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**Test Management – A Systems Perspective**

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22 September 2007

Experience certainty. IT Services  
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**Agenda** 

-  **Complexity**
-  **Test Manager – Need for Systems Approach**
-  **Multiple Frameworks**
-  **Big Picture**

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## What is "Complexity"

- The original Latin word "*complexus*", which signifies "entwined", "twisted together".

(This may be interpreted in the following way: in order to have a complex you need two or more components, which are joined in such a way that it is difficult to separate them. )

- Similarly, the Oxford Dictionary defines something as "complex" if it is "made of (usually several) closely connected parts".

- Complexity

- Number of parts
- Number of interactions
- Numbers of states ( Variety) it can exist

## Software Complexity

The complexity of software is an **ESSENTIAL** property, not an **ACCIDENTAL** one. (*The Mythical Man-Month.. Frederick Brooks*)

### ESSENTIAL

difficulties inherent in the nature of software

(issues pertaining to mental crafting of the conceptual construct)

### ACCIDENTAL

difficulties related to the production of software

(issues pertaining to implementation)

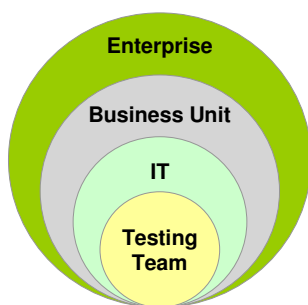
- Testing primarily focuses on identifying and removing defects which are due to **ACCIDENTAL** complexity.

## Systems Thinking

“Systems thinking is a discipline for seeing wholes, recognizing patterns and inter-relationships, and learning how to structure those inter-relationships in more effective, efficient ways”

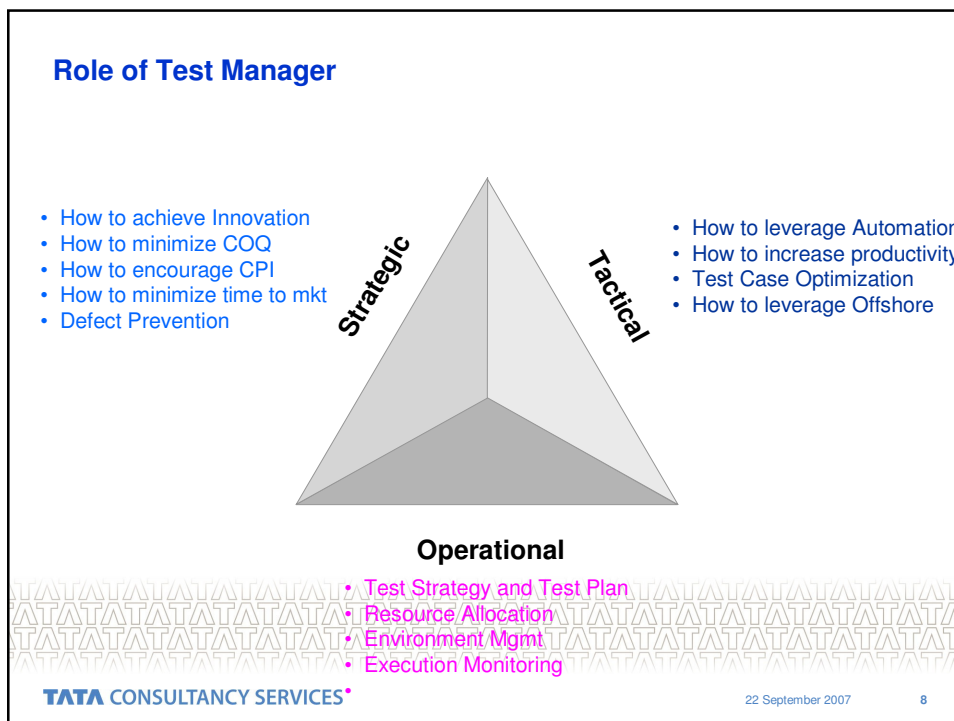
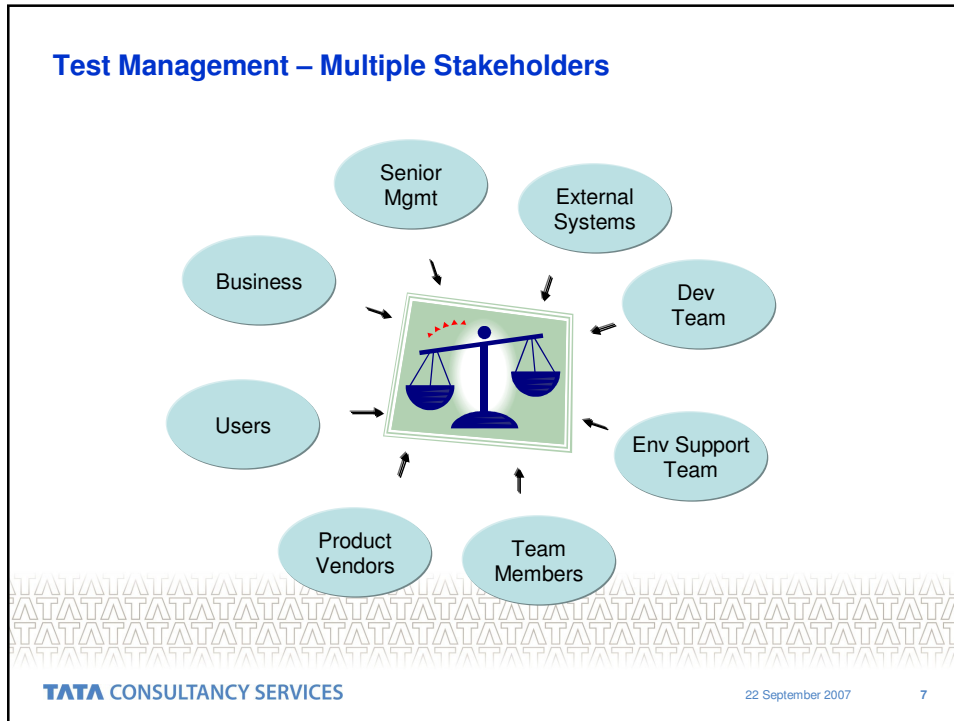
Peter Senge

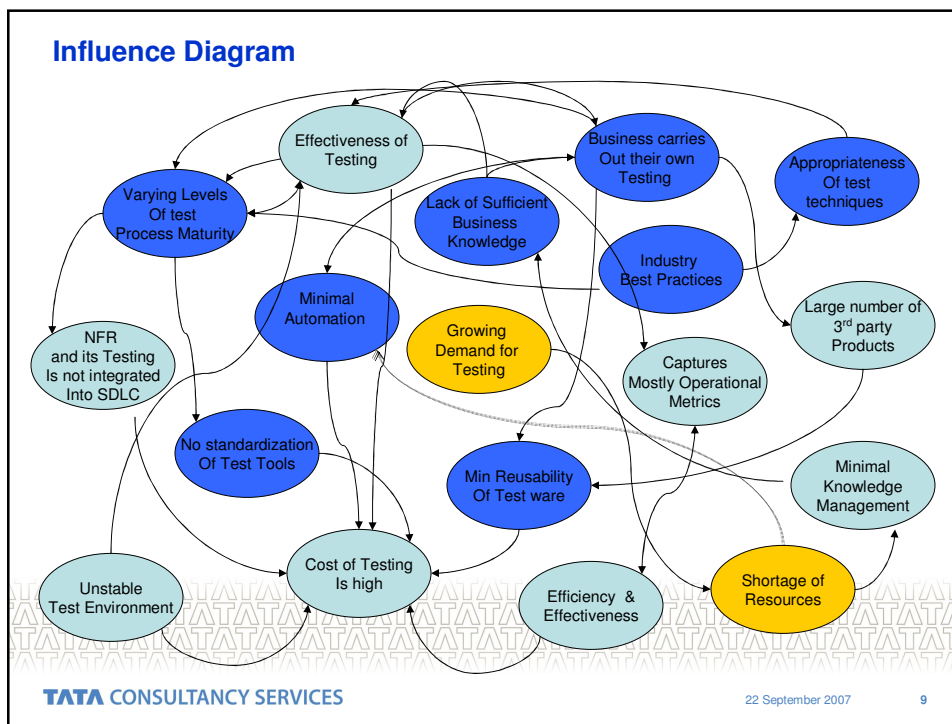
## Systems Thinking



**Systems thinking** is an approach to integration that is based on the belief that the component parts of a system will act differently when isolated from the system's environment or other parts of the system.

**Systems thinking** concerns an understanding of a system by examining the linkages and interactions between the elements that comprise the entirety of the system.





### Test Manager – Systems Perspective

- Test Management is **NOT** just managing a testing project (s)
- As a Test Manager it is necessary to understand that
  - There exists multiple stakeholders
  - Each Stakeholder has a different need (s) or expectation from Test Manager
  - There exists multiple levels of complexity and
  - Each level of complexity needs a different frame of thinking

### Multiple Frameworks

Strategic	➔	<ul style="list-style-type: none"> <li>• Systems Thinking</li> <li>• Balance Score Card</li> <li>• Value Stream Mapping</li> <li>• ...etc..</li> </ul>
Tactical	➔	<ul style="list-style-type: none"> <li>• Lean Principles</li> <li>• Six Sigma Framework</li> <li>• Kaizen</li> <li>• ...etc..</li> </ul>
Operational	➔	<ul style="list-style-type: none"> <li>• Resource Allocation</li> <li>• Project Management</li> <li>• Estimation Models</li> <li>• ...etc..</li> </ul>

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### Balance Score Card

**FINANCIAL PERSPECTIVE**

What financial objectives  
Must the team accomplish to  
Ensure the success of project?

➔

➔

**CUSTOMER PERSPECTIVE**

What customer Objectives  
Should be met?

➔

➔

**INTERNAL PERSPECTIVE**

To achieve customer and financial  
Objectives, what processes will  
Have to be worked out?

➔

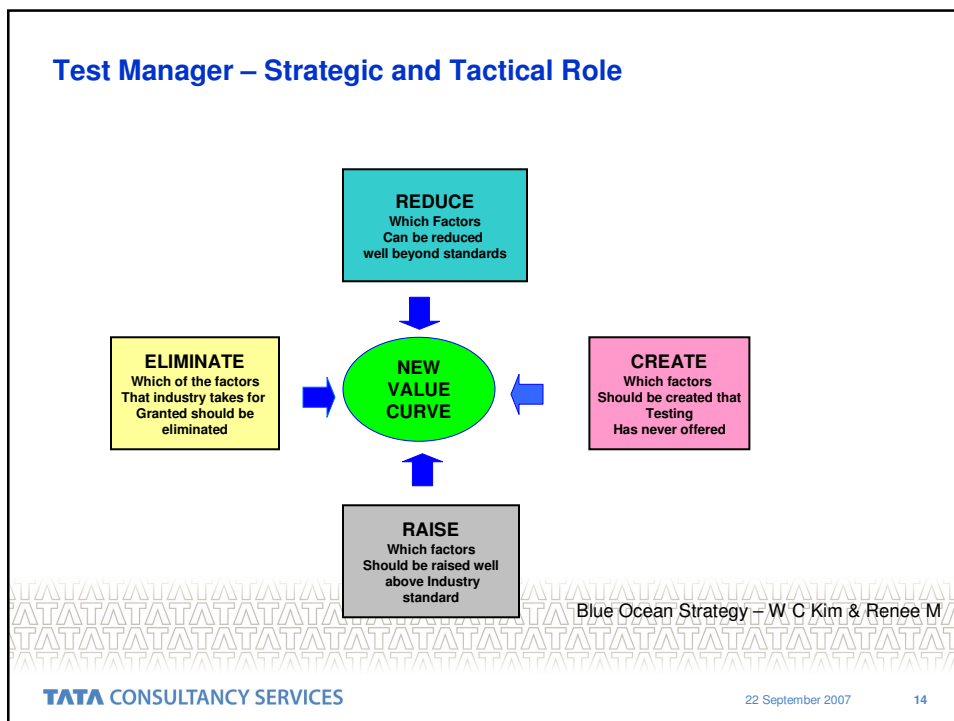
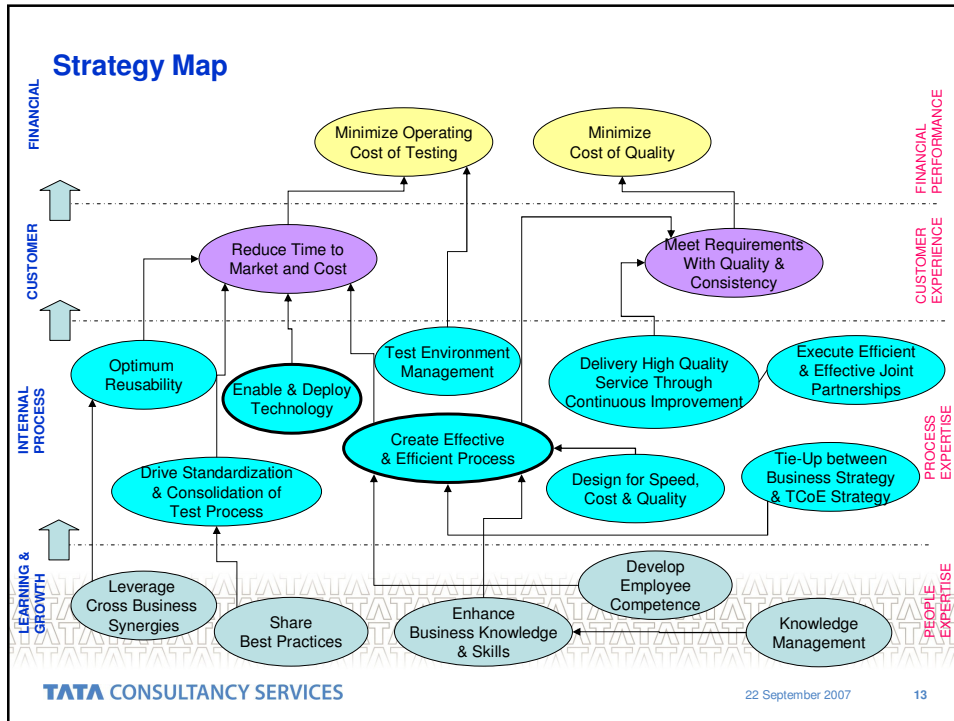
➔

**LEARNING PERSPECTIVE**

To achieve all the above goals  
What additional knowledge is  
Required for the team?

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### Test Manager - Role

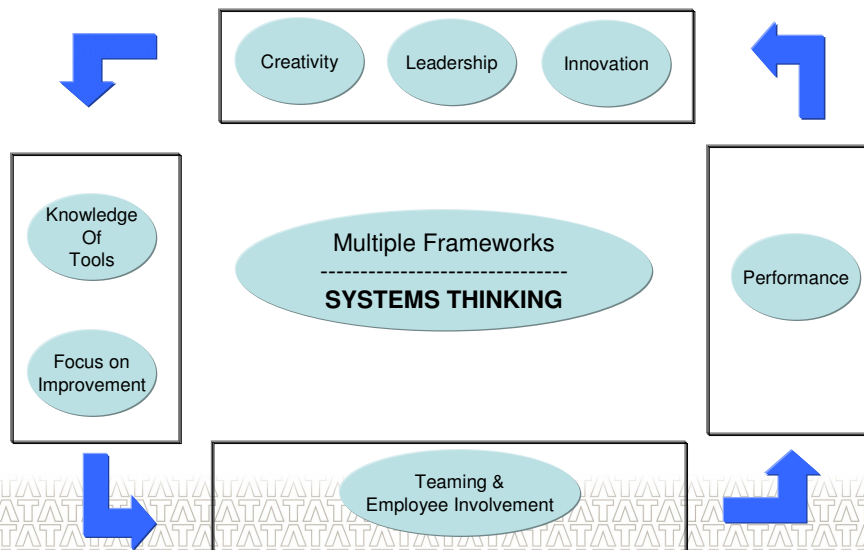
.....the essence of leaders and managers is to motivate others toward productivity. In Peter F Drucker's words,

**"Management and leadership are social functions."**

To lead effectively in today's business environment means to understand your organizational dynamics (how your people get along);

To understand your Organizational Dynamics requires a little sociology, a little psychology, and a lot of talking.

### Test Manager - Creating Right Environment



## Summary

- With the increasing complexity in Software Development process, including Testing, it is a **MUST** to have
  - The knowledge to understand complexity
  - Ability to see inter-connectedness
  - Ability to see the dynamic nature of complexity, and
  - Ability to think **BIG**
- Test Manager **NEEDS** to operate at multiple levels
  - Operational Level
  - Tactical Level
  - Strategic Level
- To operate efficiently at multiple levels, Test Manager **SHOULD** be equipped with multiple frameworks which are relevant to address specific levels

## Systems Approach

- *"Adopting a systems approach means putting the emphasis on "the big picture" or the whole and considering the functions of a system's parts based on their relations with one another and within the system's larger context. This approach has gone by different names at different times and places: systems thinking, general systems research, cybernetics, management science, operational research, decision science, to name a few. All share the concept of a multi-disciplinary approach to defining and solving complex, high-variety, dynamic, continuous, and interactive problems."*

- Allenna Leonard with Stafford Beer, [The Systems Perspective: Methods and Models for the Future](#), 1994, Introduction

### Big Picture

- Create a Service culture
- Don't try to create a control culture
- Develop the power of king's ear
- All projects evolve.
- Well run projects evolve well
- Be ready for late changes

Balancing Act of Quality, Time and Cost

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### Role of Test Manager

Essential Complexity

↑

Accidental Complexity

QUALITY

COST TIME

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**Thank You**

