

## View Point



### Realizing business value with a Testing Center of Excellence

---

Manoj Narayan, Somil Katiyar

#### Abstract

In today's world of global transformation, corporations are faced with the tough goals of generating exponential growth and maintaining high profitability in order to overcome competition. Cascading the goals to the external and internal IT organization, technology owners need to develop/enhance applications at a fast rate while at the same time, reduce the cost of development and maintain high quality standards. These pressures have resulted in numerous operational challenges for IT organizations, such as shorter development and implementation timelines, globally distributed teams, limited resource availability, and limited subject matter expertise, all impacting their ability to deliver high quality solutions.

Many organizations are setting up Centers of Excellence to cater to their testing needs and to continually improve their IT operations. As a part of the organizational transformation to Centers of Excellence, testing is being moved out from development and business teams to a centralized testing team. This paper explores the challenges in setting up a Testing Center of Excellence and puts forth some practical options to help put in place mature, structured Testing Centers of Excellence.

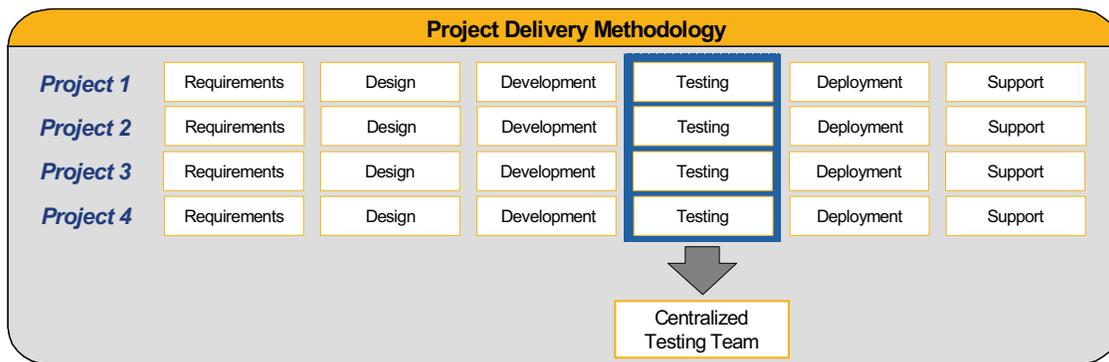
# Evolution of Testing Centers of Excellence

## Traditional Model

The traditional “silo” organizational model has no strategic resource pools. For each project or unit, members of separate project teams do the testing in the software development lifecycle. These independent testing teams cannot ensure consistent quality across the organization as they are controlled by different management teams, are focused on a particular business unit or project, and have varying levels of budget allocation. Besides, this is an inefficient process because people need to be trained for each project.

## Centralized model

To achieve operational efficiencies and to address their business needs more effectively, organizations are revisiting and transforming their testing structure. Testing is being moved out from the development and business teams to a centralized testing team that functions as a shared service.

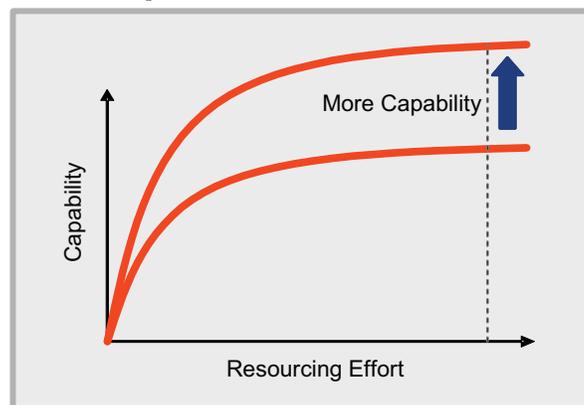


The centralized testing team uses a single group to provide testing services to multiple LOB or units. The internal organization of the centralized testing team may mirror the larger organization structure, i.e. it may be internally organized by LOB, skill or service to develop the domain/subject matter expertise. The right framework of support can help optimize resources of the centralized team and its testing capabilities — productivity, time to market, quality, and cost.

## Testing Centers of Excellence

Centers of Excellence or competency centers based on technology have existed for many years, e.g., web testing center for J2EE solutions or Microsoft solutions. A Testing Center of Excellence (TCoE) focuses on testing and deals with process, tools and best practices for enhancing testing effectiveness.

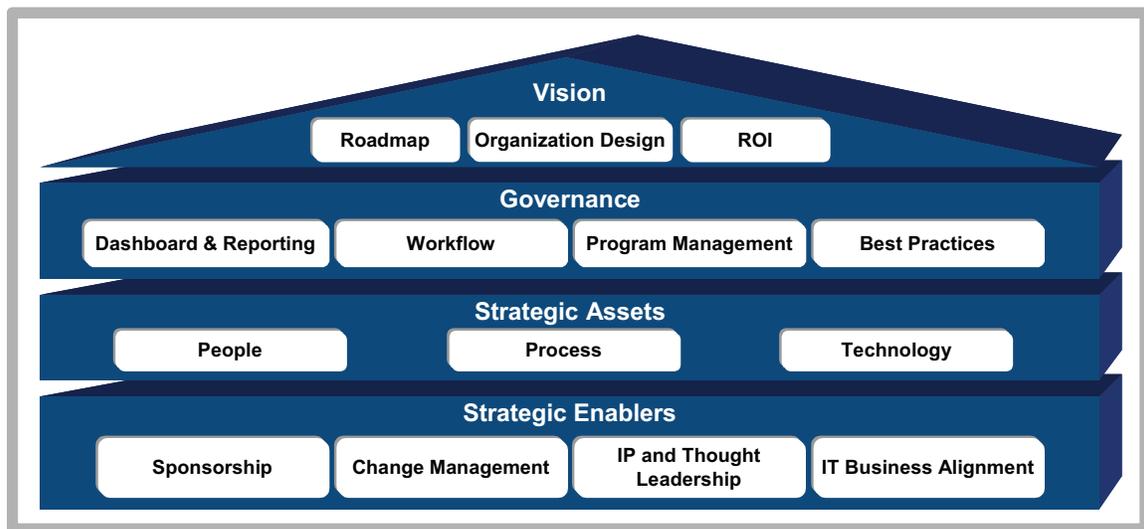
A TCoE is a framework comprising strategic assets — process, people and technology, to govern how a testing organization engages and delivers highly efficient testing services to the larger enterprise. It has clearly established goals, well-defined processes, a governance mechanism, multi-disciplined skill sets, and common tools and technology.



## The TCoE framework:

1. Implements testing process management and best practices with metrics-based management
2. Introduces test process analysis to provide advise and improvements based on trend analysis of key metrics
3. Introduces a structured approach to define business test cases
4. Introduces usage of test accelerators to enhance productivity
5. Adopts risk based testing, requirements traceability and knowledge management techniques to improve testing effectiveness
6. Enables reusability of artifacts
7. Drives consistencies in processes

## Components of a TCoE



In the TCoE framework, strategic assets (People, Process, and Technology) are tied together by key strategic enablers and a robust governance model. The synergy of the framework helps to increase efficiencies, maximize the return on testing investments and improve quality to near-zero defects. Savings generated by the framework can be re-invested in new solutions to improve competitiveness.

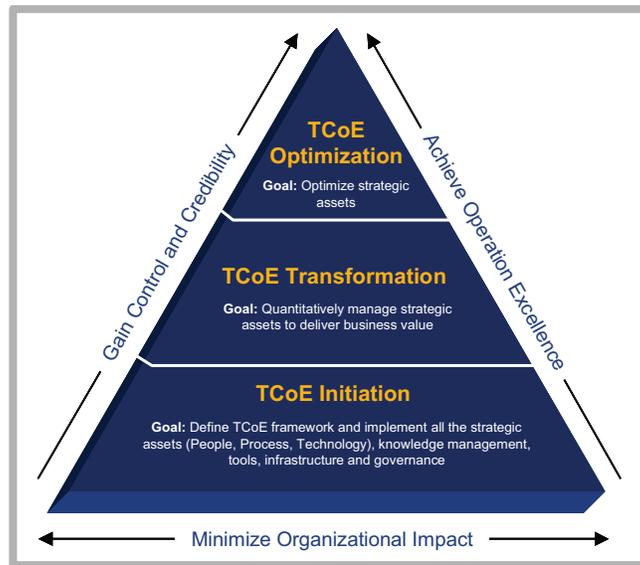
TCoE enables organizations to scale up existing testing services and offer new services with higher quality, shorter delivery time and reduced cost. These, in turn, contribute to quantifiable improvements in customer satisfaction within the IT organization.

## Challenges faced in implementing a Testing Center of Excellence

With its immense benefits, TCoE is the right strategy for organizations to follow. However, if not implemented smartly, a TCoE initiative may leave an organization confused and with loss of credibility, disengaged employees and frustrated customers.

A comprehensive plan built around the strategic assets and a robust governance model are required to transform an IT testing organization into a TCoE. A test management office should be created at the inception of the program to ensure proper implementation.

A mission statement that sets the direction and priority for developing and implementing a TCoE is crucial. It must state the level of the organization's commitment to testing and should be tied to the operations through programs, projects, actions, and rewards/ recognition. Small deliverables demonstrating the business value are essential to develop and retain organizational commitment to the TCoE initiative.



A TCoE is led from the top down and implemented from the bottom up. Leadership from the top is necessary to define, prioritize and construct various competency centers leading to a TCoE. However, its benefits cannot be derived unless everyone is empowered and given the knowledge and skills necessary to take action and improve their competencies.

The number of stakeholders impacted due to a TCoE transformation is large; and lack of sufficient communication can easily result in a lack of direction at the strategic and operational levels. Communication about the changes should be frequent and thorough. All affected parties should be involved in the planning, communication and change management efforts to ensure smooth transformation.

Since an enterprise-wide initiative of this type requires substantial investments and expertise, organizations should either acquire TCoE expertise or partner with an external party in the endeavor. Offshoring can enable organizations to manage costs while transforming their organization into a TCoE.

Another common challenge that IT owners come across while transforming into a TCoE is the management of existing demands. A big bang approach can cause damage. Therefore, it is better to incrementally change an organization into a TCoE. A properly staffed pilot implementation that is carefully selected and aligned with the long-term strategy can provide substantial financial gains and credibility to the transformation. This approach will also minimize the impact of the organization's capability to meet existing demand.

Each organization has a specific culture and way of doing things. The culture of an organization is the result of the beliefs and values of its employees. If a company is long established or if the employees are not used to change, its culture may be difficult to modify. Therefore, a balance between the culture and implementation roadmap is necessary to facilitate smooth execution. Implementation actions must involve the IT owner.

Lastly, organizations should pay close attention to the end-to-end duration of a TCoE transformation, since such initiatives can fail if the duration is too long to retain organizational commitment. Ideally, iterative implementation of a transformation must be between one to three years to maintain organizational commitment.

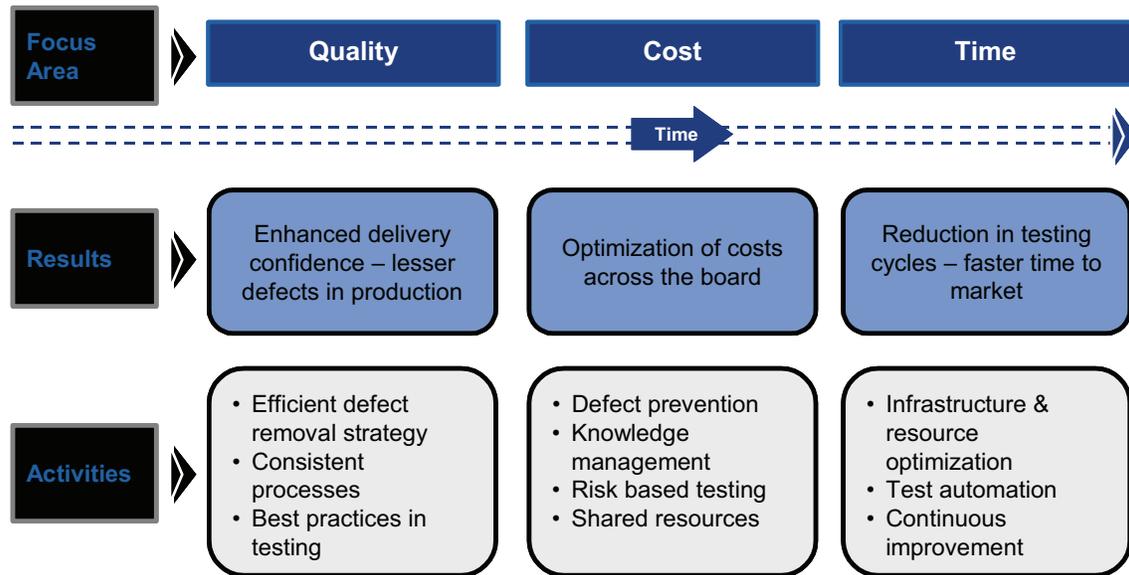
### *Benefits of a TCoE*

A properly implemented TCoE can generate several benefits to an IT organization. While many of the benefits can be quantified to justify the strategy, organizations also acquire non-quantifiable benefits such as a solid foundation to scale up strategic initiatives and services. The benefits can be broadly categorized under quality, cost, and time; and can be achieved in a timely manner as depicted:

The measure of **quality** is the defect removal rate or quality delivered. The ad hoc methods of testing, normally used by organizations, yield removal rates of around 70 percent. This means that 30 percent of the defects must be removed in the production environment — a time-consuming and costly chore that also leads to user dissatisfaction. The TCoE model uses formal steps for test planning, execution and verification, metrics-based tracking, and skilled resources to raise removal rate significantly — 95% for functional testing and 98% regression testing.

Cost savings is achieved from the reduction in overall defect density in the SDLC and reduced maintenance costs on high-quality software. In most large enterprises, the IT budget is approximately 4%-8% of sales budget. Any savings on this is a direct add-on to the bottom-line. In an IT budget, typically, 50%-60% is for maintenance (one-half for enhancement and the other half for bug-fixing), 20%-25% is for development and 20%-25% for testing and others activities. Logically, a TCoE can save half of the maintenance budget or 25% of the IT budget (best case). Execution of TCoE services from a low-cost geography, via an offshore partner, yields 35%-45% cost savings in testing projects due to pure labor arbitrage.

With the effective usage of automated testing tools and by continually improving operations, a TCoE model helps reduce **time to market**. Newer services can be offered to customers in much a shorter timeframe and with high quality.



### Infosys' proposed model

Considering the current industry trends and the challenges faced by IT owners, setting up a TCoE is a logical strategy to pursue. While it promises tremendous value, IT owners must pay close attention to the implementation methodology to realize the full benefits of a TCoE.

Having successfully implemented several Centers of Excellence, Infosys believes that an evolutionary approach is the most suitable to realize the full benefits of a TCoE. An evolutionary approach enables the organization to minimize the impact on existing demand, minimize investment risk and maximize value from the TCoE transformation.

Infosys' evolutionary approach is defined in three phases: Initiation, Transformation and Optimization. With each phase, organizations gain more control over the testing activity. Value additions at each phase demonstrate the credibility of the Testing Center of Excellence strategy.

During Initiation, the organization focuses on **quality to increase delivery confidence and reduce total number of defects found in production**. These goals are attained by standardizing testing process across various testing projects and implementing a defect removal strategy. This phase is critical to the success of the TCoE strategy as it lays the foundation on which operational excellence is realized. Therefore, organizations should either acquire expertise to initiate such initiatives or partner with an external consulting company to leverage their experience and utilize industry best practices attained through practical experience in testing domain. With such partnerships, organizations can lower their initial establishment cost and leverage a global resource base to meet their existing demands.

In the next phase — transformation, the organizational focus is on cost with a goal to **maximize return on investment across the testing organization**. This goal is realized by implementing a risk-based testing approach and developing a global test organization. Defect prevention processes, building on a knowledge base, ensure that defects are trapped earlier in the software lifecycle, thus reducing the cost of testing. **Quantitative test management** enables the organization to reallocate its investments to maximize their return on investment, while the global test organization enables it to provide 24x7 test support. In many instances, organizations establish a global test management office to ensure smooth transformation. Utilizing scorecards to manage testing activities is one of the best practices to enable an organization to maximize its return on investments.

In optimization, the last phase, the organizational focus is on time with an aim to [reduce over all testing cycle time and time to market](#). These are achieved by optimizing resources and infrastructure across the globe, building [automation capability](#), reducing overheads, and implementing a continuous improvement program. With the accomplishment of these goals, organizations can free up their resources to add new testing services to their portfolio. Continuous improvement program enables them to sustain their ability to deliver better software for lower risk and cost.

## Case in point

A leading financial firm faced challenges in setting a strategic direction for QA and measuring QA effectiveness. It lacked standardization in QA and did not have an organization dedicated to testing. Infosys enabled the client to address its core concerns by setting up an enterprise-wide Testing Center of Excellence. This consolidation and outsourcing solution improved the client's QA processes and enabled it to save \$ 3.5 million annually on direct costs. Further, economies of scale led to decreasing incremental unit cost. QA and change management, benchmarked against best practices, led to process transformation and standardization.

Infosys' scalable organizational model for a Testing Center of Excellence can:

1. Deliver higher customer satisfaction and employee engagement due to improved quality of software
2. Maximize return on investment on software testing
3. Minimize production support cost due to fewer defects leaking into production
4. Minimize time to market for new functionality
5. Ensure high performance culture and high job satisfaction

Overall, we believe that the Testing Center of Excellence strategy will enable organizations to achieve operational excellence and enhance business value, provided it is implemented properly. It enables organizations to acquire a competitive edge and introduce new products and services at a fast pace.

## Conclusion

Many industry players have set up TCoE in pursuit of excellence. However, while some of these initiatives lost their initial agility, some others were discontinued due to the lack of value realization. This has led to claims that the strategy is theoretical and does not deliver much value. We do not believe so.

The TCoE strategy is not flawed, rather it is the right strategy for organizations to adopt. [When adopted carefully, a Testing Center of Excellence \(TCoE\) - the framework comprising strategic assets \(process, people, and technology\) dedicated to the testing needs of the organization, yields synergies and increases efficiencies](#), thus creating business value for organizations.

## About The Authors

[Manoj Narayan](#) manages the Solutions and Consulting group focused on developing Validation and QA solutions at Infosys. He has over 11 years of IT experience spanning complex solution consulting, program management and delivery in functional and automated testing solutions. He has managed large Testing Center of Excellence programs and Automation competency centers for major financial institutions in North America.

[Somil Katiyar](#), Senior Test Manager, Infosys, focuses on evaluating organizations' maturity in testing space and defines roadmaps. He has over 10 years of IT experience spanning a wide variety of technical platforms, business areas, and organizational cultures within the banking and insurance industry. He has managed full systems development lifecycle for various large scale information systems and has rendered consultancy services to major financial institutions in North America to develop Testing Centers of Excellence.



For more information, contact [askus@infosys.com](mailto:askus@infosys.com)

#### About Infosys

Many of the world's most successful organizations rely on Infosys to deliver measurable business value. Infosys provides business consulting, technology, engineering and outsourcing services to help clients in over 30 countries build tomorrow's enterprise.

For more information about Infosys (NASDAQ:INFY), visit [www.infosys.com](http://www.infosys.com).