ITIL®

AXELOS
GLOBAL BEST PRACTICE

T-Shaped Professionals

For a digital economy

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Contents

1   Introduction

Today's rapidly evolving global economy is driven by disruptive technologies and innovative supply models. To remain competitive, organizations need to improve speed to market, reinforce learning cycles, and develop agility.

Current top-down leadership models, organizational structures, and performance management systems were developed decades ago, as the industrial age began. Unfortunately, although these models solved the problems industries faced at the time, they also created an entrenched culture that promotes siloed thinking and behaviour.

To survive in the information and digital age (also known as the fourth industrial revolution), a new systemic perspective and culture is necessary to address the need for improved collaboration and velocity. A holistic approach to value creation, one that addresses all four dimensions of IT service management, can help us achieve this goal.

All four dimensions, organizations and people, value streams and processes, partners and suppliers, and information and technology, must be addressed to solve current challenges. However, the starting place needs to be with organizations and people, which addresses values, beliefs, and culture. Culture and leadership are a major focal point for many IT communities.

Since the adaptation of Lean practices by the Agile movement in the 1990s, the focus on the full service lifecycle introduced by ITIL ® in 2007, and the more recent emergence of DevOps in 2013, the emphasis has been on creating a culture that values the Lean principle of systems thinking. This principle highlights the need for members of a value system to share a purpose and adopt a team-based culture dedicated to shared accountability for outcomes. These concepts have been collated and represented in the recent release of ITIL 4 guidance for IT service management.

The term 'T-shaped professional' describes the mindset that represents and demonstrates these values. This white paper will examine how the ITIL 4 Service Value System (SVS) approach, and its associated training and certification model, supports the development of T-shaped professionals. We will discuss how this mindset is the foundational building block for organizations that want to thrive in the information and digital age.

"Your beliefs become your thoughts, your thoughts become your words, your words become your actions, your actions become your habits, your habits become your values, your values become your destiny." Mahatma Gandhi

2   How we got here and where we are going

Understanding where organizations came from and what mental models formed the basis for current practices and beliefs helps us to understand how organizations must change to support improved collaboration and higher velocity.

Encouraging cross-functional collaboration and enthusiasm for shared practices and tools is challenging because of cultures of silo-based specialization. The origins of this cultural dynamic can be traced back to the dawn of the industrial age and the writings of the two fathers of scientific management: Adam Smith, the Father of Capitalism, who wrote about how specialization facilitated the efficiency of capital accumulation in the 18th century; and Fredrick Taylor, who authored *The Principles of Scientific Management* in 1911.

These two men defined the concept of a modern organization at the turn of the last century. Then, like now, organizations struggled to cope with disruptive technologies and to adjust leadership models and cultures. They identified that for organizations to transition from a rural to an industrial economy (the first technological revolution) three primary constraints would need to be considered:

1. the lack of technical skills and knowledge in a rural workforce
2. the general lack of automation
3. managing complex value systems when constrained by rudimentary communication technology.

Responding to these constraints, Smith and Taylor theorized that the best way to ensure quality, lower costs, and improve speed was to break down a complex value system into large areas of activity, and then into individual tasks. The goal was to focus structures and management systems vertically on task specialization. Their theory was to direct the workforce to master single tasks, then to measure individuals on how well their task was performed.

Because individuals were given a single or narrow focus, management would be responsible for understanding and dealing with the larger organizational context. Management's task was to instruct individuals on how to work for the best results for the entire value system.

The organizational structures and performance measurement systems that were developed to manage this vertical orientation resulted in deep specialization. They also reduced the focus on the context of the larger value system and created a culture of isolation. This resulted in specialization due to the belief that, "This task, and this task only, is what I consider my job to be."

This silo-based thinking and behaviour is a major challenge for an industry seeking to accelerate the pace and flow of value creation. The same issue was identified by the DevOps movement when they combined the words Development and Operations into one: DevOps. The term represents the blending of two families by combining two family names into one word. Although blended families can be a struggle, they are necessary to rebuild an awareness of and interest in understanding and managing the end-to-end IT value system. This is done partially by helping individuals understand that they are connected to a larger system (systems thinking) and there is a need for them to respect, understand, and value more than their own specialisms (T-shaped thinking).

2.1 LEADERSHIP'S ROLE IN CREATING A T-SHAPED CULTURE

Leadership is the primary contributing factor to culture. How any community thinks, behaves, and acts is often determined by what is referred to as the 'tone at the top'. Individuals are largely the product of the environments they have grown up in and are shaped by their collective experiences.

Lean practices have been adopted and adapted by the ITSM community to help accelerate the pace of service delivery with changing technologies. The Lean mindset and methodologies grew out of the Toyota Production System (TPS), which resulted in remarkable improvements to quality, cost, and speed for many industries, including manufacturing, utilities, and health care. The principles and practices of Lean have been applied to IT practices by the Agile community for over 20 years and they are now embraced by DevOps and the greater service management community.

The Lean leadership approach focuses on a cultural transformation that encourages people to think systemically, take personal accountability for continual improvement, and identify and deal with quality issues at their sources. Lean leaders inspire, enable, and empower this cultural mindset to help the organization continuously improve.

To transform a culture into one that promotes quality at the source, leadership and management have to shift their focus from directing or managing 'top down' to one where they promote engagement, personal accountability, self-reflection, learning, and development. Their role is to facilitate the development of individuals and teams by promoting shared values, looking for opportunities to teach, and providing support to remove barriers. This is a major change for those in middle management who are used to directing daily activities. Lean empowers front-line employees to self-manage, prioritize value, and address quality issues without being told to do so.

In many current organizations, the leadership approach, teaming structures, and performance management system must be modified for a transition to be successful. This translates to specific leadership actions to establish shared values for all stakeholders, such as the seven guiding principles described in ITIL 4. However, this approach must also translate into the use of a shared set of practices, tools, and information. A core tenet of systems thinking is that, for a system to gain velocity (velocity equals speed in a given direction), the agents of that system must adopt common values, beliefs, practices, and a sense of priority. Leadership that fails to accomplish this objective, which Lean describes as a 'constancy of purpose', will fail to create a culture that will thrive, or even survive, in the information and digital age.

2.2 THE HOLISTIC APPROACH TO VALUE CREATION

A systemic or holistic approach to value creation includes understanding how the parts of the organization integrate to deliver value. This provides end-to-end visibility and appropriate controls and is essential to the achievement of both organizational agility and resilience. It also creates velocity through alignment, which is about achieving exceptional performance, including time to market, quality, safety, improved cost, and reduced risk through mastering continual improvement and innovation.

The ITIL 4 architecture is based on the principle of systems thinking that is represented in high-level models such as the SVS and the service value chain. It was designed to enable the understanding and management of end-to-end value streams through the value chain.

Definition

Systems Thinking A discipline that is concerned with building awareness and understanding of the context of all the elements of a defined system. It focuses on the holistic context, linkages, dependencies, and boundaries between the elements of the system for the purposes of alignment and improvement.

Systems thinking forms the basis of the three pillars of Agile Scrum that focus on creating transparency to enable inspection and adaption. It also informs the principles of the Theory of Constraints (ToC) described by Eli Goldratt in his book, *The Goal*, which had a major impact on the manufacturing industry in the 1980s. In his book, Goldratt illustrates the importance of understanding the full set of system elements to discover bottlenecks in processes. A lack of systemic understanding can potentially generate localized improvements that have adverse impacts on other aspects of the system and can detract from overall system objectives.

If this warning described in *The Goal* is heeded, it can often prevent the impacts of silo-based cultures. Seeing the bigger picture is vital; you cannot manage anything about which you are unaware.

Culturally and structurally, organizations must shift from optimizing individual parts towards an integrated approach that optimizes the flow of products and services through the value streams that flow through the organization to the customer.

2.2.1   Key thinking models

Three key thinking models required by systems thinking include:

- Holistic thinking, which develops an awareness of all the elements that make up the full system and its boundaries.
- Dynamic thinking, which develops an understanding that the system is constantly impacted by, as well as evolving due to, internal and external drivers that change the system's structure and behaviours over time. Dynamic thinking requires individuals and teams to continually evaluate and understand the system's current state.
- Closed loop thinking, which develops an understanding of the causes and effects of changes in one part of the system and how they impact related or downstream system elements and/or practices.

Viewing the organization as a system can provide insights that are different from those identified as a result of analyzing the individual components of the system.

For example, the DevOps movement was largely an answer to the problems created by locally optimizing development practices without including the practices responsible for moving changed code into production or considering the warranty/non-functional and operational requirements. Although Agile lowered the backlog of work and improved the flow of software development, it also overburdened the downstream practices of service transition (release management, deployment management and change control). The localized improvement created a bottleneck at the 'move to production' step, resulting in deceleration, issues with quality, and lower availability. It also reinforced a negative view of these practices. It was from these challenges that the DevOps movement started its cry: 'Can't we all work together?'

Prominent management theorists like Dr. Edward Deming and Peter Senge have demonstrated in their writings that taking a system view and creating a discipline of feedback loops will create learning opportunities and produce tangible strategic advantages for organizations seeking to achieve their objectives.

The ways organizations manage or fail to manage systems have a direct impact on culture and the strategic objectives of an organization. These concepts are studied in the scientific and economics communities in the following schools of thought:

- Systems science: an interdisciplinary field that studies the nature of systems from simple to complex in nature, society, engineering, and technology.
- Social economics: the study of how economic activity affects and is shaped by social processes where societies are divided into three groups (social, cultural, and economic).

Key tenets of these schools of thought confirm that the ways organizations view systems will impact their ability to collaborate, form the basis of their culture, and impact their economic capability.

Increasingly in the IT industry, organizations are realizing the impact of the lack of systems thinking on their ability to scale and deliver value at speed. Hence, the concept of systems thinking and the principle of creating T-shaped professionals are key themes of the Lean, Agile, and DevOps communities, which understand that improved collaboration and teaming are critical success factors for the information and digital age.

3   Three mental models

The application of systems thinking at an individual level is best understood by considering the ways that people view themselves and approach their areas of interest and professional occupation. Describing three mental models will help to put this discussion into context.

- The generalist: a person with a diverse skillset and broad knowledge who is able to accomplish many different tasks but has no significant specialization in any one area.
- The specialist: a person who has deep skills and knowledge in one area but lacks the interest or context of other areas of knowledge outside their domain.
- The T-shaped professional: a person who is a blend of both a generalist and specialist, who has deep knowledge in one area but also has a general interest in and knowledge of a larger context.

In this section, the characteristics, benefits, and risks of each mental model and how they enable or detract from the overall goal of providing value will be examined.

> The Hedgehog and the Fox
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> Over 2,700 years ago, the Greek poet Archilochus wrote: "The fox knows many things; the hedgehog one big thing." The study and research around this topic can be found in many academic papers, research journals, and business articles.
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> In the 1950s, the philosopher Isaiah Berlin wrote an essay, *The Hedgehog and the Fox*, which divided workers into two categories: hedgehogs, who have a narrow perspective of the world, and foxes, who have a wider interest, a curious nature, and adapt to changing environments rapidly.
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> In his essay, Berlin writes: "There exists a great chasm between those, on one side, who relate everything to a single central vision, one system, less or more coherent or articulate, in terms of which they understand, think and feel […] and, on the other side, those who pursue many ends, often unrelated and even contradictory, connected, if at all, only in some de facto way."

The metaphor of the hedgehog and the fox is derived from the science of biology, which classifies species into categories based on their habitats, diet, practices, and ability to adapt. Some animals, such as the fox or the racoon (generalists), can adapt to rapid change and thrive in diverse ecologies, whereas others, such as the hedgehog or the panda (specialists), are restricted in their ability to adapt. Specialists thrive when conditions are optimal for their specialization but they are vulnerable to ecosystem changes.

3.1 THE BENEFITS AND CHALLENGES OF GENERALISTS AND SPECIALISTS

3.1.1   Generalists

The benefits associated with generalists are that they:

- have a holistic mindset that values and respects other domains of knowledge
- have complementary skills and sources of knowledge and can combine them for creative and innovative problem-solving
- are flexible, adaptable, and able to transfer skills from one domain of knowledge to another

- have a more systemic understanding of the value system and can provide context for others
- make good leaders and managers because they adapt easily to changes
- are interested in new areas of knowledge
- are willing to share knowledge and practices with other groups
- have an enthusiastic view of work outside of their areas.

The challenges associated with generalists are that they:

- lack expertise in any one area
- may make mistakes due to a shallow understanding.

3.1.2   Specialists

The benefits associated with specialists are that they:

- have deep and specific knowledge about a subject or domain
- are respected and trusted to handle challenging problems
- experience growth and opportunity when their specializations are in high demand
- are passionate about studying and learning in their own area of interest
- have so deep an understanding that they sometimes discover new truths about their areas of interest.

The challenges associated with specialists are that they:

- often value their area of discrete knowledge over other areas and devalue those areas not connected to their interest
- are very vulnerable to change
- typically focus solely on their specific frame of reference or mental model as a survival technique (the hedgehog effect) when under threat
- typically horde knowledge for the purpose of 'keeping it safe'
- tend to approach most problems the same way, unaware of more effective possible solutions
- have a dismissive view of work outside of their areas.

The philosopher, writer, and economist Henry Hazlitt describes the problems associated with generalists and specialists in this way:

> "In the modern world, knowledge has been growing so fast and so enormously, in almost every field, that the probabilities are immensely against anybody, no matter how innately clever, being able to make a contribution in any one field unless he devotes all his time to it for years. If he tries to be the Rounded Universal Man, like Leonardo da Vinci, or to take all knowledge for his province, like Francis Bacon, he is most likely to become a mere dilettante and dabbler. But if he becomes too specialized, he is apt to become narrow and lopsided, ignorant on every subject but his own, and perhaps dull and sterile even on that because he lacks perspective and vision and has missed the cross-fertilization of ideas that can come from knowing something of other subjects."

All societies need and should value the positive attributes of both generalists and specialists. The real question is, can we blend the best attributes of both mental models?

In an age of unparalleled change, organizations need to adapt in creative ways and leverage deep understanding. This perspective is being adapted by academic communities, which recognize that, to best equip their students, they must create academic programs that encourage specialization and provide an overall breadth of learning.

3.2 T-SHAPED PROFESSIONALS

T-shaped professionals are effectively a blend of the previous two mental models. The phrase 'T-shaped' comes from the shape of the letter 'T':

- vertical: deep specialization or depth of knowledge
- horizontal: collaboration across disciplines and broad knowledge.

T-shaped professionals are sometimes referred to as:

- generalizing specialists
- multidisciplinary
- polymaths
- renaissance people (derived from historical figures such as Leonardo Da Vinci and William Shakespeare).

T-shaped professionals focus on the success of the whole system, not just the goals of their organization or team. They bring the benefits of both the generalist and specialist mental models, plus the benefits listed below.

The benefits associated with T-shaped professionals are that they:

- improve communication and collaboration by:
  - developing informal relationships
  - creating affinity and empathy
- minimize the documentation necessary to translate knowledge between specialists
- improve teams' flexibility
- lower risk and improve antifragility through learning
- reduce bottlenecking due to the limited capacity of specific specializations
- break out of the traditional top-down focuses on sharing knowledge
- look at work outside of their knowledge area and think, 'How can I add value?'
- focus on the workflow across the entire system
- create stable and cross-functional teams
- break down silos.

The challenge associated with T-shaped professionals is that the tension between depth and breadth may limit the ability to achieve the same depth in a specific area of specialization.

3.2.1   The Evolutionary Stages of a T-Shaped Professional

An interesting aspect of T-shaped professionals is that they do not stay T-shaped for very long. Based on their tendency to seek learning in other areas, they eventually develop capabilities outside of their specific domain of expertise. When this happens, they develop depth in other areas or disciplines, which means they begin to resemble the symbol pi (π), and eventually a comb.

People naturally develop breadth and depth during the normal stages of evolution. The goal is not that people become interchangeable, but that through the development of additional context they can apply context and wisdom to their decisions as specialists.

The evolutionary stages of a T-shaped professional are as follows:

- Stage 1: respect. A specialist develops a healthy respect for another domain. Respect leads to increased trust and a desire to collaborate.
- Stage 2: understanding. Respect eventually leads to an improved understanding of broad concepts and theories related to the other domain. This leads to improved decision-making and lower risk.
- Stage 3: knowledge. Obtaining knowledge of a new domain means that professionals are able to translate raw data to information and then to more useful knowledge. New knowledge can be applied to other areas of specialization to support problem solving, improvement, and innovation.
- Stage 4: application. Moving from knowledge to application entails being able to effectively work and add value. As members become skilled, this improves the flexibility and agility of a team.
- Stage 5: mastery. When an individual has two or more areas of deep knowledge, they maximize their ability to adapt and pivot as required.

✉ Key message

Becoming a T-shaped individual or team does not require that all new areas of skill and knowledge move to the level of mastery. Simply moving to the first stage, respect, already provides value and benefits to the goals of collaboration and velocity.

4   Creating a T-shaped team

An interesting concept connected to the attitude of T-shaped professionals is the definition of a team by conceptualists Katzenbach and Smith.

"A team is a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable." Katzenbach and Smith

Assembling a group of people with specialized skills does not create a team. To be a team, the group must share values, a purpose, and hold one another mutually accountable for results. In essence, a team is a team when they are T-shaped in the ways that they think and act.

4.1 T-SHAPED PROFESSIONALS AND SCRUM

The three roles on an Agile Scrum team are product owner, scrum master, and development team member.

A core philosophy of development team members is that no one can bring their ego to work. Individuals are expected to contribute a specialization, such as developer, tester, quality assurance, architect, or business analyst. However, people are not defined by their specialization. When work needs to be done, team

members are expected to be willing to 'swarm' the issue. The expectation is that people will contribute to the team as T-shaped members. Pure specialists who say, "That's not my job" or generalists who say, "I don't know how to contribute value" have little place on the development team.

5   ITIL 4 certifications support the development of T-shaped cultures

In summary, surviving and thriving in the information and digital age requires individuals and organizations to develop a system thinking mindset represented by T-shaped individuals and teams. This represents a significant transformation in leadership, personal values, mental models, and organizational culture. Critically, this transformation only begins with an awareness of the need for a new mindset and approach to value creation.

As described earlier, systems thinking is at the heart of the ITIL 4 architectural design. It includes the concepts of integration and the development of T-shaped individuals and teams. The ideas in this paper are ingrained at all levels of the ITIL qualification scheme. When designing the syllabus structure and education program, the Lead Architect Team (LAT) (which I had the privilege to be part of) sought to develop an education program that would encourage T-shaped thinking. Now, different courses in the program focus on specific areas of specialization and provide the context needed to respect and understand related disciplines, at the least.

One of the questions posed to the LAT when we were developing the ITIL 4 architecture is 'Why would an IT specialist, such as a service desk agent or a network analyst, want to know about the larger SVS or other areas of the service value chain?' Our response was that context is critical.

Without context, specialists are limited. T-shaped individuals and cultures are crucial for creating the affinity, alignment, collaboration, and respect needed to operate at the velocity needed to match the speed to market, quality, and cost needs of the information and digital age.

If you focus on isolated practices without considering the context of the larger value chain, you may create process silos; bad things can happen despite good practices. IT practices can be defined and implemented that detract value from the system.

Consider the following story that illustrates the need to provide context.

> John F. Kennedy and the Janitor
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> President John F. Kennedy was visiting NASA headquarters in 1961. While touring the facility, he introduced himself to a janitor who was mopping the floor and asked him what he did at NASA. The janitor's response was. "I'm helping put a man on the moon!"

For organizations to compete on a rapidly changing world stage, they need to blend the flexibility of generalists with the depth of knowledge of specialists. The world and the IT industry need T-shaped individuals who value systems thinking and have both depth and breadth of knowledge.

As a final thought, consider the words of American author Zig Ziglar:

"The only thing worse than training an employee and having them leave is to not train them, and have them stay."

6   About the author

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Troy is a leading IT Governance and Service Management authority with over twenty years of experience in executive IT management training and consulting. Troy is a frequent speaker at IT Management events. He is a published and contributing author for multiple books on topics such as Lean IT, The Service Catalog, and official ITIL publications for editions. Troy is currently working on the ITIL 4 update as a member of the Lead Architect Team and was recently named one of the "Top 25 Industry Influencers in Tech Support and Service Management" by HDI.

7   About AXELOS

AXELOS is a joint venture company co-owned by the UK Government's Cabinet Office and Capita plc.

It is responsible for developing, enhancing and promoting a number of best practice methodologies used globally by professionals working primarily in project, programme and portfolio management, IT service management and cyber resilience.

The methodologies, including ITIL®, PRINCE2®, PRINCE2 Agile®, MSP®, RESILIA® and its newest addition AgileSHIFT® are adopted in more than 150 countries to improve employees' skills, knowledge and competence in order to make both individuals and organizations work more effectively.

In addition to globally recognized qualifications, AXELOS equips professionals with a wide range of content, templates and toolkits through the CPD aligned My AXELOS and our online community of practitioners and experts.

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