# How a Technology Client became 1st in North America to be TMMi Level 3

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## Biography

*Suresh Chandra Bose, Ganesh Bose* is a Senior Manager – Consulting (Associate Director) at Cognizant Business Consulting practice. Suresh is an accredited Lead Assessor from TMMi Foundation and has been in the IT Industry for more than 19 years with vast consulting experience in various industries. He has executed strategic initiatives for many Fortune 100 companies in the areas of PMO, PPM, Process Consulting, Portfolio Management, TMMi Assessment/Implementation, Organization Strategy, Test Consulting and CIO/Governance Dashboard/Metrics across the globe. Suresh is privileged to be the 1st TMMi Lead Assessor in North America and South America.

*Suresh holds 18 International certifications in IT and speaks at numerous international conferences, such as American Society for Quality (ASQ) Innovation Conference, American Software Testing Qualifications Board (ASTQB) and the Pacific Northwest Software Quality Conference (PNSQC). He has been part of the selection and review panel for a leading conference.*

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# Abstract

As a QA professional, I am sure you must have grappled with the following questions at some point in your career:

- Can testing practices/processes be benchmarked by industry standards?
- Can organizations improve effectiveness of testing?
- Can test maturity be sustained?
- What should the implementation plan include to improve testing processes?

As an Accredited TMMi Lead Assessor, I will provide an exhaustive approach in response to the above questions. This paper is about how we (Cognizant) enabled a Technology Client in their TMMi journey to become North America's first organization to be TMMi Level 3 certified.

We started supporting the client's adoption of TMMi as a reference framework for driving process improvement by conducting an initial assessment of the current testing processes, and identified areas of improvement and recommended a roadmap including Process Standardization, Training, Piloting and Institutionalization of the TMMi practices across the organization.

We performed a phase-wise iterative approach, with a focus on quality of deliverables and effective test practices. The underlying objective was to reduce cost of rework by improving quality through better maturity on testing practices, in accordance with TMMi Level 3. The 'one-size-fits-all' approach proved ineffective here, and hence came the need to highlight various elements of Organizational Change Management, instrumental in process roll-out after new QA processes, guidelines and checklists are defined. This was a huge initiative that helped the client transition to a higher maturity in overall testing - instilling scalable, measurable and predictive capabilities.

# 1  Background

One of the key strategic goals for the large Technology Organization (will be referred to as "the Client" in this paper) is to improve the Testing maturity of their policies, practices, processes and capabilities in order to achieve Level 3 Maturity Certification from the Test Maturity Model Integration (TMMi) Foundation which will provide a higher degree of confidence in their capabilities to their customers, both internal and external. They also wanted to improve the Testing efficiency and effectiveness. The Client is primarily focused on Storage, Server and Hardware. They were spread across USA, India and Taiwan with team size of 400.

It was during 2014, the Client had a need to assess their current Testing processes against TMMi Level 3 Maturity and also receive recommendations on ways to implement the fixes for TMMi Level 3 (L3). Their initial level was level 1 and wanted to achieve level 3.

To determine the extent of gaps between the current state and their desired future state of TMMi Level 3, Client engaged Process and Quality Consulting (PQC) within Cognizant Business Consulting during 2014 to conduct an informal TMMi assessment. The PQC team conducted initial TMMi assessment of Client's current Testing processes, and identified areas of improvement along with a Recommendations roadmap and Improvement approach.

# 2  TMMi Maturity Levels

There are five levels of maturity in TMMi: starting from a level of being ad hoc and unmanaged, to improving in maturity to one which is managed, then defined, measured, and finally optimized. The process areas for each TMMi maturity level are shown below in Figure 1.

- Level 1 - Initial:  There are no defined process areas to be considered level 1.  This means any organization regardless of whether they have any testing process can be considered at level 1. The actual maturity rating starts from level 2 upwards.
- Level 2 - Managed:  This level has five process areas starting from Test policy and Strategy. The process here is considered stable and can repeat the tasks at the project level.
- Level 3 - Defined:  Level 3 is standardization of processes at the organization level and also has five process areas.
- Level 4 – Measured:  This level is quantitatively managed with focus on measurement, product quality, and advanced peer reviews.
- Level 5 – Optimized:  The organization is capable of continually improving its processes based on a quantitative understanding of statistically controlled processes. The testing techniques are optimized with continuous focus on fine tuning and process improvement.
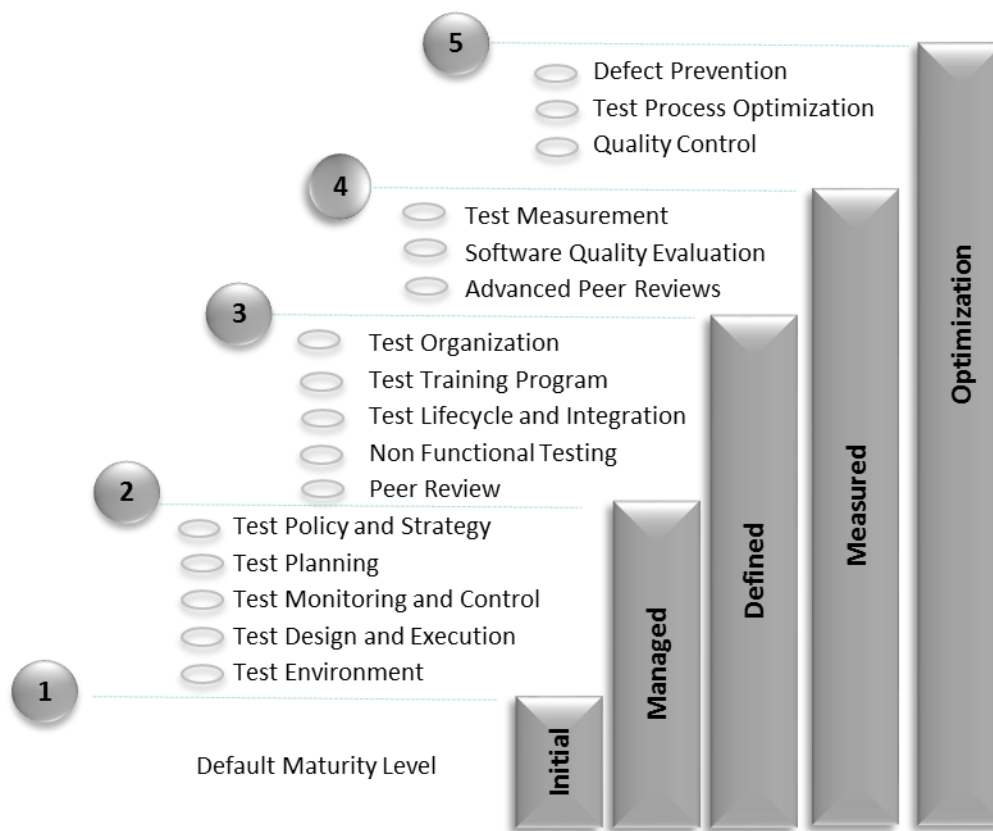


**Figure 1: TMMi Maturity Levels**

# 3  Approach

We used the following five different phases to approach the need of the Client.

- Informal Assessment
- Implementation
- Ongoing Audits
- Readiness
- Formal Assessment and Certification

## 3.1 Informal Assessment

Informal Assessment is the first step in benchmarking the progress in test process improvement with three main phases as shown in Figure 2.

As part of the planning phase, we (refer to my team as "we" since it may not be done by a single person) understand the scope of the assessment with focus on the business units, geographical locations, sample projects representing the organization getting assessed covering all lifecycle methodologies and project size.

Once the interviews are scheduled, we talk to the various stakeholders (which includes Test Engineers, Test Managers, Test Leads, Development team and the Senior Management) to understand the current landscape of the organization. We also perform documentary evidence reviews. The interviews are to ensure adequate coverage of the generic and specific goals and practices across various process areas of TMMi. Timelines change based on the maturity assessment level chosen by the organization to be assessed.
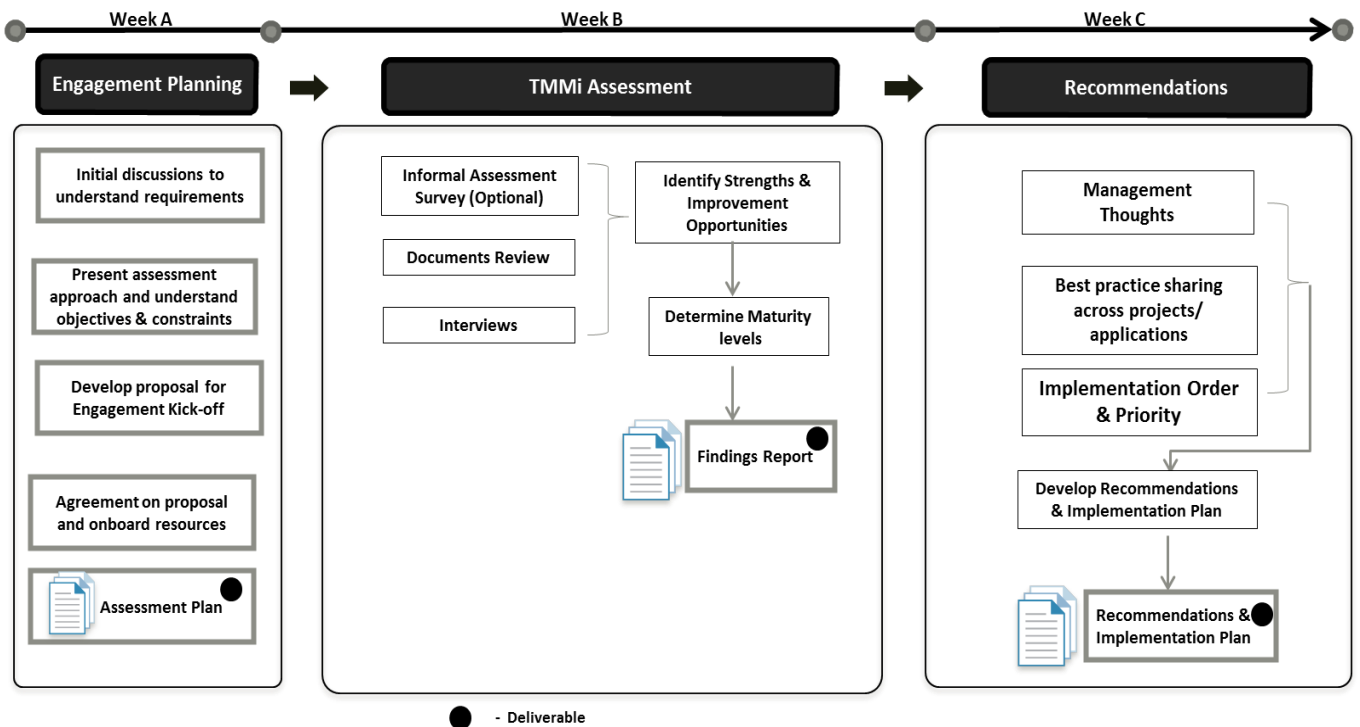


**Figure 2: Informal Assessment Phases**

Based on the outcome of the findings report, recommendations are developed for every gap identified and they are prioritized based on the inputs from the organization. A detailed Implementation roadmap is finally developed with timelines for all the prioritized recommendations.

### 3.1.1 TMMi Assessment Maturity Rating Methodology

The rating process strictly adheres to what is laid out in TMMi Assessment Method Application Requirements (TAMAR) which defines the requirements considered essential to Assessment methods intended for use with the TMMi framework.

There are 16 process areas, 77 goals and 345 practices including the specific and generic practices from level 2 to level 5. The interviews and document evidence are rated for all the specific and generic practices which are rolled up to the goals, then to process area, and finally to the maturity level. See Figure 3 for an overview of the TMMi Rating Mechanism.
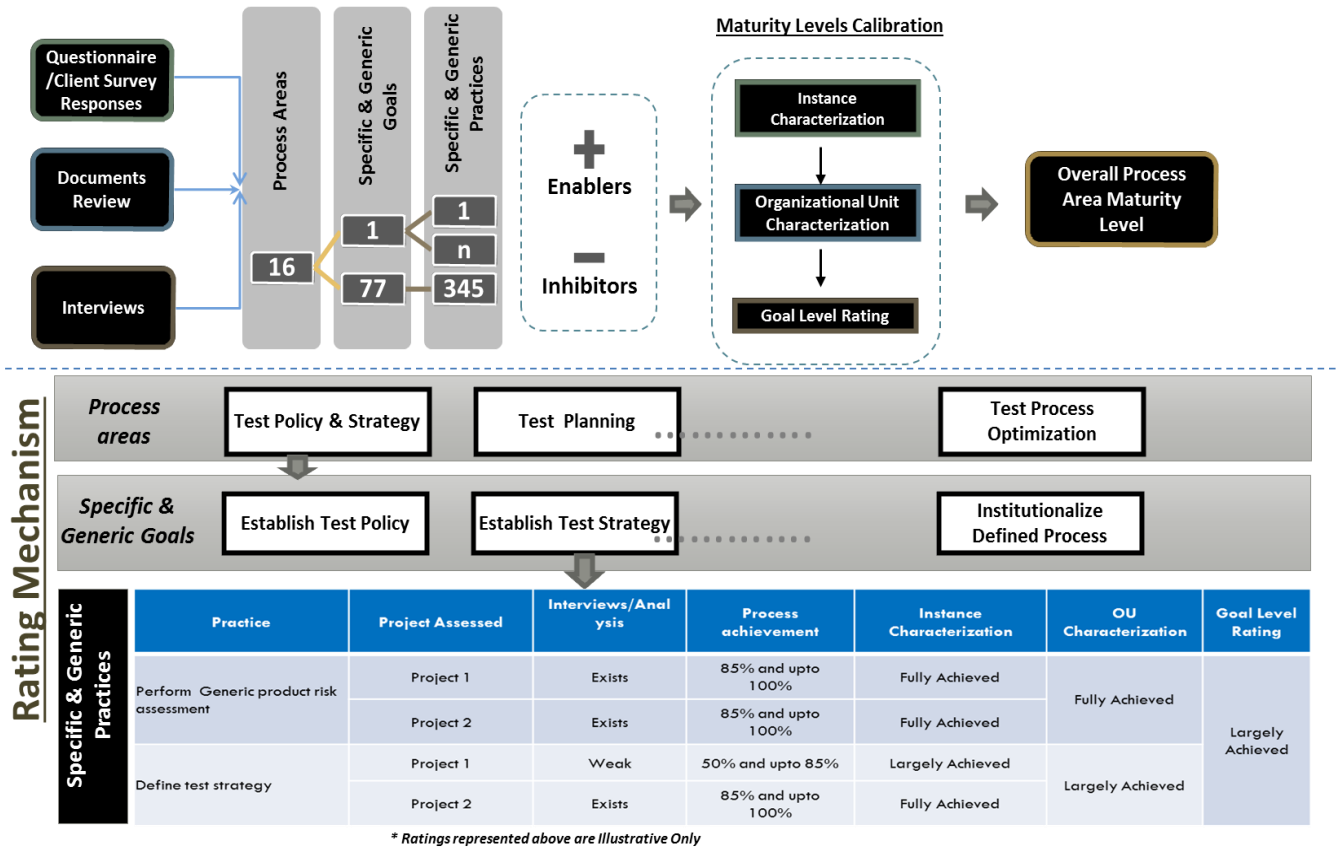


| Practice | Project Assessed | Interviews/Analysis | Process achievement | Instance Characterization | OU Characterization | Goal Level Rating |
|---|---|---|---|---|---|---|
| Perform Generic product risk assessment | Project 1 | Exists | 85% and upto 100% | Fully Achieved | Fully Achieved | Largely Achieved |
| | Project 2 | Exists | 85% and upto 100% | Fully Achieved | | |
| Define test strategy | Project 1 | Weak | 50% and upto 85% | Largely Achieved | Largely Achieved | |
| | Project 2 | Exists | 85% and upto 100% | Fully Achieved | | |

*\* Ratings represented above are Illustrative Only*

**Figure 3: TMMi Rating Mechanism**

### 3.1.2 TMMi Maturity Level Calibration Guidelines

Process Areas are designated the appropriate maturity levels based on the following guidelines:

| Rating | Description |
|---|---|
| Fully Achieved | • Convincing evidence of process compliance<br>• Systematic and widespread implementation of process<br>• No obvious weakness in distribution, application and results of this process exists<br>• Process achievement is between 85% and up to 100% |
| Largely Achieved | • Significant evidence of process compliance |

| | |
|---|---|
| | • Minor weakness in distribution, application and results of this process exists<br>• Process achievement is between 50% and up to 85% |
| Partially Achieved | • Some evidence of process found<br>• Process exhibits significant weaknesses, is incomplete, not widespread, or inconsistent in application or results.<br>• Process achievement is between 15% and up to 50% |
| Not Achieved | • Little or no evidence of process<br>• Process achievement is between 0% and up to 15% |
| Not Rated | • Any supporting goal that cannot be rated based on the current phase of the project must be "Not Rated" |
| Not Applicable | • The process area is considered not to be in the scope of the assessment or applicable to the organizational unit by the Lead Assessor |

## 3.2   Implementation

PQC worked on the complete Implementation of the prioritized recommendations from the informal assessment which included **Process Standardization, Training, Piloting and Institutionalization** (see Figure 4) of the TMMi practices across the entire Organization within Enterprise Validation. PQC performed a phase-wise iterative approach for the implementation with a focus on quality of deliverables and effective Test practices. The approach empowered Client's underlying objective to reduce the cost of rework by improving quality through better maturity on testing practices in accordance with TMMi Level 3.
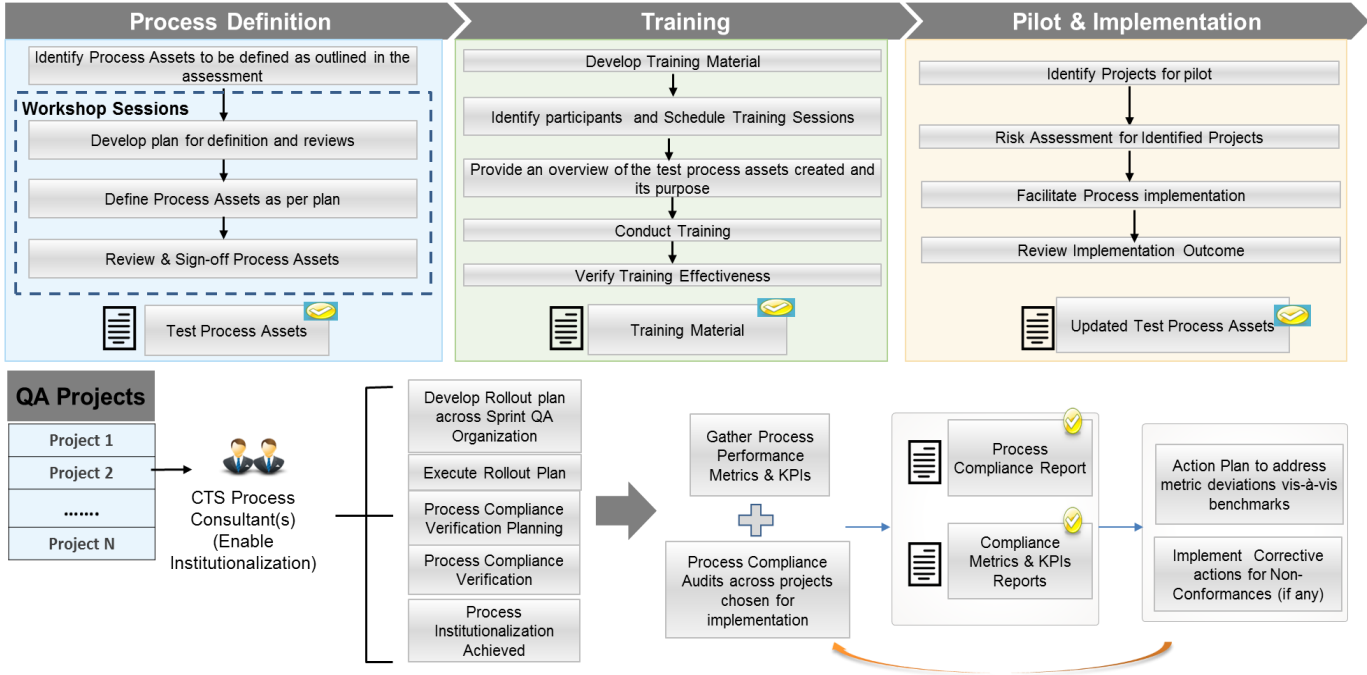


**Figure 4: TMMi Implementation**

- Restructured the testing organization focusing on consistent processes, cross trained testers and key support functions

- Identified 14 key improvement areas and implementation priorities based on existing landscape to achieve TMMi maturity level 3

- Provided a 12 month implementation roadmap to define, setup, train and rollout processes for 400+ team including full-time employees and contractors

- Defined many new processes, guidelines and checklists that were missing and refined existing processes based on the gaps related to specific and generic practices

- Trained key resources identified along with TWG (Technical Working Group) on new processes and TWG followed "train the trainer" initiative to train rest of the Organization. TWG is a key element as part of the Organizational Change Management to review the processes and help resolve operational road blocks, assist in development of collaterals and act as change agents in the transition

- Performed piloting for some of the new processes. In some cases, we refined and baseline processes based on pilot outcomes wherever applicable

- Communicated the readiness for organization wide roll out and institutionalized the processes with the support of TWG to implement improvement areas across rest of the projects. All new and active projects were mandated to follow the standardized process along with a plan for actively running projects to transition and adopt them

## 3.3   Ongoing Audits

We formed Audit Champion to oversee the audits for all current projects in multiple geographies. The Audit Champion is a single person but will have internal auditors in each region to conduct audits. An Audit plan was developed to conduct spot checks and audits to assess effectiveness of testing organization against instituted processes. Based on the outcome of the audit findings, we analyzed the Organizational level gaps (Non-Compliance) and trends and took preventive actions and ensured all gaps are closed in a timely fashion.

## 3.4   Readiness

The objective of Assessment Readiness phase is an attempt to build confidence among the Client's Enterprise Validation team, just before taking up the Formal Assessment. This is done by understanding the positive compliances and the gaps (Non-compliances and Opportunity for improvements) both at project level and at Organizational level with respect to TMMi practice implementation and then derive a plan and action to fix the gaps to ensure readiness towards Formal assessment.

The goal for this Phase of the engagement is to prepare the Enterprise Validation for formal assessment through the following means:

- Closing Non-Compliances for all active projects

- Provide facilitation to the project team on closing the gaps

- Conduct mock assessments

- Collate sufficient evidences (both direct and indirect artifact evidence) for all the projects

### 3.5 Formal Assessment and Certification

Finally we conducted a six week engagement to gather evidences, data submission requirements and document final findings for formal certification. The following activities were performed as part of this Formal TMMi Level 3 Assessment:

- Conduct interviews with identified stakeholders
- Document Analysis and review for the selected projects
- Follow-up interview/discussion with the stakeholders
- Completion of all Interviews and Document review
- OU (Organizational Unit) level findings
- Goal Ratings
- Process Area Ratings
- Recommendations on how to address weaknesses
- Final Assessment Report (Formal Assessment)
- Data Submission Requirements to TMMi Foundation

# 4 Summary

Cognizant conducted the formal assessment using TMMi approved model "**Cognizant TMMi Assessment Method 1.2"** which was led by the TMMi Accredited Lead Assessor Suresh Chandra Bose Ganesh Bose from Cognizant's PQC. Suresh Chandra Bose, the only TMMi Accredited Lead Assessor from North America, using similar approach successfully transformed the technology giant to become the first organization in the United States to be formally certified at TMMi Level 3. This was a huge initiative that helped the client transition to a higher maturity in overall testing - instilling scalable, measurable and predictive capabilities with improved Testing effectiveness, efficiency and productivity. Currently there is only one company in North America at Level 3 and would like to see more companies reach that maturity level and higher.

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