Cigniti: Using CMMI® to Drive Excellence in Quality Engineering

THE BUSINESS NEED

Cigniti is a global leader in independent software testing and quality engineering services. They help enterprises build quality software, reduce cost, and increase return on investment. With a vision to be the world's largest and most respected software testing company, Cigniti put the following continuous improvement goals in place for 2018:

- Enhance the Client Satisfaction Index above 3.65 out of a potential 4.0 by improving service quality through effective use of the Integrated Process Management System (IPMS)
- Increase profit margins by 10% by delivering more efficient testing services through utilization improvements and enhancing overall productivity

Business Challenges Faced by Cigniti

Cigniti had three specific issues that needed to be addressed before they could achieve their goals:
- Increase the productivity of their test case execution
- Improve the critical sub-processes that support their high-level process
- Stabilize fluctuating resource skill index and expand the use of test automation

COMPANY BACKGROUND

Cigniti is an independent software testing company, quickly growing into a multi-million dollar company with 2,100 experienced professionals positioned across three continents. Their aim to build a better world with better software has manifested into Intellectual Property (IP) led test solutions based on inventions, innovations and best practices that are transforming the scope and engagement of Software QA across verticals.

Cigniti is equipped with precision guided modules that are driven by speed, skill, and accuracy. Testing at Cigniti is defined, measured, optimized, and reviewed across all the stages of test life cycle to ensure the development of flawless software products and applications. Their market-driven testing approach helps clients identify and eliminate redundancies in costs, infrastructure, and processes while ensuring smoother and faster applications.

Cigniti's Managed Testing Services unit was appraised at CMMI Services (SVC) Maturity Level 3 in 2012, and CMMI SVC Maturity Level 5 in 2015 and 2018.

THE SOLUTION

According to Prasad Gundu, Assistant Vice President of Process and Advisory & Transformation Services at Cigniti, "the future of the industry is to produce quality in the most economical way, that is by - automation, collaboration, shift-left thinking and innovation." Cigniti believed that efficient integrated process management would help them accomplish the results that they envisioned. Critical aspects of the solution they put in place included:

- **Employee Training and Integrated Process Management**
  By improving employee skills and effectively utilizing statistical and quantitative data in their integrated process management systems, Cigniti enhanced the thoroughness of their high maturity practices
- **Capacity and Availability Management**
  Using processes to better manage capacity and availability helped them ensure the readiness of automation resources with the diversified skills they would need
- **Critical Success Metrics**
  Metrics were identified to manage processes and sub-processes statistically
- **Monitoring and Control**
  Control charts were used to regularly monitor and understand the statistical management processes and provide greater transparency to their executive team

How CMMI Helped Cigniti

CMMI Services High Maturity practices were used extensively to build a quality engineering platform and dashboard with predictive capabilities. Adopting CMMI concepts ensured repeatability and predictability as Cigniti pursued its business objectives of enhancing client satisfaction and improving profit margins. Processes meeting the intent of CMMI practices provided transparency to executive management so they could make more informed business decisions and proactively manage enterprise risks and associated business outcomes. Improved governance also helped their practitioners manage complex projects with greater ease.

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RESULTS

With CMMI in place, Cigniti began to put a greater focus on automation of test cases by increasing the reuse of both the test cases and test scripts. Their teams performed regular skill and enhancement activities and increased the use of hypotheses testing to measure process improvements.

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Overall, the Test Case Execution Productivity mean, quarter-over-quarter at the organization level, improved from 15.559 to 19.107 (test cases per person days) and the standard deviation was reduced from 7.589 to 1.932. These results meant greater productivity and better consistency.

Statistical Summary

As a result of their efforts, the Cigniti team improved productivity for both manual and automated testing projects.

Test Type	Increased Productivity	Better Consistency	Improved Quality	Reduced Risk
Manual	**48%** increase	72% reduction in standard deviation	62% greater test case effectiveness by detecting more defects with optional test cases	68% reduction in the standard deviation for test case authoring productivity
Automated	**22%** increase	28% reduction in standard deviation	74% greater defect detection capability	31% reduction in the modification index

KEY PERFORMANCE GOALS ACHIEVED

Cigniti successfully met both of their new key performance goals for 2018

- The Client Satisfaction Index (CSI) was raised periodically to reach the best-ever score of 3.9 out of 4.0, which was much higher than their goal of 3.65
- Profit margins were increased to over 10% over four to six quarters

They saw improvement in testing skill index, effort utilization, test design effectiveness, and review efficiency. By adopting CMMI, Cigniti enhanced business proposals, gained a competitive edge, and better aligned their solutions to market demands. Jaya Raghuram, Executive Vice President, Head of Global Delivery at Cigniti notes that, "CMMI helped us establish a great foundation and partner with our clients in delivering value. I am a firm believer in having a matured process model as a business enabler."

Recognition of Success

Cigniti became the world's first Independent Quality Engineering Services company to be appraised at CMMI Services V1.3, Maturity Level 5. Through this process, they received the following benefits and recognitions:

- CSI improved to a record 3.9/4.0, and 4th quarter EBITDA was 11.9% with subsequent quarter-over-quarter improvements
- Positioned as a 'Star Performer' and 'Major Contender' in the Everest Group PEAK Matrix
- Positioned in Gartner's Magic Quadrant for Application Testing Services, Worldwide
- Recognized as a leader in NelsonHall Vendor Evaluation & Assessment Tool (NEAT) charts for Software Testing
- Recognized for the third year in a row as a leader in the Digital and Consulting market segments
- Provided an edge over Traditional Testing Services (TTS) with the market's move towards Specialized Testing Services (STS)

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> – Jaya Raghuram,
>   Executive Vice President,
>   Head of Global Delivery

Lessons Learned

In retrospect, Cigniti cites the following key lessons learned in their performance improvement journey:

- Focus on greater **automation** of test cases
- Increase **reuse** of test cases and test scripts
- Conduct regular **training** and skills enhancement activities
- Use **'Tests of Hypothesis'** more frequently to measure results of pilots and process improvements
- Develop a **second-level Process Performance Model (PPM)** in cases where an X-factor in a PPM is influenced by multiple sub-processes