

**Report Purpose**
Context and reason for publishing the first year of CMMI V2.0 performance outcomes

**2019 V2.0 Results**
Initial performance results from 2019 V2.0 appraisals

**V2.0 Overview**
An executive overview of the CMMI V2.0 Product Suite

**V2.0 Key Messaging**
Additional context for communicating the initial results and analysis of the performance data

**Who Uses CMMI?**
What companies, industries, and geographies have adopted CMMI and why?

**Target Audiences**
Who needs to hear about and can benefit from the content of this report and why

**What’s Next**
Actions for additional information and near-term plans for the CMMI V2.0 Performance Data
Purpose

This report will help you and your clients make a shift and get a better understanding on how to embrace the value of CMMI V2.0.
Purpose of This Report

Make a Shift
Help organizations shift from a compliance and process-based improvement model to a flexible framework of best practices that provides demonstrable and measurable capability performance improvement results.

Understanding
Help current and potential customers understand how V2.0 can help them dramatically and consistently improve their business and address their critical pain points in product development, service delivery and operations, and supply chain management.

Show Results
Show CMMI V2.0 benchmark results for different industries, geographies, types of work, and organizations. *Real-world data verified by independent CMMI Appraisal teams*

Establish a Baseline
Establish a baseline for ongoing V2.0 performance analysis and reporting and setting the stage for an outcomes-based Key Performance Indicator database and reporting capability.
V2.0 Performance Report Role: To Assess, Capture and Verify Performance Results

• The Performance Report is NOT just an appraisal artifact. It is a performance planning tool, data collection tool and cross-checking performance improvement tool to verifying 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.

• Provides a mechanism to assess tangible and measurable improvement along with meeting Model Practice Area Intents and Value statements.

• Enables the “self-raising performance bar” in the model and appraisal method; appraisal teams must see and verify 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.
Key Messaging

Getting right to the point.
Key takeaways that can easily be shared.
Exceed Performance Expectations

- Initial CMMI V2.0 adoption (2019) shows that clear and demonstrable performance outcomes and results are consistently being achieved or exceeded.

- The CMMI V2.0 integrated product suite has successfully shifted the framework and product suite from a process compliance model to a business performance improvement model.

- Flexible content architecture and online/digital experience allows for fitting content to customer pain points, customizable views and integration with other frameworks, such as CMMC, ISO and COBIT.
Initial value propositions for V2.0 have all been achieved or exceeded, including a reduced impact/effort for V2.0 appraisals (up to a reported 50% reduction in some cases) and reduction in overall adoption life cycle cost.

The model overall footprint of content was reduced by 64% while still retaining key best practices and content.

Flesch-Kincaid-measured model content readability and grade levels were both significantly improved to aide in easier adoption and understanding.

Still the best of breed in terms of consistency, fidelity and benchmarking, the CMMI Appraisal method was also simplified and streamlined; the V2.0 Method Definition Document was reduced by 46%, streamlining and simplifying content and concepts, removing redundancies, etc.
Improvement Categories

Organizations that implement CMMI V2.0 are consistently realizing tangible performance improvements in multiple aspects and areas of their business.
A Focus on Process Compliance Only Often Results in Unintended Outcomes

- This was true for both the model interpretation (just do the minimal) and appraisals (check that box)!
- Governance by Sr. Management is critical for consistent performance improvement and innovation – it must be directed and purposeful.

At the risk of making Deming spin in his grave...

PLANNING

DOING

CHECKING

ACTING

has become:

has become:

has become:

has become:

The game

The attention

The box

From the lack of results
A compliance-only focus typically assumes that quality/performance is a guaranteed outcome – this is typically NOT true. **There must be a balance between compliance and performance.**

**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.


**Shift to Continual Performance Improvement vs. Compliance**

- Tendency to inflexibility puts long-term change, innovation and improvement at risk
- Tendency to become additional level of administrative overhead without clear value to performance or bottom line
- Fosters lasting organizational innovation, agility, and performance improvement
- Objective data related to business performance improvement
- Qualitative as well as quantitative indicators

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**Focus of Approach**

Compliance  
Performance
The addition of the Intent and Value statements is PARAMOUNT to V2.0:

**INTENT**

The Intent statement provides insight into why the Practice Area is important to take into consideration in your process.

**VALUE**

The Value statement explains the business performance improvement impact achieved when the intent of the Practice Area and individual practices are met.

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**Estimating**

**Required PA Information**

**Intent**

Estimate the size, effort, duration, and cost of the work and resources needed to develop, acquire, or deliver the solution.

**Value**

Estimation provides a basis for making commitments, planning, and reducing uncertainty, which allows for early corrective actions and increases the likelihood of meeting objectives.

No other framework or model has built-in and integrated performance improvement requirements or provides a clear evolutionary path to performance.
Common Questions

How are we protecting proprietary data and addressing requirements like GDPR?

• ISACA’s CMMI goes through an annual GDPR and other related IT security audits and has the controls in place to protect both confidential and proprietary data.

• The new appraisal system has these requirements as part of security by design and using a secure development approach

• Lead Appraisers can and are expected to sanitize/redact their customer’s proprietary information as needed (while still providing meaningful performance improvement information).
Common Questions

Why is the Performance Report required?

• Feedback from community pilots overwhelmingly recommended we make the report required so we can provide performance data on CMMI adoption.

• We are continually asked for performance data on using the CMMI – think of this as the beginning of our own “analyst report” on CMMI performance results achieved.

• We will continue to share these results as V2.0 adoption continues into 2020, 2021 and beyond.
Results

Data that shows the impact of CMMI V2.0.
Results Summary

Primary first year adoption in India, US, China and Mexico

Organizational Size: Most organizations were with 1-100 staff, with the vast majority small businesses (50 FTEs or less)

Types of Businesses – Financial, Transportation, Commercial – not just Defense and Government Contracting

Remarkable Results: 70% of reported objectives were met or exceeded; another 20% 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, organizational financials and schedule improvements were the biggest categories of improvement

The following slides (18-31) include data from the initial 2019 CMMI V2.0 appraisals reported/registered with ISACA, verified independently by CMMI Certified Appraisal Teams.

Based on 95 organizations targeting a total of 735 performance objectives initially appraised to CMMI V2.0, this is an excerpt from the soon-to-be-released report: “CMMI V2.0 2019 Performance Report Summary”.
Nearly 70% of target objectives achieved!

For the 20% not achieved, data shows these were mostly “not yet” but were on track to be achieved after the appraisal.
80% of the targeted objectives showed significant improvement for:

- Quality
- Productivity
- Cost Performance
- Schedule Performance
- Functionality
- Process Adherence
<table>
<thead>
<tr>
<th>Improvement Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>Quality improvements are concerned with making sure that the delivered solution, product or service performs as the customer expects and errors/defects are kept to a minimum</td>
</tr>
<tr>
<td>Productivity</td>
<td>This generally refers to how well and effectively an organization is using its resources to deliver its solutions, products or services</td>
</tr>
<tr>
<td>Cost Management</td>
<td>Emphasis in this category is on reducing the cost of developing and delivering its solutions, products or services</td>
</tr>
<tr>
<td>Schedule Management</td>
<td>How good and consistent is the organization at meeting agreed-upon milestones?</td>
</tr>
<tr>
<td>Process Adherence</td>
<td>Are people using and following the processes correctly?</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>Many of the other improvement categories are contributors to how customers perceive the organization’s solutions, products or services. This category is about directly measuring and improvement that perception.</td>
</tr>
<tr>
<td>Staff Development</td>
<td>Having right human resources with the needed knowledge and skills, and capacity to deliver the organization’s solutions, products and services.</td>
</tr>
<tr>
<td>Process Cycle Time</td>
<td>In some ways, this may be a subcategory or contributor to schedule management, but the objectives in this category are directly aimed to improve the speed of the organizational processes</td>
</tr>
<tr>
<td>Organizational Financials</td>
<td>The bottom line! How well and consistently are revenue and profitability targets being met?</td>
</tr>
<tr>
<td>Functionality</td>
<td>What is the solution, product, or service supposed to do? Did you build, deliver or operate the right thing and did you build, delivery or operate the thing correctly?</td>
</tr>
<tr>
<td>Unclear</td>
<td>The objectives as written were not clear in terms of tangible targeted and achieved results</td>
</tr>
</tbody>
</table>
These categories of quality performance objectives are critical for methods like DevOps, and agile, which can propagate a defect as rapidly as it does a new version of software!
Top 3 Quality Performance Objectives Achieved

Delivered Quality Improvement mean about **25%** with an upper range of 70%.

Work Product Quality mean of almost **40%** with an upper range of 90%.

Defect Containment improvement mean of **23%** with an upper range of 30%.
## Improvements in Quality Performance

<table>
<thead>
<tr>
<th></th>
<th>Delivered Product Quality</th>
<th>Work Product Quality</th>
<th>Defect Containment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Min. Improvement</strong></td>
<td>1.87%</td>
<td>6.00%</td>
<td>10.00%</td>
</tr>
<tr>
<td><strong>Max. Improvement</strong></td>
<td>86.50%</td>
<td>88.00%</td>
<td>70.00%</td>
</tr>
<tr>
<td><strong>Mean Improvement</strong></td>
<td>25.46%</td>
<td>39.06%</td>
<td>23.01%</td>
</tr>
<tr>
<td><strong>Standard Deviation of Improvement</strong></td>
<td>26.71%</td>
<td>32.88%</td>
<td>18.98%</td>
</tr>
<tr>
<td><strong>Median Improvement</strong></td>
<td>12.50%</td>
<td>26.13%</td>
<td>20.00%</td>
</tr>
</tbody>
</table>
Productivity Improvements

These numbers are directly related to streamlining critical development process performance and process automation, e.g. automated testing and development processes, DevOps, etc.

<table>
<thead>
<tr>
<th>Productivity Objective Type</th>
<th>Number of Objectives Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Velocity</td>
<td>37</td>
</tr>
<tr>
<td>Delivery Efficiency</td>
<td>21</td>
</tr>
<tr>
<td>Effort Proportion</td>
<td>11</td>
</tr>
<tr>
<td>Rework</td>
<td>8</td>
</tr>
<tr>
<td>Utilization</td>
<td>6</td>
</tr>
<tr>
<td>Test Execution Rate</td>
<td>5</td>
</tr>
<tr>
<td>Review Rate</td>
<td>4</td>
</tr>
<tr>
<td>Test Development Rate</td>
<td>3</td>
</tr>
<tr>
<td>Bug fix Rate</td>
<td>2</td>
</tr>
<tr>
<td>In-house Ratio</td>
<td>2</td>
</tr>
<tr>
<td>Safety</td>
<td>2</td>
</tr>
<tr>
<td>Test Coverage</td>
<td>2</td>
</tr>
<tr>
<td>Service Rate</td>
<td>2</td>
</tr>
</tbody>
</table>
Productivity Improvements

Average of 13% improvement on development velocity with a maximum of almost 40%
## Productivity Improvements

<table>
<thead>
<tr>
<th>Category Definitions</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Velocity</td>
<td>Amount of product or work product produced per unit effort or time</td>
</tr>
<tr>
<td>Delivery Efficiency</td>
<td>Proportion of planned work completed</td>
</tr>
<tr>
<td>Effort Proportion</td>
<td>The proportion of total time or effort a task or phase consumes</td>
</tr>
<tr>
<td>Rework</td>
<td>The proportion of total time or effort rework consumes</td>
</tr>
<tr>
<td>Utilization</td>
<td>The proportion of total time or effort that a resource is gainfully employed</td>
</tr>
<tr>
<td>Test Execution Rate</td>
<td>The number of tests or test cases executed per unit effort or time</td>
</tr>
<tr>
<td>Review Rate</td>
<td>Amount of product or work product reviewed per unit effort or time</td>
</tr>
<tr>
<td>Test Development Rate</td>
<td>The number of tests or test cases produced per unit effort or time</td>
</tr>
<tr>
<td>Bug fix Rate</td>
<td>Turn-around time or effort per bug fix</td>
</tr>
<tr>
<td>Service Rate</td>
<td>Amount of service delivered per unit time or effort</td>
</tr>
<tr>
<td>Safety</td>
<td>Amount of injuries per unit time or effort</td>
</tr>
<tr>
<td>In-house Ratio</td>
<td>Proportion of work done internally relative to that done by external sources.</td>
</tr>
<tr>
<td>Test Coverage</td>
<td>Proportion of the product covered by test cases</td>
</tr>
</tbody>
</table>
42 of 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 makes CMMI V2.0 a no-brainer for any organization.
## Cost Management Improvements

<table>
<thead>
<tr>
<th>Category Definitions</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effort Variance</td>
<td>Difference in planned and actual effort as a percentage of planned effort</td>
</tr>
<tr>
<td>Cost Variance</td>
<td>Difference in planned and actual costs as a percentage of planned costs</td>
</tr>
<tr>
<td>Cost Efficiency</td>
<td>Cost Performance Index (aka Earned Value Management)</td>
</tr>
<tr>
<td>Cost Reduction</td>
<td>The degree to which actual costs are reduced</td>
</tr>
<tr>
<td>Service Cost</td>
<td>Service usage costs</td>
</tr>
<tr>
<td>Estimate at Completion</td>
<td>The forecasted cost of the work as it progresses</td>
</tr>
<tr>
<td>Indirect Costs</td>
<td>Costs that are not directly accountable to the project or service work</td>
</tr>
<tr>
<td>Total Cost</td>
<td>The sum of direct and indirect costs</td>
</tr>
<tr>
<td>Cost of Ownership</td>
<td>Estimate of all costs, including infrastructure costs necessary to support a product, service or solution</td>
</tr>
<tr>
<td>Capital Costs</td>
<td>Fixed, one-time expenses incurred on the purchase of assets</td>
</tr>
<tr>
<td>Deployment Costs</td>
<td>Costs incurred in putting a product or service into the appropriate field of operations</td>
</tr>
</tbody>
</table>
Schedule Performance Improvements

Primary Categories of Schedule Performance Objectives Achieved

- **Meeting Milestones**: 23 objectives achieved
- **Schedule Variance**: 11 objectives achieved
- **Schedule Performance Index**: 5 objectives achieved
- **Process Timing**: 3 objectives achieved
- **Schedule Status**: 2 objectives achieved
- **Schedule Delay**: 2 objectives achieved

Average of **95%** performance on meeting milestones!

What organization wouldn’t want that kind of performance?
Additional V2.0 Improvement Results

Realized Model Improvements

- Focused on use of plain language to make adoption easier
- Improved Flesch-Kincaid Reading Ease from 18.7 in V1.3 to 22.9 in V2.0
- Reduced Flesch-Kincaid Grade Level from 14.9 in V1.3 to 13.2 in V2.0
- Decreased use of passive voice from 32.3% in V1.3 to 18% in V2.0
- V1.3 Total Number of Specific Practices – 500 - V2.0 39.2% practice reduction (64.5% including Generic Practices)
- Enables quicker translations
- Aligns the CMMI content with simpler architectural elements to make it easier to understand, integrate with other adopted methodologies like ISO, CMMC, etc.
## CMMI V2.0 Directly Addresses All Five of NASA’s Engineering Failure Root Causes

<table>
<thead>
<tr>
<th>NASA Engineering Excellence 5 Root Causes</th>
<th>CMMI V2.0 Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Shifting from engineering “hands-on” and “excellence” to “insight/oversight.” Lack of ownership.</td>
<td>Implementation infrastructure and governance practices areas for project performance clarity and transparency</td>
</tr>
<tr>
<td>2 “Normalization of the deviances.” Not questioning anomalies.</td>
<td>Risk and opportunity management, incident resolution and prevention, causal analysis and resolution, continuity – focus on continual performance improvement</td>
</tr>
<tr>
<td>3 Lack of critical thinking. Over-reliance on procedures and computer codes.</td>
<td>Performance management as primary focus, fundamental shift from “process for process’s sake” to ”process for performance improvement”</td>
</tr>
<tr>
<td>4 Decentralization of authority.</td>
<td>Organizational behavior, decision analysis and resolution, sustaining habit and persistence, and planning for clarity, transparency, and precise responsibility, accountability, authority and action</td>
</tr>
<tr>
<td>5 Organizational and technical complexity.</td>
<td></td>
</tr>
</tbody>
</table>
Wipro

Tailored organizational processes and the steps needed to embrace and institutionalize the improvements to make them sustainable

Improved Critical to Quality metric and business objective performance

Identified root causes and implemented processes to sustain revenues, retain customers, and increase growth, customer satisfaction, and operating margins

Strengthened processes through a focus on Governance

“Quality, like integrity, is simply non-negotiable.” - Wipro Chairman, Azim Premji
Dynanet

92% decrease in the average number of high-priority defects found within 30 days after delivery of a quarterly software release

64% improvement in the accuracy of effort estimates

52% decrease in the rate of all software defects found from beta testing phase through warranty period

41% decrease in the time to resolve questions about possible defects
CeloNova BioSciences, Inc.

World’s first Capability Level Benchmark appraisal!

27% reduction in time period - significant reduction in complaint time cycle.

Selecting appropriate metrics helped visibility within the organization and ensured employee collaboration.

Utilizing the MDDAP framework supported the already vigorous quality culture at CeloNova.

Each employee achieved a full sense of ownership and accomplishment in their everyday performance.
Who & Why

First understand who. Second, understand why. Then execute.
Who Uses CMMI?

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizations</td>
<td>10K+</td>
</tr>
<tr>
<td>National Governments</td>
<td>12</td>
</tr>
<tr>
<td>Countries</td>
<td>106</td>
</tr>
<tr>
<td>Languages</td>
<td>10</td>
</tr>
<tr>
<td>Partners</td>
<td>403</td>
</tr>
<tr>
<td>Appraisals in 2019</td>
<td>3,377</td>
</tr>
</tbody>
</table>
Who Uses CMMI?

[Logos of various organizations]
Right Sized

70% of appraisals were conducted on organizations with 100 FTEs or less.

17% were organizations with greater than 500 FTEs.

Organizational Unit Size Range
CMMI V2.0 Adaptable to Multiple Industries

A broadly diverse set of industries have initially adopted V2.0
CMMI has helped thousands of globally recognized companies assess their organizational capability and drive higher performance – many of which are Fortune 500 organizations.
2019 Country Breakdown

- India: 26%
- USA: 22%
- China: 13%
- Mexico: 11%
- Germany: 5%
- Vietnam: 4%
- Spain: 2%
- Argentina: 2%
- Brazil: 2%
- Italy: 2%
- Taiwan: 2%
- Switzerland: 2%
- Turkey: 2%
- Japan: 1%
- Singapore: 1%
- Canada: 1%
- Saudi Arabia: 1%
- Ireland: 1%
- UK: 1%
- Multiple Locations: 1%
All organizations have capabilities*. What many don’t have is a process by which they can measure their difference capabilities against best practices and pinpoint which ones are driving higher performance.

Don’t have standard processes, process assets, and job aids. (50%)

Cite difficulties in monitoring plans and adjusting when needed. (33%)

Do not measure what matters. (54%)

Benefits of Building Capability

- Defects
- Rework
- Cost
- Risk

- Speed
- Quality
- Customer Satisfaction
- Productivity

All organizations have capabilities. What many don’t have is a habitual and persistent process by which they can measure their different capabilities against best practices and pinpoint which ones are driving higher performance.
Knowing your key capability creates new value.

When an organization’s distinctive capabilities are clearly defined, everything and everyone within the organization begins to positively reinforce each other to improve performance. The business takes one new life as people know and focus on putting standard processes in place to strengthen their key capabilities, and the result is:

- Increased customer satisfaction
- Increased probability of capturing new and repeat business
- Increased profit through improved quality and less rework
- Increased productivity
- Decreased risks

Source: CMMI Institute, 2015 “Assess Your Organizational Capability” Study

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DevOps and Agile

The federal government is pushing DevOps and Agile, lighter approaches.


Over 50% of organization still rely on Waterfall.

CMMI appraised organizations exceed 80% utilization of Agile.
Honeywell

Jii Tomiceck
CP & General Manager,
Czech Republic

“The CMMI model had taught us to think in favor of the customer and be very thorough in terms of delivering our development projects. **We work to improve performance** from task to task, decision to decisions and project to project.”
“Senior management has always seen the value of process improvement as a means to improve performance, keep customers happy, and differentiate Dynanet from its competitors.”
“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
Hong Ou
Engineering Process Group Leader

“The new assessment method (CMMI V2.0) made it possible for us to have a successful appraisal and made it much easier for us to adopt other methods such as Agile”
Dr. Bin Cong
CMMI High Maturity Lead Appraiser and Instructor

“CMMI V2.0 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, V2.0 provides value to organizations that extends well beyond appraisals and maturity ratings.”
## Additional Early Results

### CMMI V2.0 Performance Data: Case Example #1

<table>
<thead>
<tr>
<th>Measure</th>
<th>Success Factor</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Satisfaction - Defect Rejection Ratio</td>
<td>#1</td>
<td>10.3% improvement</td>
</tr>
<tr>
<td>Operating Margin - Effort deviation</td>
<td>#2</td>
<td>13.5% improvement</td>
</tr>
<tr>
<td>Customer Satisfaction - Overall productivity</td>
<td>#3</td>
<td>Improved</td>
</tr>
<tr>
<td>Customer Satisfaction - Overall defect density</td>
<td>#4</td>
<td>9.19% improvement</td>
</tr>
<tr>
<td>Customer Satisfaction - Coding and Unit Testing productivity</td>
<td>#5</td>
<td>5.17% improvement</td>
</tr>
</tbody>
</table>

### CMMI V2.0 Performance Data: Case Example #2

<table>
<thead>
<tr>
<th>Measure</th>
<th>Success Factor</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase Margin</td>
<td>#1</td>
<td>On target to achieve and exceed</td>
</tr>
<tr>
<td>Increase Customer Satisfaction</td>
<td>#2</td>
<td>On target to achieve and exceed</td>
</tr>
<tr>
<td>Improve Quality</td>
<td>#3</td>
<td>Post delivery defect density dropped 15% - 50%</td>
</tr>
<tr>
<td>Improve Productivity</td>
<td>#4</td>
<td>Productivity Velocity for Scrum Project increased 20% to 30%</td>
</tr>
</tbody>
</table>

More examples of CMMI case studies can be [found on the CMMI website](https://www.cmmi.net).
CMMI V2.0?

CMMI V2.0 helps organizations quickly understand their current level of capability and performance in the context of their own business objectives and compared to similar organizations.
Key Value Drivers

• Built-in performance capabilities to demonstrate the true value and ROI of implementing CMMI

• Built-in Agile with Scrum guidance to show the impact of CMMI to today’s market

• Integrated product suite; new appraisal method that reduces the time, effort, cost and consistency for CMMI appraisals

• Flexible implementation and improved usability so CMMI is easier to read, understand and tailor to fit specific organizational needs
Model Content and Viewer

- Built-in value statements for Practice Areas and Practices to target performance improvement
- Clear pathway to performance improvement
- Simplified for accelerated adoption and smooth transition

https://cmmiinstitute.com/products/cmmi/cmmi-v2-products
Appraisal Method

• Standard Performance Report template integrated into the appraisal method
• New appraisal method helps to increase reliability while reducing overall cost and disruption to the organization appraised

https://cmmiinstitute.com/learning/appraisals
Training & Certification

• Provide performance-focused content and exercises

• Updated training has modular components with virtual and in-person options based on proven best practices

• More learner-focused, and learning objective oriented

https://cmmiinstitute.com/learning/training
System & Tools

• Redesigned integrated systems providing interactive user experience with model, appraisal method and performance reporting resources

• Online Model Viewer: https://cmmiinstitute.com/products/cmmi/cmmi-v2-products

Click here to view Published Appraisal Results
Adoption Guidance

• Resources, examples and guidance on performance improvement
• Guidance for a smooth transition from CMMI V1.3
• Helps new adopters get started with CMMI

Click here for the Adoption and Transition Guide.

Click here to view CMMI Case Studies.
Created Agile Context Specific Content

Agile with Scrum guidance highlights the synergy between CMMI and Agile

• Eases the learning curve for Agile organizations adopting CMMI

• Provides guidance on how to scale Agile performance in an organization

• Context specific information provides additional explanation on how to adopt CMMI in more traditional development lifecycles

• Complements and completes the promise of Agile with organizational scalability
CMMI Adoption & Transition Guidance V2.0

Step-by-step guidance for new and transitioning adopters that includes:

1. An Introduction – why the step is important
2. Using CMMI Partner/Consultants – where/how Partners can assist
3. “Hows” – Activities and options for performing the step
4. References – Training, partner resources, information sources
5. Mapping from V1.3 to V2.0 and Quick Reference Guide
6. Additional elaborations and considerations for the step – general discussions about topics related to the step, such as getting a sponsor, keeping your sponsor informed, etc.
7. Includes best practices for addressing change and sustaining performance
CMMI Adoption & Transition Guidance V2.0

01 LEARN
Learn how CMMI will benefit the organization

02 ESTABLISH OBJECTIVES
Develop and communicate business performance and improvement objectives

03 ANALYZE
Map current organizational processes to the CMMI
CMMI Adoption & Transition Guidance V2.0

04 DEVELOP ACTION PLAN
Develop, keep updated and follow an improvement plan to get from the current state to the desired state

05 DEPLOY IMPROVEMENTS
Deploy and follow updated organizational processes, and measure performance

06 ASSESS CAPABILITY
Assess organizational capabilities
CMMI V2.0 Value Proposition Recap

- **Transformed** CMMI from a *process improvement* model to a *business performance improvement* model
- **Open content architecture** enables *scalability* and accommodates other standards
- **Simplified wording** for ease of understanding, translation, and compatibility with other methodologies
- Created context-specific content to provide more precise guidance for methodology specific adoption
- Introduces placeholders for future Practice Areas and content
- Adds a more robust set of measurement practices to *emphasize measurable performance improvement* sooner and support the journey to high maturity
- **Performance, Performance, Performance!**

Manage the key capabilities that drive my unique business

Rapidly improve my business

Lower the total cost of ownership

Demonstrate the capability of my organization and ensure a focus on continuous improvement
CMMI V2.0 Directly Addresses 6 of the 7 Recommendations in DSB Report Software for Defense Systems

V2.0 directly addresses all areas in the DSB’s Report Software for Defense Systems including the “software as a factory” concept, and process automation like DevOps (See Next Slide)

## Why Use CMMI V2.0?

<table>
<thead>
<tr>
<th>Report Recommendation</th>
<th>CMMI V2.0 Direct Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software As A Factory</td>
<td>Capability and Practice Areas that provides proven best practices for all DSB recommendations</td>
</tr>
<tr>
<td>Continuous Iterative Development</td>
<td>Lifecycle/framework agnostic development best practices, including scalable Agile with Scrum</td>
</tr>
<tr>
<td>Risk Reduction and Metrics for New Programs</td>
<td>Risk and Opportunity Management, Incident Resolution and Prevention, and Managing Performance and Measurement practice areas; required performance report</td>
</tr>
<tr>
<td>Current and Legacy programs in Development, Production and Sustainment</td>
<td>Total end-to-end lifecycle best practices for new and legacy programs, including Operational Transition and Sustainment</td>
</tr>
<tr>
<td>Workforce</td>
<td>Managing the Workforce capability area; Governance, Organizational Training, and Organizational Behavior practice areas</td>
</tr>
<tr>
<td>Software Is Immortal – Software Sustainment</td>
<td>Full software development, operation, and sustainment framework, including delivered software, procedures, tools, documentation and ability to reconstitute delivered solutions</td>
</tr>
</tbody>
</table>

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Why Use CMMI V2.0?

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CMMI V2.0 Appraisal Types

CMMI Appraisal types can be selected to align to business needs. For example: The Medical Device Discovery Appraisal Program (MDDAP) experience – It is not all about chasing a maturity level—*patient results (performance) matters the most.*

<table>
<thead>
<tr>
<th>Appraisal Type</th>
<th>Ratings</th>
<th>Validity</th>
<th>Cost &amp; Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENCHMARK</td>
<td>Yes</td>
<td>3 Years</td>
<td>• Highest commitment of people, time and cost</td>
</tr>
<tr>
<td>SUSTAINMENT</td>
<td>Yes</td>
<td>2 Years</td>
<td>• Reduced commitment of people, time and cost compared to Benchmark Appraisal</td>
</tr>
</tbody>
</table>
| ACTION PLAN REAPPRAISAL | Same as prior appraisal | Same as prior appraisal | • Adds to cost and duration of prior appraisal  
|                       |           |          | • Must be completed within four months of the end of prior appraisal           |
| EVALUATION           | No        | N/A      | • Will vary greatly depending on the data collection approach, OU and model scope covered |
CMMI V2.0 Addresses Sustaining Habit AND Persistence

**Persistence**: Firm or obstinate continuance in a course of action despite difficulty or opposition.

**Habit**: A settled or regular tendency or practice, especially one that is hard to give up.

5 Key Elements Critical for Success in Sustaining Habit and Persistence

<table>
<thead>
<tr>
<th>Vision</th>
<th>Skills</th>
<th>Incentives</th>
<th>Resources</th>
<th>Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Success!</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Confusion</td>
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<td>Anxiety</td>
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<tr>
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<td>Gradual Change</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Frustration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>False Starts</td>
</tr>
</tbody>
</table>

Derived from: Delorise, Ambrose. “Managing Complex Change.” The Enterprise Group, Ltd.
CMMI V2.0 contains an entire Capability Area of best practices for sustaining habit and persistence.

This is an area frameworks like the CMMC are still struggling with and working on addressing; it’s already in place with V2.0.

Results: Sustained, and consistent organizational performance improvement.
Target Audiences
Existing CMMI adopters

Appraised organizational sponsors and staff and their customers with organizations and individuals transitioning from V1.3 to V2.0:

- That want to learn about the differences between versions
- That want to transition smoothly from V1.3 to V2.0
- That want to shift from compliance to performance in their work processes
New to CMMI

Organizations and individuals new to CMMI and CMMI V2.0 (or) organizations and individuals unaware of CMMI V2.0 and its benefits

✔ Who have never heard of CMMI, but have jobs to do, capabilities to develop and pain points to address
Not Focused on Rating

Organizations and individuals who are adopting CMMI V2.0, but don’t care about the rating

✓ Who have adopted CMMI, but never intend to get a Maturity or Capability level rating; they simply want to improve effectively and efficiently and use the CMMI to do so
CMMI Partners

CMMI partners and certified individuals

✓ Who want to learn about CMMI, become a partner, get certified, and offer CMMI V2.0 products and services
Potential strategic partners

- Who want to work with us to improve their efforts, e.g., FDA/MDDAP (Medical Device Discovery Appraisal Program), CMMC (Cybersecurity Maturity Model Certification)
Next Steps & Takeaways
CMMI V2.0 is keeping up to date on the latest industry needs.

✓ The data is very clear – **adopting CMMI V2.0 yields tangible and consistent performance results** across multiple types of industries, organizations and geographies.

✓ CMMI V2.0 enables a proven, and effective approach for performance-based improvement and enables innovation, digital transformation and other complementary methods such as agile and DevOps.

✓ CMMI V2.0’s focus on persistent and habitual performance improvement sets it apart from any other standard or model.

✓ **Our next major content release in 2021 includes:** new Managing Security and Safety Capability Area with 3 new Practice Areas, covering areas such as cybersecurity and CMMC context specific information, and a brand-new Practice Area on Enabling Virtual Solution Delivery Practice area (already released) and certification role that contains best practices on virtual delivery for remote workforces.

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Summary of Reports Key Takeaways & Best Practice

• Early data indicates the V2.0 product suite value propositions are being met or exceeded, when the model and method are understood and adopted as intended/designed. We will report on 2020 results in 2021 using data from this report as the baseline.

• Fundamental focus shift to continual performance improvement from process compliance are still being recognized/realized by appraisal teams and organizations adopting V2.0.

• Well in advance of the CMMI Appraisal - Conduct Appraisal Phase (2), the Lead Appraiser must have a detailed and thorough understanding of the critical importance of the nexus between the processes and work flow, process roles, organizational context, and Practice Area and Practice Intent and Value Statements.

• The Performance Report is NOT just an appraisal artifact. It is a planning tool, data collection tool and cross-checking performance improvement tool to verifying business performance improvement before, during, and after the appraisal.

• While it cannot be used alone to determine a rating, the Performance Report SHOULD be used to verify if the appraisal findings and performance improvement results are consistent with the Performance Report.
CMMI Timeline

1987: The U.S. Department of Defense (DoD) contacts Carnegie Mellon University to develop a capability maturity model (CMM) to assess the quality and capability of their software contractors.

1991: Carnegie Mellon’s Software Engineering Institute releases the first version of the software development capability maturity model.

2010: Carnegie Mellon University founds CMMI Institute in order to extend the benefits of CMMI beyond software and systems engineering to any product or service company regardless of size or industry.

2013: CMMI Institute introduces the Data Management Maturity (DMM™) model to help companies build, improve, and measure their enterprise data management function and staff.

2014: CMMI Institute is acquired by ISACA®, a global non-profit association specializing in information technology. Both companies share a vision for advancing organizational performance across a spectrum of functions and industries.

2016: The CMMI® development View is released with key enhancements to meet the challenges of the changing global business landscape.

2017: CMMI Institute collaborates with the US government to release two healthcare initiatives that improve patient safety.

2018: CMMI V2.0 expands to include views for Services and Supplier Management.


2020: First CMMI V2.0 appraisals conducted and accepted. Major release of new Enabling Virtual Solution Delivery Practice Area, numerous updates to product suite components, major improvements to Performance Report template and instructions. New Security and Safety Content completed with CMMC context information, other model components being updated.

1999 Undersecretary of Defense (J. Gansler) Memo – SW-CMM ML3 Required for ACAT 1 programs
Appendix
Acknowledgements

Thank you to the CMMI community around the world for making this report possible. These are YOUR accomplishments, and we cannot wait to see what the data shows in 2020 and beyond! This report has been made possible through the creation and rapid improvements made to the CMMI V2.0 Performance Report template based on community and adoption feedback data. The new template has proven to be a powerful tool in the CMMI results arsenal.

This 2019 report represents a new baseline for real-world, global performance results from adopting CMMI V2.0. There is more to come, including an upcoming series of performance-focused webinars based on the information contained in this report, and we welcome your feedback and use of this report and valuable information with your clients and students.

A special thank you to our current illustrious Partner Advisory Board Chairman, Mr. Kieran Doyle, for his invaluable help, support and keen analysis and reviews for this effort.

Sincerely,

Ron Lear
CMMI Chief Architect, ISACA Director of CMMI Product Development and Services
and on behalf of the entire ISACA staff and CMMI V2.0 development teams and working groups
CMMI Categories and Capability Areas

4 Categories to Organize Thinking and Enable Adoption:
- Doing
- Managing
- Enabling
- Improving

12 Capability Areas to Address Common Business and Performance Challenges
The CMMI V2.0 Model is divided into Categories (about the work) which are divided into Capability Areas, which are divided into Practice Areas, which are divided into practices.

This hierarchy makes the model easier to navigate, target, adopt, and address your specific “pain points,” and faster to achieve performance and value.
Practice Area Capability Level

**Process implementation:**
That meets the intents of practices of the Practice Area up to and including the target capability level in the set of processes used for the work. (Some PAs have fewer than 5 levels.)

**Process habit and persistence:**
The intents of practices of II, GOV, and the target PAs up to and including this capability level are implemented for the set of processes used for the work. (Some of these PAs have fewer than 5 levels.)
A Revolution of Evolution

Evolutionary Practices Group
Levels Within Practice Areas

LEVEL 0
Initial
- Incomplete approach to meeting the intent of the Practice Area
- May or may not be meeting the intent of any practice
- Inconsistent performance

LEVEL 1
Managed
- Initial approach to meeting the intent of the Practice Area
- Not a complete set of practices to meeting the full intent of the Practice Area
- Begins to address performance issues

LEVEL 2
Defined
- Subsumes Level 1 practices
- Simple, but complete set of practices that address the full intent of the Practice Area
- Does not require the use of organizational assets
- Identifies and monitors progress towards project performance objectives

LEVEL 3
Quantitatively Managed
- Builds on Level 2 practices
- Uses organizational standards and tailoring to address project and work characteristics
- Projects use and contribute to organization assets
- Focuses on achieving both project and organizational performance objectives

LEVEL 4
Optimizing
- Builds on Level 3 practices
- Uses statistical and other quantitative techniques to understand performance variation and detect, refine, or predict the area of focus to achieve quality and process performance objectives
- Identifies and understands variation, and predicts and improves the ability to achieve quality and process performance objectives

LEVEL 5
- Builds on Level 4 practices
- Uses statistical and other quantitative techniques to optimize performance and improvement to achieve quality and process performance objectives
CMMI Appraisal Process – Appraisal Flow by Phase

1. Plan & Prepare for Appraisal
   - 1.1 Analyze Requirements
   - 1.2 Develop Appraisal Plan
   - 1.3 Ensure Readiness to Conduct the Appraisal

2. Conduct Appraisal
   - 2.1 Collect and Examine Objective Evidence
   - 2.2 Characterize Practices and Validate Preliminary Results
   - 2.3 Generate Appraisal Results

3. Report Results
   - 3.1 Deliver Appraisal Results
   - 3.2 Package and Archive Appraisal Assets

4. Conduct Action Plan Reappraisals (APR)
   - 4.1 Plan and Conduct APR, if Eligible

Only available for Benchmark Appraisals or Sustainment Appraisals, if eligible