# Honeywell Technology Solutions India Applies CMMI® Capabilities, Harmonized with Agile and Lean Practices, to Enable Continuous Culture Improvement

## Company Background

Honeywell Technology Solutions (HTS) is the development and engineering arm of Honeywell Inc. HTS works on almost all of Honeywell's products from every Strategic Business Group (SBG), from conception to technology development and insertion, design, engineering, and delivery. Areas of focus include Aerospace, Transportation Systems, Automation and Control Solutions (ACS), Performance Materials and Technology (PMT), and IT Services and Solutions. HTS is an integral part of Honeywell in developing products, services, and offerings using the best of technology, tools, processes, and people. It is actively serving products for developed markets and high-growth regions.

**❝ When you achieve CMMI maturity level 5, there's no free pass. You're expected to keep improving by submitting yourself to evaluations and adopting new ideas in a framework that maintains this robustness. The journey is not the endpoint but the opportunity for continuous improvement. ❞**

–ANDREAS KRAMVIS, VICE CHAIRMAN, HONEYWELL

## THE BUSINESS NEED

At its location in Bangalore, India, Honeywell Technology Solutions (HTS), the development and engineering arm of Honeywell Inc., produces software, products, and services for its key areas of focus catering to Aerospace, Automation and Control Solutions (ACS), and Performance Materials and Technologies (PMT). Crucial to its culture of "right and fast," its market expansion focuses on the quality and reliability of the software that is built into its products and services. Many of the environments in which HTS works is for machine-critical products and offerings, so strong processes must be put into place to deliver consistent, high-performance products.

HTS wanted to improve its problem-solving capability among 7,000 engineers and multiple lines of business. Accomplishing this goal required standard methods of communicating, implementing, and transferring knowledge.

HTS identified five specific areas for improvement:

1. Reduce the time that engineers spend solving problems in fusion with the Honeywell operating system (HOS).
2. Improve the ability to pinpoint complications early in the process by making solutions available from team members through sharing lessons learned and their collective knowledge base.
3. Create and sustain a problem-solving culture across the organization by empowering the engineers and team to work out engineering and management issues.
4. Shape the problem-solving process to be simple, easily adopted, with improved accuracy and addressing the root causes effectively and efficiently.
5. Improve systematic and layered problem-solving capabilities for each of the engineers, commensurate with their roles and responsibilities, training and competency development plans, and mentoring plans.

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## THE SOLUTION

Previously, HTS had implemented ISO 9001, ISO 16949, AS 9100, and AS 9115 quality control standards, along with document (DO) standards from the Radio Technical Commission for Aeronautics (RTCA). The organization had also used several internal best practices and Honeywell enablers such as the HOS and Velocity Product Development™ (VPD), which are built on a foundation of design for Six Sigma to drive sustainable improvements. To drive higher capability improvement across the enterprise, HTS implemented CMMI® for Development, version 1.3 (CMMI-DEV, V1.3).

HTS deployed CMMI Causal Analysis and Resolution (CAR) practices to help the organization bring continuous improvement and best practices to its processes. The many possibilities of CAR range from delivering instantaneous solutions to elaborate investigation.

HTS has architected CAR as a multifaceted instrument. While CMMI processes usually advocate that CAR activities be applied to identify causes of selected outcomes, HTS uses it to attack problems and let other applications of CAR naturally follow. It has merged CAR seamlessly with its initiatives such as agile and lean.

HTS has ensured CAR engages people well and uses data to refine and validate judgments. It encourages practitioners to perform CAR rather than restricting it to a central team. Kept as an open system for all, HTS thus avoids the pitfalls of maintaining CAR in a closed system with local perspectives. With this strategy, HTS has deployed CAR in the different domains of its business and in various process levels. To implement this strategy, HTS used the "Star Model," a standard approach in Honeywell.

HTS deployed CAR in three forms:

- Intuitive CAR
- Causal Maps
- Quantitative CAR

Selecting from the three categories depends on the complexity of the problem. Simpler issues are solved by intuitive CAR, whereas complex problems are solved by causal maps. More complex problems are treated with statistical CARs.

## RESULTS

HTS knew it needed to put robust methodologies in place to build capabilities before it could expect to transform its business. Implementing major initiatives is part of the company culture, and the CMMI model fit right in. The consistency, repeatability, and transparency of the CMMI platform helped to accelerate the problem-solving abilities within the organization. HTS first earned a CMMI maturity level rating 5 in 2014, helping it to achieve the following results through the capability improvement framework:

- Between a 12 to 15 percent decrease in the occurrence of functional defects
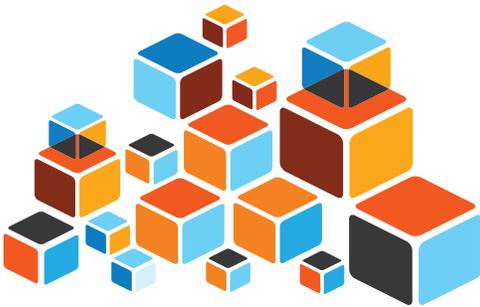
> " Honeywell is committed to building excellence in its software capability. CMMI maturity level 5 best practices in software engineering are critical to creating products that are intuitive, reliable, and meet current and emerging customer needs. Agile software development emphasizes iterative and incremental development, daily collaboration with the customer, and the use of cross-functional teams to build working software. Both CMMI maturity level 5 and agile development are critical to creating products that are intuitive, reliable, and have a higher customer value. "
>
> **-KRISHNA MIKKILINENI, SENIOR VICE PRESIDENT, ENGINEERING, OPERATIONS, AND IT, HONEYWELL**

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- 15 percent improvement in implementation of Kaizen strategy over the last three to four years
- Curtailment of the escalation of issues via the Andon information tool in the system that required stakeholders to shift focus from development to issue resolution
- Design, development, and deployment of structured tools such as do-it-yourself (DIY) kits to help with statistics-driven approaches
- Increased knowledge sharing at each tier level
- Shortened learning curve for employees

Implementing CMMI as part of a company-wide program has resulted in a corporate culture that encourages problem-solving and innovation. When developing software, the engineer is now able to immediately address and work out problems in order to move forward with deliverables, clearing the path for speed and quality. Relationships between causal factors and effects are uncovered, bringing transparency to the forefront and complementing what metrics have achieved. This excellence in software development and a focus on continuous improvement have helped HTS to continue to drive faster growth and outperform markets.

A harmonized approach and balanced mix for the rapid problem-solving (RPS) has enabled HTS to achieve these four goals:
- Simplification for engineers
- Solutions for managers
- Structure for leaders
- A cultural change for executives, engineers, and all stakeholders (internal and external), where everyone sees the value in and rallies around the capabilities improvement

Since HTS implemented CMMI processing in order to improve its problem-solving ability among its 7,000 engineers and multiple business lines, the process has been an unqualified success. The framework has allowed the company to stay true to its culture of "right and fast," positioning it as a leader for years to come. For more information, contact Prabhakar S. at **prabhakar@honeywell.com** or Roopadevi Venkateshamurthy at roopadevi. **venkateshamurthy@honeywell.com**.

## About CMMI® Institute

CMMI Institute (**CMMI**institute.com) is the global leader in the advancement of best practices in people, process, and technology. The Institute provides the tools and support for organizations to benchmark their capabilities and build maturity by comparing their operations to best practices and identifying performance gaps. For over 25 years, thousands of high-performing organizations in a variety of industries, including aerospace, finance, healthcare, software, defense, transportation, and telecommunications, have earned a CMMI maturity level rating and proved they are capable business partners and suppliers.

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