

Case Study

Hangzhou Pailie Turbocharges Business Outcomes Using CMMI's Performance Report



The Business Need

A CMMI user since 2018, Hangzhou Pailie develops complex credit software applications for small- and medium-sized financial institutions to help them manage risk better through sophisticated quantitative analysis. As a data-driven organization, they understood that as the company grows and its product portfolio expands, they needed to carefully map processes and track performance to improve business outcomes, better align compensation to specific measurable benchmarks, and optimize the entire software development process. They were particularly focused on improving per capita output, a key metric in software development.

The Solution

The capabilities targeted for this appraisal were:

- Ensuring Quality
- Managing the Workforce
- Improving Performance
- Engineering and Developing Products
- Planning & Managing Work
- Managing Business Resilience
- Sustaining Habit & Persistence
- Supporting Implementation

Hangzhou Pailie achieved CMMI-DEV Maturity Level 3 in 2018 and achieved CMMI-DEV Maturity Level 5 in 2021 (CMMI-DEV). Their primary motivation to conduct the ML5 appraisal was to continue to improve and fine-tune performance following the ML3 rating. They discovered that the CMMI Performance Report served a critical role in helping to continually assess tangible and measurable improvements.

Company Background

Founded in 2016, Hangzhou Pailie Technology is a Chinese startup focused on helping small and medium-sized financial institutions with their credit businesses via Big Data risk control and management technologies. Their five major products include Big Data platforms, smart modeling systems, precision marketing, customer acquisition solutions, and credit management systems. The company provides professional, reliable, and intelligent online risk management solutions to over 150 clients across banks, fintech companies, and insurance firms.

Their leadership and technical teams hail from some of the best-known technology enterprises like Google, Yahoo, PayPal, Lending Club, and Alibaba. The company is headquartered in Hangzhou, with an R&D outpost in Silicon Valley.

For more information, go to ecreditpal.com





The Role of the CMMI Performance Report

An integral component of CMMI, the Performance Report is completed by each CMMI appraisal team during the appraisal, based on the objectives and measurement data the organization provides and is validated with the organization appraised. The Performance Report is a required deliverable for any CMMI Benchmark Appraisal and helps to identify critical performance weaknesses and improvement opportunity “anchor points” and makes performance improvement clear, transparent, intentional, and consistent.

Hangzhou Pailie used the Performance Report as a planning tool, and a data collection tool to verify business performance before, during, and after the appraisal. The Performance Report helped Hangzhou Pailie to:

- Make a shift from a compliance and process-based model to a flexible framework of best practices that provides demonstrable and measurable capability performance improvement results
- Understand how to improve their business and address their critical pain points in software development
- Compare results benchmarked to their industry and geography
- Establish a baseline for ongoing CMMI performance analysis and outcome-based KPIs

“As the organization grows, it gets more difficult to manage based on past experience and gut feeling.

Data never lies—if I connect bonuses with data, it is more convincing; my people see that I am not making decisions based on imagination.”




Zhen Xia
CEO, Hangzhou Pailie Technology Co.

“When reviewing the Performance Report with the Appraisal Sponsor, he 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 assets and will be maintained on a quarterly basis as a reporting tool that links Business Objectives (BOs), Quality and Process Performance Objectives (QPPOs), Process and Performance Baselines (PPBs), and Process Performance Models (PPMs) in an integrated format.”

Pascal Rabbath, Benchmarked Pty Ltd, CMMI Lead Appraiser



Key Performance Goals Achieved

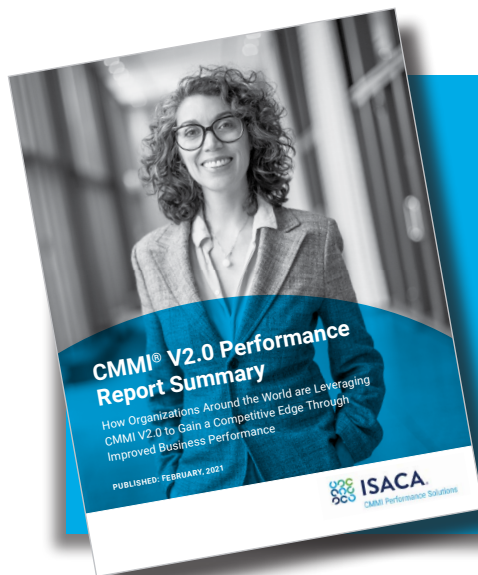
Target Business Objectives	Target Measurement	Actual Measurement Results	Post Improvement Results	Summary of Quantifiable Organizational Benefits
<p>Increase per capita output</p> 	<p>Increase per capita output to 330,000 yuan, an increase of 8.98% over previous year.</p>	<p>Achieve mean total unit workload of 1.15 person/FP with a standard deviation of 0.025 person/FP.</p> <p>Achieve mean coding workload of 0.227 person/FP with a standard deviation of 0.046 person/FP.</p> <p>Achieve integration test workload of 0.14 person/FP with a standard deviation of 0.006 person/FP.</p>	<p>Mean total unit workload of 1.11 person day/FP with a standard deviation of 0.022 person day/FP.</p> <p>Mean coding workload of 0.226 person day/FP with a standard deviation of 0.05 person day/FP.</p> <p>Mean integration test workload of 0.14 person day/FP with a standard deviation of 0.03 person day/FP.</p>	<p>The threshold for per capita output was achieved within the calendar year through a reduction in the mean total unit workload of approximately 3.6% with the variance remaining largely unchanged. The mean coding workload and variance remained largely unchanged during the same period.</p>
<p>Reduce coding workload</p> 	<p>Reduce the mean total unit workload by 4.2%, from 1.2 person day/FP to 1.15 person day/FP during the 2020 calendar year.</p>	<p>Achieve equivalent design pages of 0.261 design pages/FP with a standard deviation of 0.022 person/FP.</p> <p>Achieve code reuse rate of 23.9% with a standard deviation of 3.2%.</p>	<p>Mean equivalent design pages of 0.265 design pages/FP with a standard deviation of 0.022 design pages/FP.</p> <p>Mean code reuse rate of 24.5% with a standard deviation of 1.2%.</p>	<p>The mean total unit workload was reduced within the calendar year by increasing the mean design pages per Function Point (a measure of productivity) by approximately 1.5% while keeping the variance largely unchanged.</p> <p>During the same period, the mean code reuse was moderately improved, however variance was reduced significantly— by a factor of more than 2.5 times—indicating improved code reuse rates within Hangzhou Pailie's project portfolio.</p>
<p>Maintain residual defect density</p> 	<p>Maintain the current mean level of residual defect density of 0.227 defect/FP during the 2020 calendar year.</p>	<p>Maintain residual defect density of 0.227 defect/FP with a standard deviation of 0.002 defect/FP.</p>	<p>Mean residual defect density of 0.227 defect/FP with a standard deviation of 0.008 defect/FP.</p>	<p>A cost benefit analysis was conducted by Hangzhou Pailie on reducing the mean residual defect density. The conclusion was that there would be limited benefits, given that the software was already meeting the customers' quality needs. This would have resulted in uncompensated increase in project costs.</p> <p>Therefore, for the calendar year, Hangzhou Pailie decided to focus its improvement effort on increasing code reuse and productivity while maintain residual defect density. This analysis and strategy allowed Hangzhou Pailie to maintain its cost of quality for the calendar year on par with the previous year.</p>



Lessons Learned

Hangzhou Pailie believes that the appraisal process and Performance Report helped the entire organization feel more confident and provided them with a unique competitive advantage in a crowded and ultra-competitive marketplace. By embedding the CMMI-DEV model into its quarterly performance goals, it allowed the organization to bring its software development processes and management to a new level and incorporate statistical analysis into the strategic planning process. It also linked performance goals to individual employee compensation, providing a transparent and measurable process based on quantitative data, that incents employees on specific achievements, improving overall employee satisfaction.

Hangzhou Pailie understands that as an organization that helps other organizations use their own data better, they must intensely focus on their own data to improve performance and outcomes. This encourages the entire organization to collectively identify potential improvements (backed by relevant metrics), reinforces best practices and creates persistent habits and clear processes. This will allow Hangzhou Pailie to continue its high level of performance as the company grows.



The CMMI Performance Report in Action

See for yourself how organizations around the globe are leveraging CMMI to improve business performance and create a sustainable competitive edge.

Download this report to view the analysis of the performance improvement results found in CMMI appraised organizations' Performance Reports.

Go to www.isaca.org/cmmi to download your complimentary copy.



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