

partners and suppliers, information, communication, technology, and practice for new or changed products and services, and the interaction between the organization and its customers.

If products, services, or practices are not designed properly, they will not necessarily fulfil customer needs or facilitate value creation. If they evolve without proper architecture, interfaces or controls, they are less able to deliver the overall vision and needs of the organization and its internal and external customers.

Even when a product or service is well designed, delivering a solution that addresses the needs of both the organization and customer in a cost-effective and resilient way can be difficult. It is therefore important to consider iterative and incremental approaches to service design, which can ensure that products and services introduced to live operation can continually adapt in alignment with the evolving needs of the organization and its customers.

In the absence of formalized service design, products and services can be unduly expensive to run and prone to failure, resulting in resources being wasted and the product or service not being customer-centred or designed holistically. It is unlikely that any improvement programme will ever be able to achieve what proper design could have achieved in the first place. Without service design, cost-effective products and services that deliver what customers need and expect are extremely hard to achieve.

Service design practice should also ensure that the customer's journey from





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Welcome to ITIL 4

At this new stage in the development of the IT industry, AXELOS is delighted to present ITIL 4, the latest step in the evolution of IT best practice. By building on c experience and bringing fresh and forward-looking thinking to the marketplace, I 4 equips your business to deal with the challenges currently faced by the industr

The adoption of ITIL as the most widely used guidance in the world on IT service management (ITSM) will continue with ITIL 4. It ensures continuity with existing ways of working (where service management is already successful) by integrating modern and emerging practices with established and proven know-how. ITIL 4 al provides guidance on these new methods to help individuals and organizations to see their benefits and move towards using them with confidence, focus, and minimal disruption.

ITIL 4's holistic approach raises the profile of service management in organization and industries, setting it within a more strategic context. Its focus tends to be on end-to-end product and service management, from demand to value.

ITIL 4 is the result of a great amount of global research and development work across the IT and service management industries; this work has involved active practitioners, trainers, consultants, vendors, technicians, and business customers

Mark Basham
CEO
AXELOS Global Best Practice

About this publication

ITIL Foundation is the first publication of ITIL 4, the latest evolution of the most widely adopted guidance for ITSM. Its audience ranges from IT and business students taking their first steps in service management to seasoned professionals familiar with earlier versions of ITIL and other sources of industry best practice.

ITIL 4 Foundation will:

- provide readers with an understanding of the ITIL 4 service management framework and how it has evolved to adopt modern technologies and ways of working
- explain the concepts of the service management framework to support candidates studying for the ITIL 4 Foundation exam
- act as a reference guide that practitioners can use in their work, further studies and professional development.

We hope you will find it useful.

About the ITIL story

The guidance provided in this publication can be adopted and adapted for all types of

per cent of all bookings. Shareholders could expect handsome quarterly dividends. However, over the past four years, the company has experienced a downturn.

Customer satisfaction ratings have consistently declined and repeat bookings are

rare. Competitors are offering new and innovative options to traditional vehicle hire. Car-pooling, ride-share, and driverless cars are big draws. Customers have come to expect online and app interfaces as standard for the company's services.

In this evolving market, Axle Car Hire faces an uncertain future. The board is keen to improve customer satisfaction levels. They want to attract and retain customers, and improve the company's bottom line. They've appointed a new CIO, Henri. He was chosen for his experience in digitalized services and his track record in successful, large-scale IT transformations. He understands the impact of digital service offerings, not only for customer satisfaction levels, but also for employee retention rates.

Henri's strong background in ITIL and ITSM means that he values ITIL certification and his hiring policy reflects this. Having worked with Design Thinking, DevOps, a Agile methodologies, he believes sustainable business requires a blended approach to ITSM.

Henri is keen to see how his team can redefine the car-hire experience and ensure that Axle Car Hire is the first choice for new and existing customers.

Meet the Axle employees

CHAPTER 1

INTRODUCTION

1 Introduction

1.1 IT service management in the modern world

According to the World Trade Organization,¹ services comprise the largest and most dynamic component of both developed and developing economies. Services are the main way that organizations create value for themselves and their customers. Almost all services today are IT-enabled, which means there is tremendous benefit for organizations in creating, expanding, and improving their IT service management capability.

Technology is advancing faster today than ever before. Developments such as cloud computing, infrastructure as a service (IaaS), machine learning, and blockchain have opened fresh opportunities for value creation, and led to IT becoming an important business driver and source of competitive advantage. In turn, this positions IT service management as a key strategic capability.

To ensure that they remain relevant and successful, many organizations are embarking on major transformational programmes to exploit these opportunities. While these transformations are often referred to as 'digital', they are about more than technology. They are an evolution in the way organizations work, so that they

ITIL 4 provides the guidance organizations need to address new service management challenges and utilize the potential of modern technology. It is designed to ensure a flexible, coordinated and integrated system for the effective governance and management of IT-enabled services.

1.3 The structure and benefits of the ITIL 4 framework

The key components of the ITIL 4 framework are the ITIL service value system (SVS),

1.3.1 The ITIL SVS

The ITIL SVS represents how the various components and activities of the organization work together to facilitate value creation through IT-enabled services. These can be combined in a flexible way, which requires integration and coordination to keep the organization consistent. The ITIL SVS facilitates this integration and coordination and provides a strong, unified, value-focused direction for the organization. The structure of the ITIL SVS is shown in Figure 1.1, and is repeated in Chapter 4, where it is described in more detail.

The core components of the ITIL SVS are:

- the ITIL service value chain

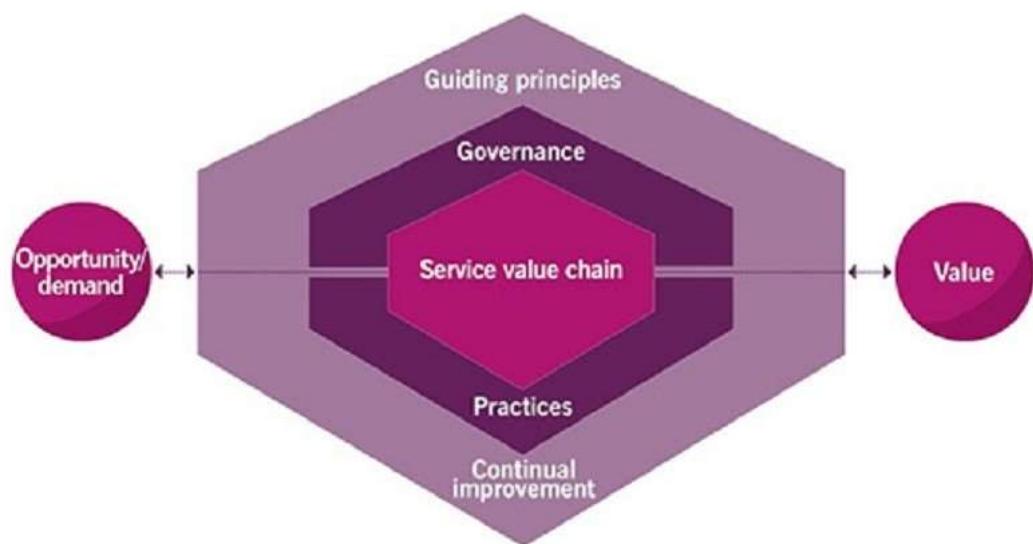


Figure 1.1 The service value system

The ITIL guiding principles can be used to guide an organization's decisions and actions and ensure a shared understanding and common approach to service management across the organization. The ITIL guiding principles create the foundation for an organization's culture and behaviour from strategic decision-making to day-to-day operations.

The ITIL SVS also includes governance activities that enable organizations to continually align their operations with the strategic direction set by the governing body.

The ITIL story: The CIO's vision for Axle



Henri: These days, the pace of industry change is rapid, with the term 'Fourth Industrial Revolution' now widely used. Companies such as Axle are competing with disruptors that include driverless cars and car share.

Service expectations have changed since Axle was created 10 years ago. Customers want immediate access to services via apps and online services. Axle's booking app is out of date, and our technology isn't keeping pace with changes in our service offerings.

My vision for Axle is that we become the most recognized car-hire brand in the world. We'll continue to offer outstanding customer service while maintaining competitive car-hire rates. After all, Axle is now about more than just hiring a vehicle. We must focus on our customers' whole travel experience.

Footnote:

1 https://www.wto.org/english/tratop_e/serv_e/serv_e.htm

CHAPTER 2

KEY CONCEPTS OF SERVICE MANAGEMENT

2 Key concepts of service management

A shared understanding of the key concepts and terminology of ITIL by organizations and individuals is critical to the effective use of this guidance to address real-world service management challenges. To that end, this chapter explains some of the most important concepts of service management, including:

- the nature of value and value co-creation
- organizations, service providers, service consumers, and other stakeholders
- products and services
- service relationships
- value: outcomes, costs, and risks.

These concepts apply to all organizations and services, regardless of their nature and underpinning technology. But the first thing that must be outlined is the most fundamental question of all: What is ‘service management’?



The ITIL story: Axle's customers

Here are three of Axle Car Hire's frequent customers, whom you will meet as the story unfolds:



Ichika Is a university student on holiday with no fixed plans. She hopes to visit music festivals as part of her travel experience. Apart from that, her travel is flexible. She is tech-savvy and quickly adapts to new applications and solutions. She is interested in trying new and exciting digital services.



Faruq Is recently retired and typically holidays alone. He is thoughtful and enjoys learning about and adopting new technology. Faruq often makes his travel plans on the go, as his needs can change, based on personal or health considerations.



Amelia Is the facilities manager at an organic food distribution company called Food for Fuel. Their head office is in central London, but many Food for Fuel consumers are in regional areas. This means access by public transport is typically infrequent, unreliable, and expensive. Consequently, Food for Fuel provides its sales staff with vehicles to enable them to conveniently and reliably visit existing and potential customers.

2.1 Value and value co-creation

The perceived benefits, usefulness, and importance of something.

Inherent in this definition is the understanding that value is subject to the perception of the stakeholders, whether they be the customers or consumers of service, or part of the service provider organization(s). Value can be subjective.

2.1.1 Value co-creation

There was a time when organizations self-identifying as 'service providers' saw their role as delivering value to their customers in much the same way that a package is delivered to a building by a delivery company. This view treated the relationship between the service provider and the service consumer as mono-directional and distant. The provider delivers the service and the consumer receives value; the consumer plays no role in the creation of value for themselves. This fails to take into consideration the highly complex and interdependent service relationships that exist in reality.

Increasingly, organizations recognize that value is co-created through an active collaboration between providers and consumers, as well as other organizations that are part of the relevant service relationships. Providers should no longer attempt to work in isolation to define what will be of value to their customers and users, but

actively seek to establish mutually beneficial, interactive relationships with their consumers, empowering them to be creative collaborators in the service value chain. Stakeholders across the service value chain contribute to the definition of



service for me is the on-demand availability of a car that suits my needs. I spend less money on car hire each year than it would cost me to maintain and run my own car.

Value means it meets my budget. Being retired means I'm flexible, with very few commitments or deadlines. When I'm on holiday, I only plan a few days ahead. An extra day of car hire offers real value to me.



Amelia: The value of car hire for my organization, Food for Fuel, is two-fold. First, we need the ability to reach our customers. Second, we're keen to lower our costs and risks by hiring cars instead of running our own fleet.

As a regular customer who books car hire on behalf of my sales reps and staff, I value a consistent and reliable standard of service. Travel and car hire at Food for Fuel is pre-planned and typically only requires daily hire. There's not much value in an extra day of car hire for my organization.



Henri: We also have to think about how value is created for Axe. The most obvious value we receive when we hire out our cars is revenue. For our service consumers, value includes easy access to a vehicle when they need it, without the overall expense of car ownership. In both cases, we need a combination of the two for the value to be realized. In that way, we co-create value through our service relationships.

Value will be explored in greater depth later in this chapter. Before that, however, it is important to outline the various stakeholders who are involved in value co-creation and the language used in ITIL to describe them.

Organizations vary in size and complexity, and in their relation to legal entities, from a single person or a team to a complex network of legal entities united by common objectives, relationships, and authorities.

As societies and economies evolve, the relationships between and within organizations become more complex. Each organization depends on others in its operation and development. Organizations may hold different roles, depending on the perspective under discussion. For example, an organization that coordinates adventure vacations can fill the role of a service provider to a travel agent when it sells a vacation, while simultaneously filling the role of service consumer when it purchases airport transfers to add to their vacation packages.

2.2.1 Service providers



Key message

When provisioning services, an organization takes on the role of the service provider. The provider can be external to the consumer's organization, or they can both be part of the same organization.

2.2.2 Service consumers



Key message

When receiving services, an organization takes on the role of the service consumer.

Service consumer is a generic role that is used to simplify the definition and description of the structure of service relationships. In practice, there are more specific roles involved in service consumption, such as customers, users, and sponsors. These roles can be separate or combined.



Definitions

per the agreed contract.

In another example, an individual private consumer of the same wireless carrier (one person using the mobile network) simultaneously acts as a user, customer, and sponsor.

The ITIL story: Axle's service consumers



Su: Our most obvious service consumers are the people and organizations who hire our cars, visit our offices, and use our website and booking app. For example, Ichika and Faruq are service consumers, and so is Food for Fuel. They are also our customers.



Radhika: Users are the people who make use of our services. Our car-hire users are the drivers and passengers in our vehicles.



Marco: Sponsors are the people who authorize budgets. For Axle Car Hire, our sponsors include Amelia from Food for Fuel, who approves the travel budget even if she doesn't travel herself.



Henri: Individual service consumers such as Ichika and Faruq approve their own budgets, define their requirements for car hire, and drive the cars. Therefore, Ichika and Faruq act as sponsors, customers, and users. Sometimes, though, they may share the trip with fellow drivers (friends or family members). In this case, their contracts will include other users.

Products and services create value for stakeholders in a number of ways. Some are quite direct such as the generation of revenue, while others are more indirect such as employee experience. Table 2.1 provides examples of value for several different types of stakeholder.

Detailed recommendations on the management of value for different stakeholders can be found in other ITIL 4 publications and supplementary materials.

Table 2.1 Examples of value for different types of stakeholder

| Stakeholder | Example of value for stakeholder |
|----------------------------|---|
| Service consumers | Benefits achieved; costs and risks optimized |
| Service provider | Funding from the consumer; business development; image improvement |
| Service provider employees | Financial and non-financial incentives; career and professional development; sense of purpose |
| Society and community | Employment; taxes; organizations' contribution to the development of the community |
| Charity organizations | Financial and non-financial contributions from other organizations |
| Shareholders | Financial benefits, such as dividends; sense of assurance and stability |

2.3 Products and services

The central component of service management is, of course, the service. The nature of services will now be considered, and an outline given of the relationship between a service and a product.



Definitions

- **Services** A means of enabling value co-creation by facilitating outcomes that customers want to achieve, without the customer having to manage specific costs and risks.
- **Product** A configuration of an organization's resources designed to offer value for a consumer.

Each product that an organization offers is created with a number of target consumer groups in mind, and the products will be tailored to appeal to, and meet the needs of, these groups. A product is not exclusive to one consumer group, and can be used to address the needs of several different groups. For example, a software service can be offered as a 'lite' version, for individual users, or as a more comprehensive corporate version.

Products are typically complex and are not fully visible to the consumer. The portion of a product that the consumer actually sees does not always represent all of the components that comprise the product and support its delivery. Organizations define which product components their consumers see, and tailor them to suit the target consumer groups.

Definition: Service offering

A formal description of one or more services, designed to address the needs of a target consumer group. A service offering may include goods, access to resources, and service actions.

Service offerings may include:

- goods to be supplied to a consumer (for example, a mobile phone). Goods are supposed to be transferred from the provider to the consumer, with the consumer taking the responsibility for their future use
- access to resources granted or licensed to a consumer under agreed terms and conditions (for example, to the mobile network, or to the network storage). These resources remain under the provider's control and can be accessed by the consumer only during the agreed service consumption period
- service actions performed to address a consumer's needs (for example, user support). These actions are performed by the service provider according to the agreement with the consumer.

Examples of different types of service offering are shown in Table 2.2.

Services are offered to target consumer groups, and those groups may be either internal or external to the service provider organization. Different offerings can be created based on the same product, which allows it to be used in multiple ways to address the needs of different consumer groups. For example, a software service

The ITIL story: Axle's service offerings



Su: Axle's service offerings include car hire and the various options we provide to address different travel needs. These offerings include discounted insurance, a loyalty programme, and complimentary travel products which include bottled water, tissues, badge holders for parking permits, and baby seats.

Our consumers are a diverse group and expect different travel experiences. For example, our corporate consumers don't usually need baby seats or weekend rates. At the same time, some individual customers aren't interested in free airport car collection if they're only travelling locally.

All our service offerings include access to our website and booking app.

2.4 Service relationships

To create value, an organization must do more than simply provide a service. It must also cooperate with the consumers in service relationships.





consumer.

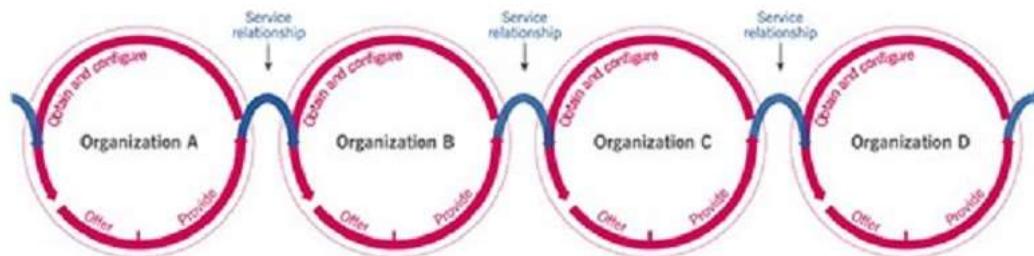


Figure 2.1 The service relationship model

The service consumer can use its new or modified resources to create its own products to address the needs of another target consumer group, thus becoming service provider. These interactions are shown in Figure 2.1.

Definitions

- Service relationship A cooperation between a service provider and service consumer. Service relationships include service provision, service consumption, and service relationship management.
- Service provision Activities performed by an organization to provide

The ITIL story: Axle's service relationships



Henri: Axle has service relationships with many service providers and consumers, both internal and external. Some services provided to Axle create new resources for the business, such as car manufacturers selling cars to us. Other services, such as the work done for us by our internal car cleaning team, and mechanics outside of Axle, change our existing resources by ensuring that our cars are clean and functional.

Axle can use these resources in other relationships to provide its own services, in the form of car hire, to consumers, i.e. our customers.

These are just a few examples of the service relationships that Axie has. The organization as a whole has many more.

2.5 Value: outcomes, costs, and risks

This section will focus on how an organization in the role of service provider should evaluate what its services should do and how its services should be provided to meet the needs of consumers.

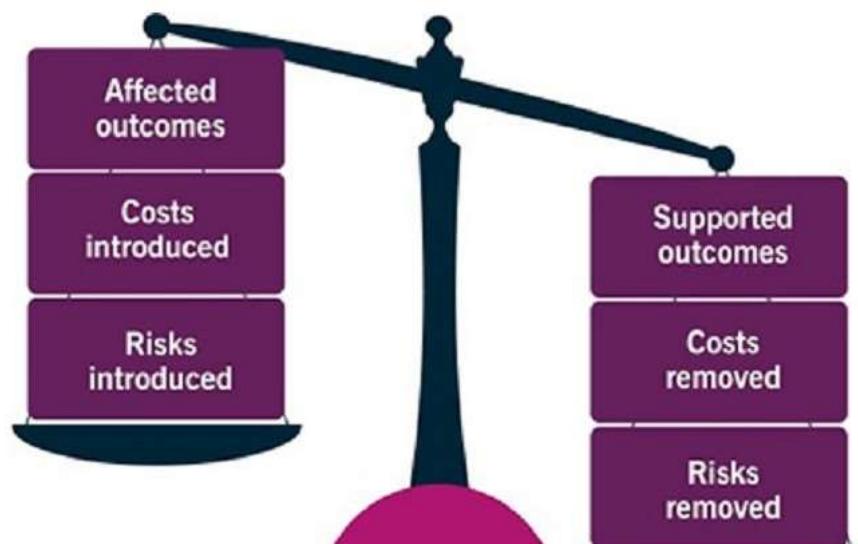


consumers to achieve certain outcomes.



Definitions

- Output A tangible or intangible deliverable of an activity.
- Outcome A result for a stakeholder enabled by one or more outputs.



are offered to a wide consumer group. This is how mobile operators, broadband service providers, and transport companies usually operate. Finally, some service providers predict or even create demand for certain outcomes, forming a target group for their services. This may happen with innovative services addressing needs that consumers were not even aware of before. Examples of this include social networks or smart home solutions.

The ITIL story: Outputs and outcomes



Henri: *At Axele, our key output is a car that is clean, roadworthy, and well maintained.*



Su: *For our service consumers, outcomes include travel that is convenient and affordable, and meets a range of needs. This includes self-drive holidays, client site visits, and travel to see family and friends.*

2.5.2 Costs



the service relationship, it is important that both types of cost are fully understood.

From the provider's perspective, a full and correct understanding of the cost of service provision is essential. Providers need to ensure that services are delivered within budget constraints and meet the financial expectations of the organization (see section 5.1.11).

2.5.3 Risks



Definition: Risk

A possible event that could cause harm or loss, or make it more difficult to achieve objectives. Can also be defined as uncertainty of outcome, and can be measured in the context of assessing the probability of something happening.

used in the context of measuring the probability of positive outcomes as well as negative outcomes.

As with costs, there are two types of risk that are of concern to service consumer

- risks removed from a consumer by the service (part of the value proposition).

2.5.4 Utility and warranty

To evaluate whether a service or service offering will facilitate the outcomes desired by the consumers and therefore create value for them, the overall utility and warranty of the service should be assessed.



Definitions

- Utility The functionality offered by a product or service to meet a particular need. Utility can be summarized as 'what the service does' and can be used to determine whether a service is 'fit for purpose'. To have utility, a service must either support the performance of the consumer or remove constraints from the consumer. Many services do both.
- Warranty Assurance that a product or service will meet agreed requirements. Warranty can be summarized as 'how the service performs' and can be used to determine whether a service is 'fit for use'. Warranty often relates to service levels aligned with the needs of service consumers. This may be based on a formal agreement, or it may be a marketing message or brand image. Warranty typically addresses such areas as the availability of the service, its capacity, levels of security and continuity. A



Su: Axle's recent customer satisfaction surveys consistently revealed low ratings for car cleanliness. This hampered our customers' travel experience and was a contributing factor for low repeat bookings.



Henri: Axle Car Hire made the decision to outsource the cleaning of all vehicles to a service provider. Previously, cleaning of our vehicle fleet was performed by an internal department. The cost and effort to maintain equipment, update

It is important to understand that the risk of outsourcing any task or service is that an organization loses skills and capabilities. However, car cleaning is a service requiring specialized equipment as well as a flexible and motivated workforce. Continual investment in this service is something that is not beneficial for Axle.

At face value, outsourcing may appear to cost an organization more than using internal resources. Initially this may be true; however, over time and correctly managed, outsourcing services should be beneficial to both the organization and supplier. The benefit for Axle is that we can concentrate on our core business. After all, we're not a cleaning company.



Marco: There are always pros and cons to outsourcing. Let's have a look at the outcomes, costs, and risks that are introduced and removed.

| Pros | Cons |
|--|--|
| Users will be happy with our cars' cleanliness Axle will no longer need to maintain its own | Axle will lose an opportunity to offer car cleaning as a service |



Su: Craig's Cleaning is doing a great job! The cars have never been cleaner, and our customer satisfaction ratings for car cleanliness are steadily on the increase.

Axle and Craig's Cleaning have worked on a cleaning schedule together, with focus on car cleaning turnaround times during peak hours. Axle is responsible for providing Craig and his team with timely notice of any changes that can impact this schedule. For example, Axle may need to expand its cleaning requirements in the light of new service offerings, such as the one Marco is developing.



Marco: Axle has a goal to become a greener company and help the environment. We would like Craig's Cleaning to support us in this goal and aim for the same sustainable growth as us.

2.6 Summary

This chapter has covered the key concepts in service management, in particular the nature of value and value co-creation, organizations, products, and services. It has explored the often complex relationships between service providers and consumers and the various stakeholders involved. The chapter has also covered the key components of consumer value: benefits, costs, and risks, and how important it is to understand the needs of the customer when designing and delivering services. These concepts will be built upon over the next few chapters, and guidance

CHAPTER 3

THE FOUR DIMENSIONS OF SERVICE MANAGEMENT

3 The four dimensions of service management

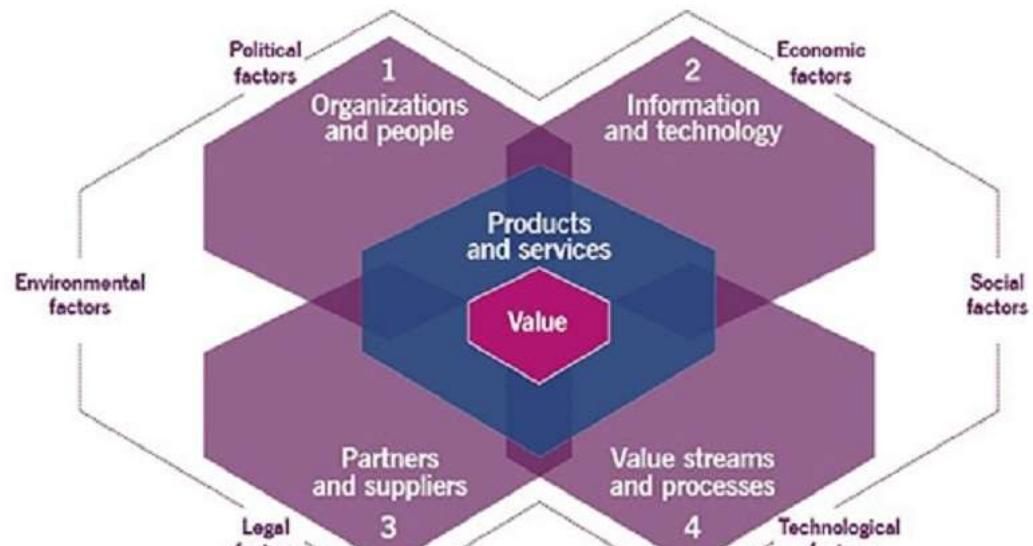
The previous chapter outlined the concepts that are key to service management. The objective of an organization is to create value for its stakeholders, and this is achieved through the provision and consumption of services. The ways in which the various components and activities of an organization work together to create this value is described by the ITIL SVS. However, before this is explored further, the four dimensions of service management must be introduced. These dimensions are relevant to, and impact upon, all elements of the SVS.

To achieve their desired outcomes and work as effectively as possible, organizations should consider all aspects of their behaviour. In practice, however, organizations often become too focused on one area of their initiatives and neglect the others. For example, process improvements may be planned without proper consideration for the people, partners, and technology involved, or technology solutions can be implemented without due care for the processes or people they are supposed to support. There are multiple aspects to service management, and none of these are sufficient to produce the required outcomes when considered in isolation.



The four dimensions, and the relationships between them, are represented in Fig 3.1.

Failing to address all four dimensions properly may result in services becoming undeliverable, or not meeting expectations of quality or efficiency. For example, failing to consider the value streams and processes dimension holistically can lead to wasteful work, duplication of efforts, or worse, work that conflicts with what is being done elsewhere in the organization. Equally, ignoring the partners and suppliers dimension could mean that outsourced services are misaligned with the needs of the organization. The four dimensions do not have sharp boundaries and may overlap. They will sometimes interact in unpredictable ways, depending on the level of complexity and uncertainty in which an organization operates.



suppliers, and the value streams, processes, and technologies that we use.

3.1 Organizations and people

The first dimension of service management is organizations and people.

The effectiveness of an organization cannot be assured by a formally established structure or system of authority alone. The organization also needs a culture that supports its objectives, and the right level of capacity and competency among its workforce. It is vital that the leaders of the organization champion and advocate values which motivate people to work in desirable ways. Ultimately, however, it is the way in which an organization carries out its work that creates shared values and attitudes, which over time are considered the organization's culture.



Key message

The complexity of organizations is growing, and it is important to ensure that the way an organization is structured and managed, as well as its roles, responsibilities, and systems of authority and communication, is well defined.

deep specialization in certain fields.

Every person in the organization should have a clear understanding of their contribution towards creating value for the organization, its customers, and other stakeholders. Promoting a focus on value creation is an effective method of breaking down organizational silos.

The organizations and people dimension of a service covers roles and responsibilities, formal organizational structures, culture, and required staffing and competencies, all of which are related to the creation, delivery, and improvement of a service.

The ITIL story: Axle's organization and people



Henri: The organizations and people dimension of Axle's car-hire services includes my IT team and other teams within the organization, such as procurement, HR, and facilities.

3.2 Information and technology

The second dimension of service management is information and technology. As with the other three dimensions, information and technology applies both to ser

communication systems, and analytical tools. Service management increasingly benefits from developments in technology. Artificial intelligence, machine learning and other cognitive computing solutions are used at all levels, from strategic planning and portfolio optimization to system monitoring and user support. The use of mobile platforms, cloud solutions, remote collaboration tools, automated test and deployment solutions has become common practice among service provider

In the context of a specific IT service, this dimension includes the information created, managed, and used in the course of service provision and consumption, and the technologies that support and enable that service. The specific information and technologies depend on the nature of the services being provided and usually cover all levels of IT architecture, including applications, databases, communication systems, and their integrations. In many areas, IT services use the latest technological developments, such as blockchain, artificial intelligence, and cognitive computing. These services provide a business differentiation potential to early adopters, especially in highly competitive industries. Other technology solutions, such as cloud computing or mobile apps, have become common practice across many industries globally.

In relation to the information component of this dimension, organizations should consider the following questions:

- What information is managed by the services?
- What supporting information and knowledge are needed to deliver and manage the services?

and regulatory compliance requirements, are also a focus of this dimension. For example, an organization may be subject to the European Union's General Data Protection Regulation (GDPR), which influences its information management policies and practices. Other industries or countries may have regulations that impose constraints on the collection and management of data of multinational corporations. For example, in the US the Health Insurance Portability and Accountability Act of 1996 provides data privacy and security provisions for safeguarding medical information.

Most services nowadays are based on IT, and are heavily dependent on it. When considering a technology for use in the planning, design, transition, or operation product or service, questions an organization may ask include:

- Is this technology compatible with the current architecture of the organization and its customers? Do the different technology products used by the organization and its stakeholders work together? How are emerging technologies (such as machine learning, artificial intelligence, and Internet of Things) likely to disrupt the service or the organization?
- Does this technology raise any regulatory or other compliance issues with the organization's policies and information security controls, or those of its customers?
- Is this a technology that will continue to be viable in the foreseeable future? Is the organization willing to accept the risk of using aging technology, or of embracing emerging or unproven technology?
- Does this technology align with the strategy of the service provider, or its service delivery partners?

Some industries have restrictions on the use of some technologies, or have significantly higher security concerns that must be addressed. Other industries, such as finance or life sciences, are also subject to restrictions around their use of technology. For example, they usually cannot use open source and public services when dealing with sensitive data.

The ITIL story: Axle's information and technology



Henri: The information and technology dimension of Axle Car Hire represents the information created and managed by teams. It also includes the technologies that support and enable our services. Applications and databases such as our booking app and financial system are part of the information and technology dimension as well.



Definition: Cloud computing

A model for enabling on-demand network access to a shared pool of configurable computing resources that can be rapidly provided with minimal management effort or provider interaction.

- measured service (often from service consumer's perspective).

In the context of ITSM, cloud computing changes service architecture and the distribution of responsibilities between service consumers, service providers, and their partners. It especially applies to in-house service providers, i.e. the organization's internal IT departments. In a typical situation, adoption of the cloud computing model:

- replaces some infrastructure, previously managed by the service provider, with a partner's cloud service
- decreases or removes the need for infrastructure management expertise and the resources of the service provider
- shifts the focus of service monitoring and control from the in-house infrastructure to a partner's services
- changes the cost structure of the service provider, removing specific capital expenditures and introducing new operating expenditures and the need to manage them appropriately
- introduces higher requirements for network availability and security
- introduces new security and compliance risks and requirements, applicable to both the service provider and its partner providing the cloud service
- provides users with opportunities to scale service consumption using self-service via simple standard requests, or even without any requests.

All these affect multiple service providers' practices, including, but not limited

in their need for faster time to market and digitalization of their services.

Considering the influence of cloud computing on organizations, it is important to make decisions about the use of this model at the strategic level of the organization, involving all levels of stakeholders, from governance to operations.

3.3 Partners and suppliers

The third dimension of service management is partners and suppliers. Every organization and every service depend to some extent on services provided by other organizations.



Key message

The partners and suppliers dimension encompasses an organization's relationships with other organizations that are involved in the design, development, deployment, delivery, support, and/or continual improvement of services. It also incorporates contracts and other agreements between the

Table 3.1 Relationships between organizations

| Form of cooperation | Outputs | Responsibility for the outputs | Responsibility for achievement of the outcomes | Level of formality | Examples |
|---------------------|--------------------|--------------------------------------|--|--|--|
| Goods supply | Goods supplied | Supplier | Customer | Formal supply contract/invoices | Procurement of computers and phones |
| Service delivery | Services delivered | Provider | Customer | Formal agreements and flexible cases | Cloud computing (infrastructure or platform as a service) |
| Service partnership | Value co-created | Shared between provider and customer | Shared between provider and customer | Shared goals, generic agreements, flexible case-based arrangements | Employee onboarding (shared between HR, facilities and IT) |

One method an organization may use to address the partners and suppliers dimension is service integration and management. This involves the use of a specially established integrator to ensure that service relationships are properly coordinated. Service integration and management may be kept within the organization, but can also be delegated to a trusted partner.

Factors that may influence an organization's strategy when using suppliers include:

- **Strategic focus** Some organizations may prefer to focus on their core competencies and to outsource non-core supporting functions to third parties; others may prefer to stay as self-sufficient as possible, retaining full control over all important functions.
- **Corporate culture** Some organizations have a historical preference for one approach over another. Long-standing cultural bias is difficult to change without compelling reasons.

bundle goods and services into a single product offering that can be consumed as a utility, and is typically accounted for as operating expenditure. This frees companies from investing in costly infrastructure and software assets that need to be

accounted for as capital expenditure.

The ITIL story: Axle's partners and suppliers



Henri: The partners and suppliers dimension for Axle includes suppliers such as Go Go Gas and Craig's Cleaning, as well as internet service providers and developers.

3.4 Value streams and processes

The fourth dimension of service management is value streams and processes. Like the other dimensions, this dimension is applicable to both the SVS in general, and specific products and services. In both contexts it defines the activities, workflow controls, and procedures needed to achieve agreed objectives.



3.4.1 Value streams for service management



Key message

A value stream is a series of steps that an organization uses to create and deliver products and services to a service consumer. A value stream is a combination of the organization's value chain activities (see section 4.5 for more details on value chain activities and Appendix A for examples of value streams).



Definition: Value stream

A series of steps an organization undertakes to create and deliver products and services to consumers.

significant amount of time. In any case, they should be continually improved to ensure that the organization achieves its objectives in an optimal way. Value stream mapping is described in more detail in other ITIL 4 publications.

3.4.2 Processes



Key message

A process is a set of activities that transform inputs to outputs. Processes describe what is done to accomplish an objective, and well-defined processes can improve productivity within and across organizations. They are usually detailed in procedures, which outline who is involved in the process, and work instructions, which explain how they are carried out.



The ITIL story: Axle's value streams and processes



Radhika: *The value streams and processes dimension represents the series of activities that are carried out within Axle. Value streams help Axle to identify wasteful activity and remove obstacles that hinder the organization's productivity.*

3.5 External factors

Service providers do not operate in isolation. They are affected by many external factors, and work in dynamic and complex environments that can exhibit high degrees of volatility and uncertainty and impose constraints on how the service provider can work. To analyse these external factors, frameworks such as the PESTLE (or PESTEL) model are used. PESTLE is an acronym for the political, economic, social, technological, legal, and environmental factors that constrain and influence how a service provider operates.

Collectively, these factors influence how organizations configure their resources to address the four dimensions of service management. For example:

- Government and societal attitudes towards environmentally friendly products and services may result in the organization investing more in tools and technologies that meet external expectations. An organization may choose to

dimension. The impact of external factors on the four dimensions should also be considered. All four dimensions and the external factors that affect them should be addressed as they evolve, considering emerging trends and opportunities. It is essential that an organization's SVS is considered from all four dimensions, as the failure to adequately address or account for one dimension, or an external factor, can lead to sub-optimal products and services.

The ITIL story: Balancing the four dimensions



Marco: *To make Axe's services as effective as possible, we use the best combination of our people, our teams, our value streams, and our ways of working. We now engage a blended approach to service management, incorporating DevOps, Design Thinking, and Agile into product development. We also use new technologies such as robotics, AI, and machine learning, striving to be efficient and Lean, and to automate wherever possible.*

CHAPTER 4

THE ITIL SERVICE VALUE SYSTEM

4 The ITIL service valuesystem

4.1 Service value system overview

For service management to function properly, it needs to work as a system. The Service Value System (SVS) describes the inputs to this system (opportunity and demand), the elements of this system (organizational governance, service management, continual improvement, and the organization's capabilities and resources), and the output (achievement of organizational objectives and value for the organization, its customers, and other stakeholders).



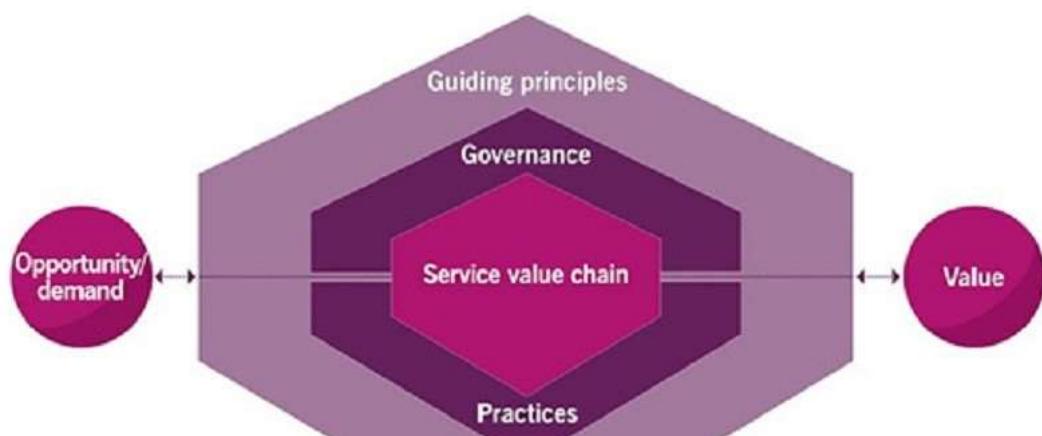
Key message

The ITIL SVS describes how all the components and activities of the organization work together as a system to enable value creation. Each organization's SVS has interfaces with other organizations, forming an interconnected network of systems.

facilitate value realization.

- Practices Sets of organizational resources designed for performing work or accomplishing an objective.
- Continual improvement A recurring organizational activity performed at all levels to ensure that an organization's performance continually meets stakeholders' expectations. ITIL 4 supports continual improvement with the ITIL continual improvement model.

The purpose of the SVS is to ensure that the organization continually co-creates value with all stakeholders through the use and management of products and services. The structure of the SVS is shown in Figure 4.1. The left side of the figure shows opportunity and demand feeding into the SVS from both internal and external sources. The right side shows value created for the organization, its customers, and other stakeholders.



A siloed organization cannot act quickly to take advantage of opportunities or to optimize the use of resources across the organization. It is often unable to make effective decisions about changes, due to limited visibility and many hidden agendas. Practices can also become silos. Many organizations have implemented

practices such as organizational change management or incident management

practices such as organizational change management or incident management without clear interfaces with other practices. All practices should have multiple interfaces with one another. The exchange of information between practices should be triggered at key points in the workflow, and is essential to the proper function of the organization.

The architecture of the ITIL SVS specifically enables flexibility and discourages silo working. The service value chain activities and the practices in the SVS do not form a fixed, rigid structure. Rather, they can be combined in multiple value streams to address the needs of the organization in a variety of scenarios. This publication provides examples of service value streams, but none of them are definite or prescriptive. Organizations should be able to define and redefine their value streams in a flexible, yet safe and efficient manner. This requires continual improvement activity to be carried out at all levels of the organization; the ITIL continual improvement model helps to structure this activity. Finally, the continual improvement and overall operation of an organization are shaped by the ITIL guiding principles. The guiding principles create a foundation for a shared culture across the organization, thus supporting collaboration and cooperation within and between the teams, and removing the need for constraints and controls previously provided by silos.

With all these elements in place, the ITIL SVS can help organizations to move towards a more agile and resilient way of working.

coordinating, and consuming products and services.

Organizational agility is the ability of an organization to move and adapt quickly, flexibly, and decisively to support internal changes. These might include changes to the scope of the organization, mergers and acquisitions, changing organizational practices, or technologies requiring different skills or organizational structure and changes to relationships with partners and suppliers.

Organizational resilience is the ability of an organization to anticipate, prepare for, respond to, and adapt to both incremental changes and sudden disruptions from an external perspective. External influences could be political, economic, social, technological, legal or environmental. Resilience cannot be achieved without a common understanding of the organization's priorities and objectives, which sets the direction and promotes alignment even as external circumstances change.

The ITIL SVS provides the means to achieve organizational agility and resilience and to facilitate the adoption of a strong unified direction, focused on value and understood by everyone in the organization. It also enables continual improvement throughout the organization.

4.2 Opportunity, demand, and value

external customers. A definition of value, and what constitutes value for different stakeholders, can be found in Chapter 2.

4.3 The ITIL guiding principles



Key message

A guiding principle is a recommendation that guides an organization in all circumstances, regardless of changes in its goals, strategies, type of work, or management structure. A guiding principle is universal and enduring.

Table 4.1 Overview of the guiding principles

| Guiding principle | Description |
|------------------------------|--|
| Focus on value | <p>Everything that the organization does needs to map, directly or indirectly, to value for the stakeholders.</p> <p>The focus on value principle encompasses many perspectives, including experience of customers and users.</p> |
| Start where you are | <p>Do not start from scratch and build something new without considering what is already available to be leveraged. There is likely to be a great deal of existing knowledge and resources that can be utilized.</p> |
| Keep it simple and practical | <p>If a process, service, action or metric fails to provide value or produce a useful outcome, eliminate it. In a process or procedure, use the minimum number of steps necessary to accomplish the objective(s). Always use outcome-based thinking to produce practical solutions that deliver results.</p> |
| Optimize and automate | <p>Resources of all types, particularly HR, should be used to their best effect. Eliminate anything that is truly wasteful and use technology to achieve whatever it is capable of. Human intervention should only happen when it really contributes value.</p> |

The guiding principles defined here embody the core messages of ITIL and of service management in general, supporting successful actions and good decisions of all types and at all levels. They can be used to guide organizations in their work as they adopt a service management approach and adapt ITIL guidance to their own specific needs.

needs and circumstances. The guiding principles encourage and support organizations in continual improvement at all levels.

These principles are also reflected in many other frameworks, methods, standards, philosophies, and/or bodies of knowledge, such as Lean, Agile, DevOps, and COB. This allows organizations to effectively integrate the use of multiple methods into an overall approach to service management.

The guiding principles are applicable to practically any initiative and to all relationships with stakeholder groups. For example, the first principle, focus on value, can (and should) be applied not only to service consumers, but to all relevant stakeholders and their respective definitions of value.

Table 4.1 provides a high-level introduction to the guiding principles. Additional

Just as Agile techniques provide service organizations with a flow of product and software increments, ITIL can also provide software development organizations with a wider perspective and language with which to engage other service teams. Adopting Agile without ITIL can lead to higher costs over time, such as the costs of adopting different technologies and architectures, and costs to release, operate, and maintain software increments. Similarly, implementing ITIL without Agile techniques can risk losing focus on value for customers and users, creating slow-moving and highly centralized bureaucracies.

When Agile and ITIL are adopted together, software development and service management can progress at a similar cadence, share a common terminology, and ensure that the organization continues to co-create value with all its stakeholders. Some of the ways in which ITIL and Agile can work together include:

- streamlining practices such as change control
- establishing procedures to incorporate and prioritize the management of unplanned interruptions (incidents), and to investigate the causes of failure
- separating interactions, if necessary, between ‘systems of record’ (e.g. the configuration management database) needed to manage services from ‘systems of engagement’ (e.g. collaboration tools) used by software development teams.

DevOps methods build on Agile software development and service

- work can be quickly converted to value for multiple stakeholders
- differentiating deployment management from release management
 - advocating a ‘systems view’ that emphasizes close collaboration between enterprise governance, service teams, software development, and technology operations.

4.3.1 Focus on value



Key message

All activities conducted by the organization should link back, directly or indirectly, to value for itself, its customers, and other stakeholders.

This section is mostly focused on the creation of value for service consumers. However, a service also contributes to value for the organization and other stakeholders. This value may come in various forms, such as revenue, customer loyalty, lower cost, or growth opportunities. The following recommendations car



vehicles. This process remains very manual. Some of our regional depots continue to use paper-based forms to register customers. Customers don't want to waste time completing forms for identification when this information has already been provided during the online booking process.

To improve the customer identification process, Axle could use biometric technology to identify our customers.



Marco: Biometric technology uses scanned graphical data for personal identification. It's fast and reliable, and widely used in other industries. For example, the airline industry is using it for security screening, check-in, and even for aircraft boarding. We could use fingerprint or facial recognition scans to quickly identify our customers, and automate the car collection and return process.



Radhika: We need to be mindful of regulations such as GDPR and the possible risks to data security this technology could bring.



Marco: Axle also wants to trial automated identification of damage to



Marco. Marco also wants to trial automated identification of damage to returned vehicles, including scratches, dents, and broken lights. Potentially the technology could even identify fuel levels. This would automate the calculation of any fuel charges incurred by our customers, which is also a manual process.



Su: Our customers want simplicity and speed while maintaining comfort and safety on the road. Biometric technology and car scanning would be a source of opportunity to meet evolving customer demands.

consumer. The service provider needs to know:

- why the consumer uses the services
- what the services help them to do
- how the services help them achieve their goals
- the role of cost/financial consequences for the service consumer
- the risks involved for the service consumer.

Value can come in many forms, such as increased productivity, reduced negative impact, reduced costs, the ability to pursue new markets, or a better competitive position. Value for the service consumer:

- is defined by their own needs
- is achieved through the support of intended outcomes and optimization of the service consumer's costs and risks
- changes over time and in different circumstances.

4.3.1.3 The customer experience

An important element of value is the experience that service consumers have when they interact with the service and the service provider. This is frequently called customer experience (CX) or user experience (UX) depending on the adopted definitions, and it must be actively managed.

are and to understand CX.

- Focus on value during normal operational activity as well as during improvement initiatives. The organization as a whole contributes to the value that the customer perceives, and so everybody within the organization must maximize the value they create. The creation of value should not be left only to the people working on exciting projects and new things.

- Include focus on value in every step of any improvement initiative Everybody involved in an improvement initiative needs to understand what outcomes the initiative is trying to facilitate, how its value will be measured, and how they should be contributing to the co-creation of that value.

The ITIL story: Focus on value



Radhika: *When Axle expanded to the Asia-Pacific region, we undertook research focused on customers travelling outside their native countries. The results found that American and European customers travelling to these areas had concerns around unfamiliar road rules and safety.*



Marco: *Axle is introducing a certified, third-party driver assistance system called Axle Aware. The system checks external surroundings and internal conditions in the car. It includes cameras to monitor the area around the car, and an artificial intelligence program with local road rules. It can even let the driver know when fatigue is starting to set in.*

The system will alert the driver to approaching dangers and potential road rule



our partners and suppliers.



Radhika: *For example, we've updated our contract with our fleet maintenance partner. Maintenance will now include Axle Aware. The value to our maintenance partner is the additional revenue.*

4.3.2 Start where you are



Key message

In the process of eliminating old, unsuccessful methods or services and creating something better, there can be great temptation to remove what has been done in the past and build something completely new. This is rarely necessary, or a wise decision. This approach can be extremely wasteful, not only in terms of time, but also in terms of the loss of existing services, processes, people, and tools that could have significant value in the

improvement effort. Do not start over without first considering what is already in place.

possible. Within organizations there is frequently a discrepancy between reports and reality. This is due to the difficulty of accurately measuring certain data, or the unintentional bias or distortion of data that is produced through reports. Getting data from the source helps to avoid assumptions which, if proven to be unfounded, can be disastrous to timelines, budgets, and the quality of results.

Those observing an activity should not be afraid to ask what may seem to be stupid questions. It can sometimes be beneficial for a person with little or no prior knowledge of the service to be part of the observation, as they have no preconceptions of the service, and may spot things that those more closely involved with it would miss.

The ITIL story: Assessing the current state



Henri: Everyone likes the idea of a new app, and IT is keen to start gathering user requirements so that we can start development. However, before we develop an entirely new app, let's assess the current state of the app we have to see if there's any functionality we can re-use.

The current process for booking a car meets basic requirements, and doesn't need to change. We just need additional functionality. For example, the process for recording, storing, and calculating points for our loyalty programme won't change.

We should also consider the limits of the technology that our customers use. If we want to introduce biometric data recognition, we will need to have

but not replace what is observed, as over-reliance on data analytics and reporting can unintentionally introduce biases and risks in decision-making. Organizations should consider a variety of techniques to develop knowledge of the environment in which they work. Although it is true that some things can only be understood through measuring their effect (for example, natural phenomena such as the weather), direct observation should always be the preferred option. Too often existing data is used with no consideration of direct personal investigation.

It should be noted that the act of measuring can sometimes affect the results, making them inaccurate. For example, if a service desk knows it is being monitored on length of time spent on the phone, it might focus too much on minimizing customer engagement (thus leading to good reports), rather than actually helping users resolve issues to their satisfaction. People are very creative in finding ways

users resolve issues to their satisfaction. People are very creative in finding ways to meet the metrics they are measured against. Therefore, metrics need to be meaningful and directly relate to the desired outcome.

'When a measure becomes a target, it ceases to be a good measure
Goodhart's Law'

4.3.2.3 Applying the principle

Having a proper understanding of the current state of services and methods is important to selecting which elements to re-use, alter, or build upon. To apply this principle successfully, consider this advice:

Regardless of how desirable it may be to re-use, repurpose and recycle, or even upcycle, there will be times when the only way to achieve the desired result is to start over entirely. It should be noted, however, that these situations are very rare.

4.3.3 Progress iteratively with feedback



Key message

Resist the temptation to do everything at once. Even huge initiatives must be accomplished iteratively. By organizing work into smaller, manageable sections that can be executed and completed in a timely manner, the focus on each effort will be sharper and easier to maintain.

Improvement iterations can be sequential or simultaneous, based on the requirements of the improvement and what resources are available. Each individual iteration should be both manageable and managed, ensuring that tangible results are returned in a timely manner and built upon to create further improvement.

feedback mechanisms facilitate understanding of:

- end user and customer perception of the value created
- the efficiency and effectiveness of value chain activities
- the effectiveness of service governance as well as management controls
- the interfaces between the organization and its partner and supplier network
- the demand for products and services.

Once received, feedback can be analysed to identify improvement opportunities, risks, and issues.

4.3.3.2 Iteration and feedback together

Working in a timeboxed, iterative manner with feedback loops embedded into the process allows for:

- greater flexibility
- faster responses to customer and business needs
- the ability to discover and respond to failure earlier
- an overall improvement in quality.

Having appropriate feedback loops between the participants of an activity gives

4.3.3.3 Applying the principle

To apply this principle successfully, consider this advice:

- Comprehend the whole, but do something Sometimes the greatest enemy to progressing iteratively is the desire to understand and account for everything. This can lead to what is sometimes called 'analysis paralysis', in which so much time is spent analysing the situation that nothing ever gets done about it.
- Understanding the big picture is important, but so is making progress. The ecosystem is constantly changing, so feedback is essential Change is happening constantly, so it is very important to seek and use feedback at all times and at all levels.
- Fast does not mean incomplete Just because an iteration is small enough to be done quickly does not mean that it should not include all the elements necessary for success. Any iteration should be produced in line with the concept of the minimum viable product. A minimum viable product is a version of the final product which allows the maximum amount of validated learning with the least effort.

4.3.4 Collaborate and promote visibility



Recognition of the need for genuine collaboration has been one of the driving factors in the evolution of what is now known as DevOps. Without effective collaboration, neither Agile, Lean, nor any other ITSM framework or method will work.

Working together in a way that leads to real accomplishment requires informative understanding, and trust. Work and its results should be made visible, hidden agendas should be avoided, and information should be shared to the greatest degree possible. The more people are aware of what is happening and why, the more they will be willing to help.

When improvement activity occurs in relative silence, or with only a small group being aware of the details, assumptions and rumours can prevail. Resistance to change will often arise as staff members speculate about what is changing and how it might impact them.

4.3.4.1 Whom to collaborate with

Identifying and managing all the stakeholder groups that an organization deals with is important, as the people and perspectives necessary for successful collaboration can be sourced within these stakeholder groups. As the name suggests, a stakeholder is anyone who has a stake in the activities of the organization, including the organization itself, its customers and/or users, and many others. The scope of stakeholders can be extensive.

with operations teams to investigate defects (problems) and to develop workarounds or permanent fixes to resolve these defects

- suppliers collaborating with the organization to define its requirements and brainstorm solutions to customer problems
- relationship managers collaborating with service consumers to achieve a comprehensive understanding of service consumer needs and priorities
 - customers collaborating with each other to create a shared understanding of

- customers collaborating with each other to create a shared understanding of their business issues
- internal and external suppliers collaborating with each other to review shared processes and identify opportunities for optimization and potential automatic

4.3.4.2 Communication for improvement

The contribution to improvement of each stakeholder group at each level should be understood; it is also important to define the most effective methods to engage with them. For example, the contribution to improvement from customers of a public cloud service may be through a survey or checklist of options for different functionalities. For an internal customer group, the contribution to improvement may come from feedback solicited via a workshop or a collaboration tool on the organization's intranet.

Some contributors may need to be involved at a very detailed level, while others simply be involved as reviewers or approvers. Depending on the service and the relationship between the service provider and the service consumer the

- understanding the flow of work in progress
- identifying bottlenecks, as well as excess capacity
- uncovering waste.

It is important to involve and address the needs of stakeholders at all levels. Leaders at various levels should also provide appropriate information relating to the improvement work in their own communications to others. Together, these actions will serve to reinforce what is being done, why it is being done, and how it relates to the stated vision, mission, goals, and objectives of the organization. Determining the type, method, and frequency of such messaging is one of the central activities related to communication.

The ITIL story: Working collaboratively



Henri: As well as being iterative, our work on the new Axle booking app is also collaborative. We include many of our teams, such as developers, testers, and support staff, and of course, our customers and users. This approach enables us to improve our services in a more responsive and targeted manner, based on feedback.

4.3.4.4 Applying the principle



Key message

No service, practice, process, department, or supplier stands alone. The outputs that the organization delivers to itself, its customers, and other stakeholders will suffer unless it works in an integrated way to handle its activities as a whole, rather than as separate parts. All the organization's activities should be focused on the delivery of value.

Services are delivered to internal and external service consumers through the coordination and integration of the four dimensions of service management (see Chapter 3).

Taking a holistic approach to service management includes establishing an understanding of how all the parts of an organization work together in an integrated way. It requires end-to-end visibility of how demand is captured and translated into outcomes. In a complex system, the alteration of one element can impact others and, where possible, these impacts need to be identified, analysed and planned for.

The ITIL story: Think and work holistically

mechanisms are put in place for all relevant stakeholders to collaborate in a timely manner, it will be possible to address any issue holistically without being unduly delayed.

- Where possible, look for patterns in the needs of and interactions between system elements. Draw on knowledge in each area to identify what is essential for success, and which relationships between elements influence the outcome. With this information, needs can be anticipated, standards can be set, and a holistic view point can be achieved.
- Automation can facilitate working holistically. Where the opportunity and sufficient resources are available, automation can support end-to-end visibility for the organization and provide an efficient means of integrated management.

4.3.6 Keep it simple and practical



Key message

Always use the minimum number of steps to accomplish an objective. Outcome-based thinking should be used to produce practical solutions that deliver valuable outcomes. If a process, service, action, or metric fails to



Henri: *Our developers are already busy with an implementation schedule for biometric services. We need speed to market for this functionality. We must prioritize our work based on the expected value.*

4.3.6.1 Judging what to keep

When analysing a practice, process, service, metric, or other improvement target always ask whether it contributes to value creation.

When designing or improving service management, it is better to start with an uncomplicated approach and then carefully add controls, activities, or metrics until it is seen that they are truly needed.

Critical to keeping service management simple and practical is understanding exactly how something contributes to value creation. For example, a step in a process may be perceived by the operational staff involved as a waste of time. However, from a corporate perspective, the same step may be important for regulatory compliance and therefore valuable in an indirect, but nevertheless important, way. It is necessary to establish and communicate a holistic view of the organization's work so that individual teams or groups can think holistically about how their work is being influenced by, and in turn influences, others.

The ITIL story: Judging what to keep

4.3.6.3 Applying the principle

To apply this principle successfully, consider this advice:

- Ensure value Every activity should contribute to the creation of value.
- Simplicity is the ultimate sophistication It may seem harder to simplify, but it often more effective. Do fewer things, but do them better Minimizing activities to include only those with value for one or more stakeholders will allow more focus on the quality of those actions.
- Respect the time of the people involved A process that is too complicated and bureaucratic is a poor use of the time of the people involved.
- Easier to understand, more likely to adopt To embed a practice, make sure it is easy to follow.
- Simplicity is the best route to achieving quick wins Whether in a project, or while improving daily operations activities, quick wins allow organizations to demonstrate progress and manage stakeholder expectations. Working in an iterative way with feedback will quickly deliver incremental value at regular intervals.

4.3.7 Optimize and automate



optimization of services and practices, as they exist within a set of constraints which may include financial limitations, compliance requirements, time constraints, and resource availability.

4.3.7.1 The road to optimization

There are many ways in which practices and services can be optimized. The concepts and practices described in ITIL, particularly the practices of continual improvement, and measurement and reporting (see sections 5.1.2 and 5.1.5), are essential to this effort. The specific practices an organization uses to improve and optimize performance may draw upon guidance from ITIL, Lean, DevOps, Kanban, and other sources. Regardless of the specific techniques, the path to optimization follows these high-level steps:

- Understand and agree the context in which the proposed optimization exists
- includes agreeing the overall vision and objectives of the organization. Assess current state of the proposed optimization This will help to understand where can be improved and which improvement opportunities are likely to produce biggest positive impact.
- Agree what the future state and priorities of the organization should be. focus

on simplification and value. This typically also includes standardization of practices and services, which will make it easier to automate or optimize further at a later point.

- Ensure the optimization has the appropriate level of stakeholder engagement

Opportunities for automation can be found across the entire organization. Looking for opportunities to automate standard and repeating tasks can help save the organization costs, reduce human error, and improve employee experience.

The ITIL story: Optimize and automate



Marco: *Axle has started to trial the new biometric technology, and the tests are going well. We're keen to implement this technology in all our depots.*



Radhika: *Before Axle introduced biometrics, there were many manual, paper-based processes. Axle staff used paper checklists to carry out vehicle damage checks. Their notes then had to be entered in a database, which was only available on desktop computers. It was not real time or accessible across other systems.*



Su: *This work was usually put aside until the end of the day, and details were often lost. We had to improve the process of data capture before automating.*



Radhika: *We can automate almost anything. But let's get the business rules and processes right first.*

- Focus on value Selecting what to optimize and automate and how to do so should be based on what will create the best value for the organization.
- Start where you are The technology already available in the organization may have features and functionalities that are currently untapped or under-utilized. Make use of what is already there to implement opportunities for optimization and automation quickly and economically.

4.3.8 Principle interaction

As well as being aware of the ITIL guiding principles, it is also important to recognize that they interact with and depend upon each other. For example, if an organization is committed to progressing iteratively with feedback, it should also think and work holistically to ensure that each iteration of an improvement includes all the elements necessary to deliver real results. Similarly, making use of appropriate feedback is key to collaboration, and focusing on what will truly be valuable to the customer makes it easier to keep things simple and practical.

Organizations should not use just one or two of the principles, but should consider the relevance of each of them and how they apply together. Not all principles will be critical in every situation, but they should all be reviewed on each occasion to determine how appropriate they are.

4.4 Governance

controlled. Governance is realized through the following activities:

- Evaluate The evaluation of the organization, its strategy, portfolios, and relationships with other parties. The governing body evaluates the organization on a regular basis as stakeholders' needs and external circumstances evolve.
- Direct The governing body assigns responsibility for, and directs the preparation and implementation of, organizational strategy and policies. Strategies set the direction and prioritization for organizational activity, future investment, etc. Policies establish the requirements for behaviour across the organization and, where relevant, suppliers, partners, and other stakeholders.
- Monitor The governing body monitors the performance of the organization and its practices, products, and services. The purpose of this is to ensure that performance is in accordance with policies and direction.

Organizational governance evaluates, directs, and monitors all the organization's activities, including those of service management.

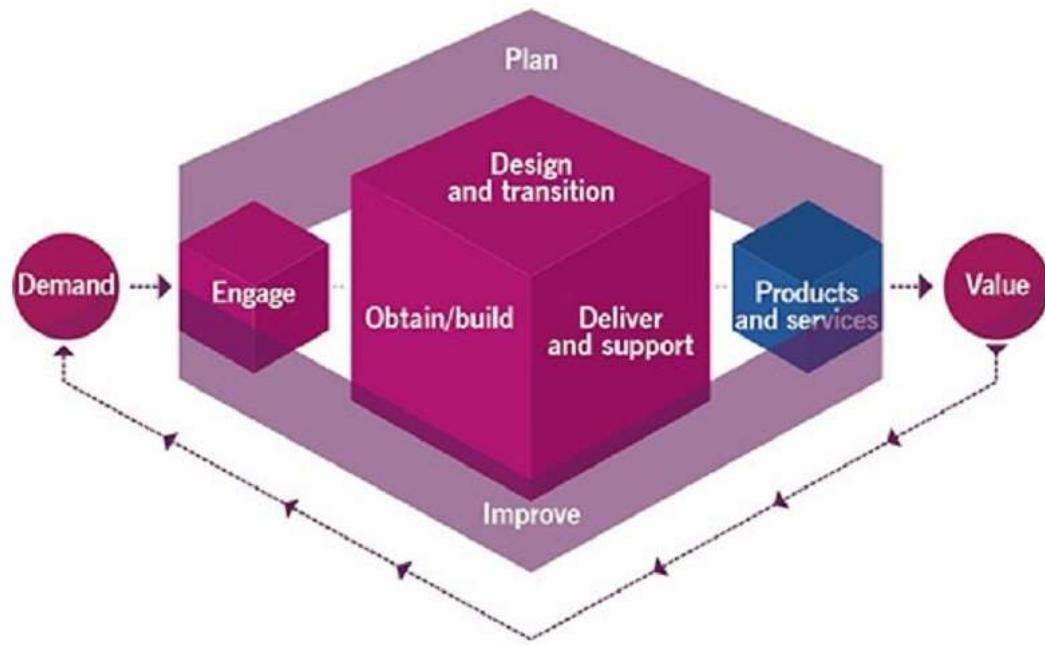
4.4.2 Governance in the SVS

The role and position of governance in the ITIL SVS depends on how the SVS is applied in an organization. The SVS is a universal model that can be applied to an organization as a whole, or to one or more of its units or products. In the latter case, some organizations delegate authority to perform governance activities at different levels. The governing body of the organization should retain oversight of this to

4.5 Service value chain

The central element of the SVS is the service value chain, an operating model which outlines the key activities required to respond to demand and facilitate value realization through the creation and management of products and services.

As shown in Figure 4.2, the ITIL service value chain includes six value chain activities which lead to the creation of products and services and, in turn, value.



demand from outside the value chain or outputs of other activities. All the activities are interconnected, with each activity receiving and providing triggers for further action.

To convert inputs into outputs, the value chain activities use different combinations of ITIL practices (sets of resources for performing certain types of work), drawing internal or third-party resources, processes, skills, and competencies as required. For example, the engage activity might draw on supplier management, service delivery management, relationship management, and service request management to respond to new demands for products and services, or information from various stakeholders (see Chapter 5 for more information on practices).

Regardless of which practices are deployed, there are some common rules when using the service value chain:

- All incoming and outgoing interactions with parties external to the value chain are performed via *engage*
- All new resources are obtained through *obtain/build*
- Planning at all levels is performed via *plan*
- Improvements at all levels are initiated and managed via *improve*.

To carry out a certain task or respond to a particular situation, organizations create service value streams. These are specific combinations of activities and practices, and each one is designed for a particular scenario. Once designed, value streams

- support.

Although the high-level steps are universal, different products and clients need different streams of work. For example:

- The development of a new application for a new client starts with initial engagement (pre-sale), then proceeds to business analysis, prototyping, the drawing up of agreements, development, testing, and eventually to release and support.
- Changing an existing application to meet new requirements of existing clients does not include pre-sale and involves business analysis, development, testing, and support in a different way.
- Fixing an error in a live application may be initiated in support, proceed with rolling back to a previous stable version (release), then moves to development, testing, and release of a fix.
- Experiments with new or existing applications to expand the target audience may start with innovation planning and prototyping, then proceed to development, and eventually to a pilot release for a limited group of users to test their perception of the changes made.

These are examples of value streams: they combine practices and value chain activities in various ways to improve products and services and increase potential value for the consumers and the organization.

direct observation

- breaking development work into small increments and iterations
- establishing product-based cross-functional teams

- visually presenting (Kanban) and regularly discussing (daily stand-ups) work progress
- presenting a working (at least, the minimum viable) software to the stakeholders at the end of each iteration.

If applied successfully, Agile software development enables fast responses to the evolving needs of service consumers. However, in many organizations, Agile software development has not provided the expected benefits, often due to lack of Agile methods in the other phases of the service lifecycle. This fragmented agility makes little sense for the organization, as the overall performance of the value chain is defined by that of the slowest part. A holistic approach to the service value chain should be adopted to make sure that the service provider is Agile throughout the service lifecycle. This means that agility should become a quality of all service management dimensions and all service value chain activities.

One of the greatest obstacles to service value chain agility used to be the rigidity of infrastructure solutions. It could take months to deploy the necessary infrastructure for a new software program, which made all development agility invisible and irrelevant for the service consumer. This problem has, to a great extent, been solved as technology has evolved.

environment. Applied in a fragmented way, Agile methods can become a costly and wasteful complication.

The ITIL story: Value chains and value streams



Henri: At Axele Car Hire, the value chain is the way that our company operates. It has multiple value streams. Each value stream adopts and adapts the activities of the value chain for carrying out particular tasks. For example, there is one value stream for innovation, and another for providing standard services to existing customers.

The value stream for providing standard services to existing customers represents the activities that are carried out when a customer hires a car. This starts with engagement, when a customer contacts Axele, and then proceeds to delivery, when they receive a car (although engagement can still happen at this stage).

Some value chain activities may be ongoing throughout a particular value stream, or may not be involved at all. In this stream, planning activity is continuous, but design and procurement activities will typically not be involved. The stream ends with more engagement activities, when cars are returned by customers, feedback is given, and orders are closed.



Marco: *Value chain activities do not have to happen in a particular order. Axe's innovation value stream is triggered by opportunity, and then goes to*

4.5.1 Plan



Key message

The purpose of the plan value chain activity is to ensure a shared understanding of the vision, current status, and improvement direction for all four dimensions and all products and services across the organization.

The key inputs to this activity are:

- policies, requirements, and constraints provided by the organization's govern body
- consolidated demands and opportunities provided by *engage*
- value chain performance information, improvement status reports, and improvement initiatives from *improve*
- knowledge and information about new and changed products and services from *design and transition*, and *obtain/build*
- knowledge and information about third-party service components from *engage*

The purpose of the improve value chain activity is to ensure continual improvement of products, services, and practices across all value chain activities and the four dimensions of service management.

The key inputs to this value chain activity are:

- product and service performance information provided by *deliver and support*
- stakeholders' feedback provided by *engage*
- performance information and improvement opportunities provided by all val

chain activities

- knowledge and information about new and changed products and services from *design and transition*, and *obtain/build*
- knowledge and information about third-party service components from *engage*

The key outputs of this value chain activity are:

- improvement initiatives for all value chain activities
- value chain performance information for *plan* and the governing body
- improvement status reports for all value chain activities
- contract and agreement requirements for *engage*
- service performance information for *design and transition*.

↑ ← → ↓

- requests and feedback from customers
- incidents, service requests, and feedback from users
- information on the completion of user support tasks from *deliver and support*
- marketing opportunities from current and potential customers and users
- cooperation opportunities and feedback provided by partners and suppliers
- contract and agreement requirements from all value chain activities
- knowledge and information about new and changed products and services from *design and transition*, and *obtain/build*
- knowledge and information about third-party service components from suppliers and partners
- product and service performance information from *deliver and support*
- improvement initiatives from *improve*
- improvement status reports from *improve*.

The key outputs of this value chain activity are:

- consolidated demands and opportunities for *plan*
- product and service requirements for *design and transition*
- user support tasks for *deliver and support*
- improvement opportunities and stakeholders' feedback for *improve*
- change or project initiation requests for *obtain/build*
- contracts and agreements with external and internal suppliers and partners for *engage*

The key inputs to this activity are:

- portfolio decisions provided by *plan*
- architectures and policies provided by *plan*
- product and service requirements provided by *engage*
- improvement initiatives provided by *improve*
- improvement status reports from *improve*
- service performance information provided by *deliver and support*, and *improv*
- service components from *obtain/build*
- knowledge and information about third-party service components from *enga*
- knowledge and information about new and changed products and services fro
- contracts and agreements with external and internal suppliers and partners provided by *engage*.

The key outputs of this activity are:

- requirements and specifications for *obtain/build*
- contract and agreement requirements for *engage*
- new and changed products and services for *deliver and support*
- knowledge and information about new and changed products and services to value chain activities

provided by *engage*

- goods and services provided by external and internal suppliers and partners
- requirements and specifications provided by *design and transition*
- improvement initiatives provided by *improve*
- improvement status reports from *improve*
- change or project initiation requests provided by *engage*
- change requests provided by *deliver and support*
- knowledge and information about new and changed products and services fro
- knowledge and information about third-party service components from *enga*

The key outputs of this activity are:

- service components for *deliver and support*
- service components for *design and transition*

- SERVICE COMPONENTS FOR DESIGN AND TRANSITION

- knowledge and information about new and changed service components to a value chain activities
- contract and agreement requirements for *engage*
- performance information and improvement opportunities for *improve*.

4.5.6 Deliver and support

- knowledge and information about new and changed service components and services from *design and transition*, and *obtain/build*
- knowledge and information about third-party service components from *engage*

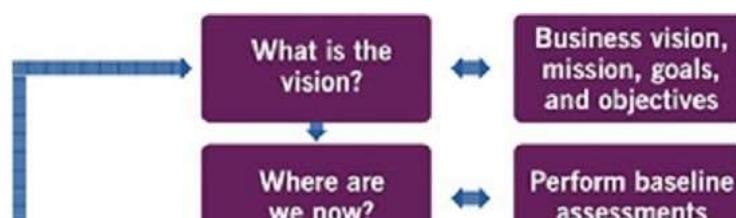
The key outputs of this activity are:

- services delivered to customers and users
- information on the completion of user support tasks for *engage*
- product and service performance information for *engage* and *improve*
- improvement opportunities for *improve*
- contract and agreement requirements for *engage*
- change requests for *obtain/build*
- service performance information for *design and transition*.

Further details on the service value chain activities can be found in other ITIL 4 publications and supplementary materials.

4.6 Continual improvement

Continual improvement takes place in all areas of the organization and at all levels, from strategic to operational. To maximize the effectiveness of services, each person who contributes to the provision of a service should keep continual improvement in mind, and should always be looking for opportunities to improve.



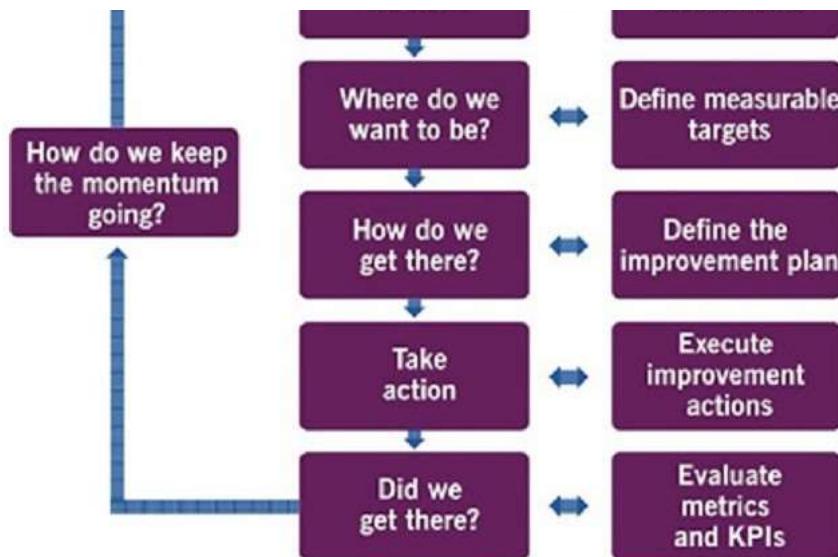


Figure 4.3 The continual improvement model

The ITIL story: Improving Axe

Henri would like Axe to become a greener company and introduce more environmentally friendly practices into its work. Over the following sections

linear fashion, and it may be necessary to re-evaluate and return to a previous step at some point. Critical judgement should always be applied when using this model.

4.6.1 Steps of the continual improvement model

This section provides more detail on each step of the continual improvement model. An organization can adjust these steps to its culture and goals. The model is simple and flexible, and can just as easily be used in an Agile culture as in a more traditional waterfall culture.

4.6.4.1 Step 1: What is the vision?



Key message

Each improvement initiative should support the organization's goals and objectives. The first step of the continual improvement model is to define the vision of the initiative. This provides context for all subsequent decisions and

links individual actions to the organization's vision for the future.

The ITIL story: What is the vision?



Henri: Axle's vision is for the business to become one of the top three green car-hire companies globally. A continual improvement initiative called Axle Green was created for this purpose.



Craig: As a supplier of cleaning services to Axle, I'll support them in this improvement initiative.

4.6.1.2 Step 2: Where are we now?



Key message

The success of an improvement initiative depends on a clear and accurate understanding of the starting point and the impact of the initiative. An improvement can be thought of as a journey from Point A to Point B, and this step clearly defines what Point A looks like. A journey cannot be mapped out if

be compared with a previous state at a later point.

The ITIL story: Where are we now?



Su: We need to understand the baseline. How do we know if we've improved, if we don't know where we started? Currently, only 5 per cent of the vehicles in our fleet are electric.



Craig: Only 20 per cent of my cleaning products are biodegradable.



4.6.1.3 Step 3: Where do we want to be?



Key message

Just as the previous step (Step 2) describes Point A on the improvement

If this step is skipped, the target state will remain unclear. It will be difficult to prepare a satisfactory explanation of what key stakeholders stand to gain from the improvement initiative, which may result in low support or even pushback.

The ITIL story: Where do we want to be?



Su: *Within five years, we want 50 per cent of our fleet to consist of electric vehicles. The other half should comply with the strictest ecological requirements for petrol and diesel cars.*



Craig: *One of my targets is that 90 per cent of my cleaning products will be biodegradable within the next two years.*



Radhika: *This is a great initiative. In our IT team, we want to use biodegradable cups. We would also like Axle to use environmentally friendly light bulbs in all our offices.*

4.6.1.4 Step 4: How do we get there?

Now that the start and end points of the improvement journey have been defined, a specific route can be agreed. Based on the understanding of the vision of the

If this step is skipped, the execution of the improvement is likely to flounder and to achieve what is required of it. Failed improvements erode confidence and can make it difficult to get support for future improvements.

The ITIL story: How do we get there?



Craig: *My plan is to replace our current stocks of cleaning products with biodegradable options as we run out. Meanwhile, we'll test new products to find the optimal balance of price and quality.*



Su: *Sometimes knowing how you get there is easy, but replacing half of our fleet with electric cars is a bigger challenge. We don't want excess cars in our car lots if they're not being used. We must also consider specifics and infrastructure in different countries, as well as local regulations.*



Radhika: *We're encouraging the use of ceramic cups over plastic ones. We're discontinuing the purchase of plastic cups, and we are buying ceramic cups for all our offices.*

4.6.1.5 Step 5: Take action

During the improvement, there needs to be continual focus on measuring progress towards the vision and managing risks, as well as ensuring visibility and overall awareness of the initiative. ITIL practices such as organizational change management (section 5.1.6), measurement and reporting (section 5.1.5), risk management (section 5.1.10) and, of course, continual improvement (section 5.1) are important factors in achieving success in this step.

Once this step is completed, the work will be at the end point of the journey, resulting in a new current state.

The ITIL story: Take action



Craig: *We have started to replace our stocks of cleaning products with biodegradable options. We've found some great new products to use, and even managed to save money by using cheaper alternatives that don't compromise on quality.*



Su: *We have started to phase out some of our older petrol and diesel cars and replace them with new electric models. We have carried out a thorough check of the petrol and diesel cars we are keeping to ensure they meet ecological requirements, and will take action to fix this where they do not.*



Radhika: *We have brought the new biodegradable cups and environmentally friendly light bulbs into our offices and started to remove the plastic cups.*

For each iteration of the improvement initiative, both the progress (have the original objectives been achieved?) and the value (are those objectives still relevant?) need to be checked and confirmed. If the desired result has not been achieved, additional actions to complete the work are selected and undertaken, commonly resulting in a new iteration.

If this step is skipped, it is hard to be sure whether the desired or promised outcomes were actually achieved, and any lessons from this iteration, which would support a course correction if needed, will be lost.

The ITIL story: Did we get there?



Craig: *After a few months we managed to hit our target of having 90 per cent of our products being biodegradable.*



Su: *The electric cars are being introduced, but for logistical reasons it is proving more difficult to replace the petrol and diesel cars than we had anticipated. We will need to do this at a faster pace if we want to hit our five-year target. We may now have to reconsider our target, and decide whether we should do more to support it, or if it needs to be revised.*



Radhika: *Our offices now have biodegradable cups and environmentally friendly light bulbs. Some of the old plastic cups are still being used, but we have stopped purchasing more, so once they run out they'll be gone.*

managers should help their teams to truly integrate new work methods into their daily work and institutionalize new behaviours.

If the expected results of the improvement were not achieved, stakeholders need to be informed of the reasons for the failure of the initiative. This requires a thorough analysis of the improvement, documenting and communicating the lessons learned.

This should include a description of what can be done differently in the next iteration, based on the experience gathered. Transparency is important for future efforts, regardless of the results of the current iteration.

If this step is skipped, then it is likely that improvements will remain isolated and independent initiatives, and any progress made may be lost over time. It may also be difficult to get support for future improvements, and embed continual improvement in the organization's culture.

The ITIL story: How do we keep the momentum going?



Craig: Now that we have hit our target we will monitor any new products we buy to ensure that they meet our standards of being biodegradable. We will also be on the lookout for any opportunities to replace our remaining non-biodegradable products with more environmentally friendly alternatives.



Su: We've made a great start on adding new electric vehicles to the Axle fleet, but haven't hit our targets yet. Now we need to analyse what has prevented us from reaching our objectives, record what lessons we have learned, and

Continual improvement is not only an integral part of Lean, but also Agile (retrospectives), DevOps (continual experimentation and learning, and mastery), and other frameworks. It is one of the key components of the ITIL SVS, providing along with the guiding principles, a solid platform for successful service management.

Table 4.2 The steps of the continual improvement model linked to the most relevant ITIL guiding principles

| | Focus on value | Start where you are | Progress iteratively with feedback | Collaborate and promote visibility | Think and work holistically | Keep it simple and practical | Optimize and automate |
|------------------------------------|----------------|---------------------|------------------------------------|------------------------------------|-----------------------------|------------------------------|-----------------------|
| What is the vision? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Where are we now? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Where do we want to be? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| How do we get there? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Take action | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Did we get there? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| How do we keep the momentum going? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Continual improvement and the theory of constraints

In an increasingly dynamic business environment, an enterprise's ability to change quickly, whether in response to external factors or to disrupt the market, can make the difference between failure and success.

management, release management, and organizational change management.

Finally, if the weakest link is the delivery and support of IT services, then IT operations practices and tools can be used, such as the ITIL 4 practices of incident management, problem management, service desk, and infrastructure and platform management.

4.7 Practices

A practice is a set of organizational resources designed for performing work or accomplishing an objective. These resources are grouped into the four dimensions of service management (see Chapter 3). The ITIL SVS includes general management, service management, and technical management practices, as described in Chapter 5.

4.8 Summary

The ITIL SVS describes how all the components and activities of the organization work together as a system to enable value creation. Each organization's SVS has interfaces with other organizations, forming an ecosystem that facilitates value creation for the organizations, their customers, and other stakeholders.

The ITIL SVS is a powerful holistic construct for the governance and management of IT services across the entire service lifecycle.

CHAPTER 5

ITIL MANAGEMENT PRACTICES

5 ITIL management practices

The ITIL SVS includes 14 general management practices, 17 service management practices, and three technical management practices, all of which are subject to the four dimensions of service management (see Chapter 3).



Key message

In ITIL, a management practice is a set of organizational resources designed for performing work or accomplishing an objective. The origins of the practices are as follows:

- General management practices have been adopted and adapted for service management from general business management domains.
- Service management practices have been developed in service management and ITSM industries.
- Technical management practices have been adapted from technology

Workforce and talent management Service desk

Service level management

Service request management

Service validation and testing

ITSM in the modern world: high-velocity service delivery

In business innovation and differentiation, speed to market is a key success factor. If an organization takes too long to implement a new business idea, it is likely to be done faster by someone else. Because of this, organizations have started demanding shorter time to market from their IT service providers.

For service providers that have always used modern technology, this has not been a big challenge. They have adopted modern ways of scaling their resources and established appropriate practices for project and product management, testing, integration, deployment, release, delivery, and support of IT services. These practices have been documented and have triggered the development of new IT management movements and practices, such as DevOps. However, for organizations bearing a legacy of old IT architectures and IT management practices focused on control and cost efficiency, the new business demand has introduced a greater challenge.

The high-velocity service delivery paradigm includes:

- product-based organizational structure
- adaptive risk management, and audit and compliance management
- flexible architecture management
- specific architecture technology solutions, such as microservices
- complex partner and supplier environments
- continual monitoring of technology innovations and experimenting
- human-centred design
- infrastructure management focused on cloud computing.

Even if only some of the services in a provider's portfolio need high-velocity delivery, organizational changes of a significant scale are required to enable this, especially if the organization has a legacy of low-velocity services, practices, and habits. Moreover, bi-modal IT, where high-velocity service management is combined with traditional practices, introduces even more complexity and greater challenges. However, for many modern organizations, high-velocity service delivery is no longer an option but a necessity, and they must improve their service management practices to respond to this challenge.

5.1 General management practices

and how to achieve organizational agility and resilience. Without the visibility and coordination made possible by a proper architecture management practice, an organization can become a labyrinth of third-party contracts, variant processes across different organizational silos, various products and services that have been needlessly customized for different customers, and a legacy infrastructure. The result is a complex landscape where any change becomes far more difficult to implement and introduces a much higher risk.

A complete architecture management practice should address all architecture domains: business, service, information, technology, and environment. For a small and less complex organization, the architect can develop a single integrated architecture.

Architecture types

Business architecture

The business architecture allows the organization to look at its capabilities in terms of how they align with all the detailed activities required to create value for the organization and its customers. These are then compared with the organization's strategy and a gap analysis of the target state against current capabilities is performed. Identified gaps between the baseline and target state are prioritized and these capability gaps are addressed incrementally. A 'roadmap' describes the transformation from current to future state to achieve the organization's strategy.

these concepts in mind.

Technology architecture

The technology architecture defines the software and hardware infrastructure needed to support the portfolio of products and services.

Environmental architecture

The environmental architecture describes the external factors impacting the organization and the drivers for change, as well as all aspects, types, and levels of environmental control and their management. The environment includes developmental, technological, business, operational, organizational, political, economic, legal, regulatory, ecological, and social influences.

Figure 5.1 shows the contribution of architecture management to the service value chain, with the practice being involved in all value chain activities; however, it is most instrumental in the plan, improve, and design and transition value chain activities:

- **Plan** The architecture management practice is responsible for developing and maintaining a reference architecture that describes the current and target architectures for the business, information, data, application, technology, and environment perspectives. This is used as a basis for all the plan value chain activity.

or service components need to be obtained or built.

- **Deliver and support** The reference architectures are used continually as part of the operation, restoration, and maintenance of products and services.

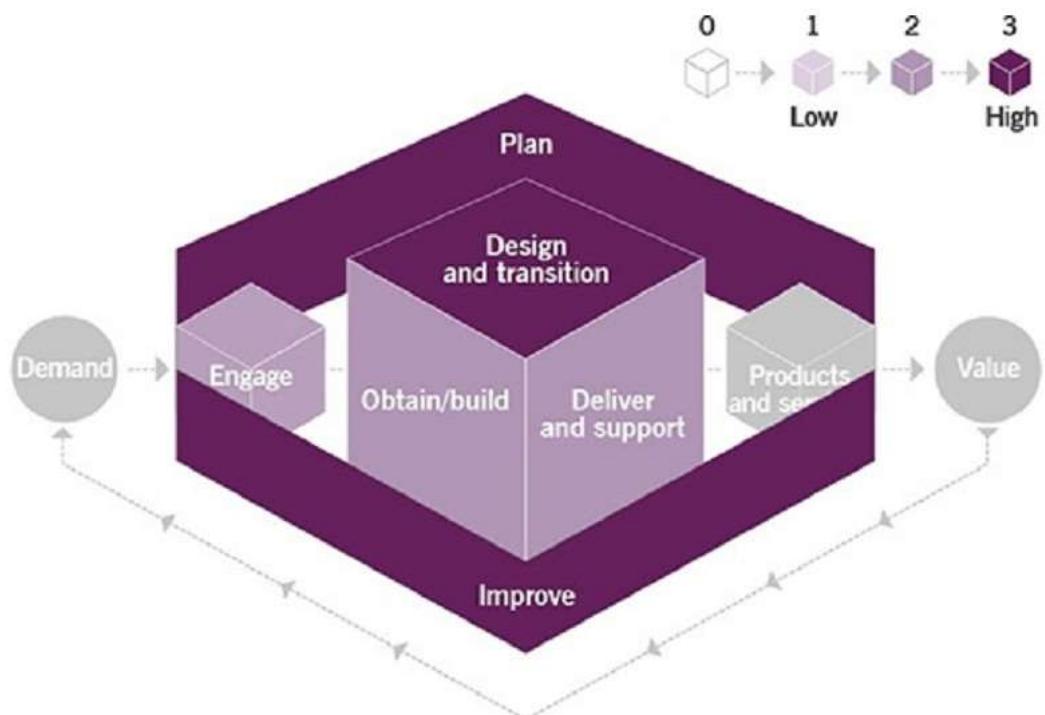


Figure 5.1 Heat map of the contribution of architecture management to value chain activities

improvement efforts.

Key activities that are part of continual improvement practices include:

- encouraging continual improvement across the organization
- securing time and budget for continual improvement
- identifying and logging improvement opportunities
- assessing and prioritizing improvement opportunities
- making business cases for improvement action
- planning and implementing improvements
- measuring and evaluating improvement results
- coordinating improvement activities across the organization.

There are many methods, models, and techniques that can be employed for making improvements. Different types of improvement may call for different improvement methods. For example, some improvements may be best organized into a multi-phase project, while others may be more appropriate as a single quick effort.

The ITIL SVS includes the continual improvement model (see Figure 4.3), which can be applied to any type of improvement, from high-level organizational changes to individual services and configuration items (CIs). The model is described in section 4.6.

When assessing the current state, there are many techniques that can be employed

Older methods may gradually be retired in favour of new ones if better results are achieved.

Continual improvement is everyone's responsibility. Although there may be a group of staff members who focus on this work full-time, it is critical that everyone in the organization understands that active participation in continual improvement activities is a core part of their job. To ensure that this is more than a good intention, it is wise to include contribution to continual improvement in all job descriptions and every employee's objectives, as well as in contracts with external suppliers and contractors.

The highest levels of the organization need to take responsibility for embedding continual improvement into the way that people think and work. Without their leadership and visible commitment to continual improvement, attitudes, behavior, and culture will not evolve to a point where improvements are considered in

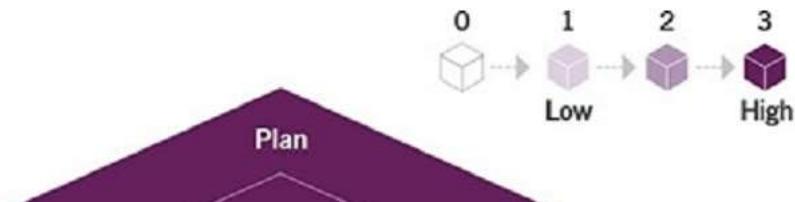
Training and other enablement assistance should be provided to staff members to help them feel prepared to contribute to continual improvement. Although everyone should contribute in some way, there should at least be a small team dedicated full-time to leading continual improvement efforts and advocating the practice across the organization. This team can serve as coordinators, guides, and mentors, helping others in the organization to develop the skills they need and navigating any difficulties that may be encountered.

When third-party suppliers form part of the service landscape, they should also be encouraged to contribute to continual improvement.

CIRs are used to constantly reprioritize improvement opportunities. The use of CIRs provides additional value because they help to make things visible. This is not limited to what is currently being done, but also to what is already complete and what has been set aside for further consideration at a later date.

It does not matter exactly how the information in a CIR is structured, or what the collections of improvement ideas are called in any given organization. What is important is that improvement ideas are captured, documented, assessed, prioritized, and appropriately acted upon to ensure that the organization and its services are always being improved.

The continual improvement practice is integral to the development and maintenance of every other practice as well as to the complete lifecycle of all services and indeed the SVS itself. That said, there are some practices that make special contribution to continual improvement. For example, the organization's problem management practice can uncover issues that will be managed through continual improvement. The changes initiated through continual improvement may fail without the critical contributions of organizational change management. And many improvement initiatives will use project management practices to organize and manage their execution.



current objectives and context.

- **Improve** The continual improvement practice is key to this value chain activity

structures resources and activities, enabling improvement at all levels of the organization and the SVS.

- Engage, design and transition, obtain/build, and deliver and support Each of these value chain activities is subject to continual improvement, and the continual improvement practice is applied to all of them.

5.1.3 Information security management



Key message

The purpose of the information security management practice is to protect the information needed by the organization to conduct its business. This includes understanding and managing risks to the confidentiality, integrity, and availability of information, as well as other aspects of information security such as authentication (ensuring someone is who they claim to be) and non-repudiation (ensuring that someone can't deny that they took an action).

organizational policies. Most organizations have a dedicated information security team, which carries out risk assessments and defines policies, procedures, and controls. In high-velocity environments, information security is integrated as much as possible into the daily work of development and operations, shifting the reliance on control of process towards verification of preconditions such as expertise and integrity.

Information security is critically dependent on the behaviour of people throughout the organization. Staff who have been trained well and pay attention to information security policies and other controls can help to detect, prevent, and correct information security incidents. Poorly trained or insufficiently motivated staff can be a major vulnerability.

Many processes and procedures are required to support information security management. These include:

- an information security incident management process
- a risk management process
- a control review and audit process
- an identity and access management process

- event management
- procedures for penetration testing, vulnerability scanning, etc.
- procedures for managing information security related changes, such as firewall configuration changes.

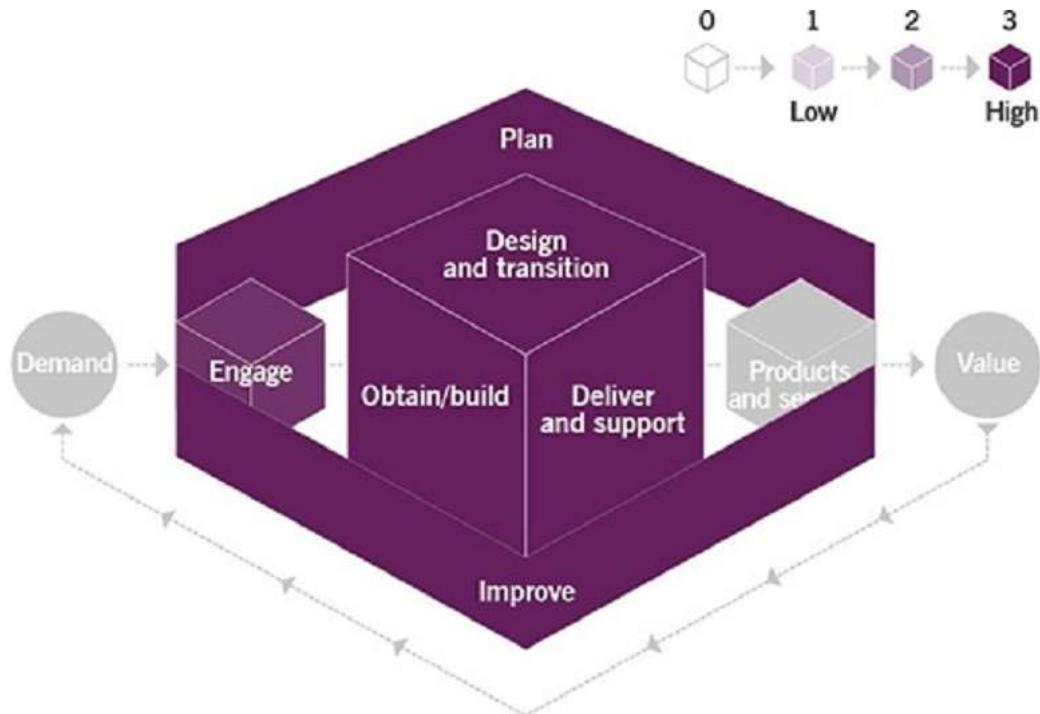


Figure 5.3 Heat map of the contribution of information security management to value chain activities

- **Design and transition** Information security must be considered throughout this value chain activity, with effective controls being designed and transitioned in operation. The design and transition of all services must consider information security aspects as well as all other utility and warranty requirements.
- **Obtain/build** Information security must be built into all components, based on



Su: Our consumers need to know that their data is safe and will not be misused. We regularly undergo external audits to provide assurance for our stakeholders and to confirm compliance with national and international regulations.



Henri: As CIO, I make sure everyone who works in and with Axle is aware of the importance of information security, and follows Axle policies and procedures concerning information security management.

5.1.4 Knowledge management



Key message

The purpose of the knowledge management practice is to maintain and improve the effective, efficient, and convenient use of information and knowledge across the organization.

Knowledge is one of the most valuable assets of an organization. The knowledge

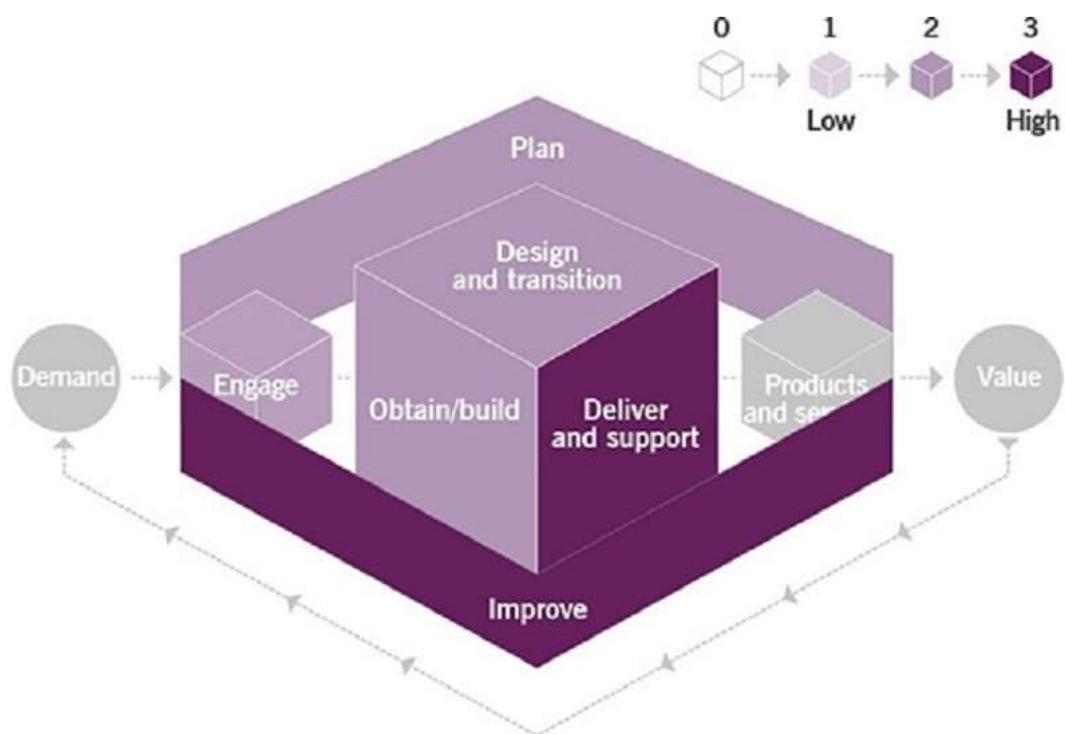


Figure 5.4 Heat map of the contribution of knowledge management to value chain activities

It is important to understand that 'knowledge' is not simply information. Knowledge is the use of information in a particular context. This needs to be understood with both the user of the knowledge and the relevant situation in mind. For example, information presented in the form of a 300-page manual is not useful for a service desk analyst who needs to find a fast solution. A better example of knowledge th

understanding of the context and history of those relationships. Knowledge management helps to better understand stakeholders.

- **Design and transition** As with the obtain/build value chain activity, knowledge of the solutions and technologies available, and the re-use of information, can make this value chain activity more effective.
- **Obtain/build** The efficiency of this value chain activity can be significantly improved with sufficient knowledge of the solutions and technologies available and through the re-use of information.
- **Deliver and support** Ongoing value chain activity in this area benefits from knowledge management through re-use of solutions in standard situations and better understanding of the context of non-standard situations that require analysis.

The ITIL story: Axle's knowledge management



Radhika: Because we're using an Agile deployment for our app development, we need to make sure our staff have up-to-date knowledge on new features. Just as importantly, knowledge needs to be retired when it's out of date. For example, we recently discovered the printing feature of our app was not being used by our customers. We removed printing and replaced it with a new function to send information from the app by email instead. As part of release management, we've already provided updated knowledge articles to our service desk to reflect the change.

Key message

The purpose of the measurement and reporting practice is to support good decision-making and continual improvement by decreasing the levels of uncertainty. This is achieved through the collection of relevant data on various managed objects and the valid assessment of this data in an appropriate context. Managed objects include, but are not limited to, products and services, practices and value chain activities, teams and individuals, suppliers and partners, and the organization as a whole.

Many of these managed objects are connected, and so are their respective metrics and indicators. For example, to set clear objectives for measurement and reporting there is a need to understand organizational goals. These can be based on a number of areas: profit, growth, competitive advantage, customer retention, operational/public service, etc. (see the focus on value guiding principle in section 1).

4.3.1). In such cases, it is important to establish a clear relationship between high level and subordinate goals and the objectives that relate to them.

For the set goals, operational critical success factors (CSFs) can be defined. Based on these CSFs, a set of related key performance indicators (KPIs) can then be agreed upon, against which success can be measured.



Operational KPIs should ideally be set for teams rather than focusing too closely on individuals. This means that there can be some flexibility in the targets and behaviours allowed by the team as a whole. Individuals will, of course, still need some specific guidelines for their performance, but this should be clearly within the goals of the team and organization, and all targets should be set in the context of providing value for the organization.

5.1.5.2 Reporting

Data collected as metrics is usually presented in the form of reports or dashboards. It is important to remember that reports are intended to support good decision-making, so their content should be relevant to the recipients of the information and related to the required topic. Reports and dashboards should make it easy for the recipient to see what needs to be done and then take action. As such, a good report or dashboard should answer two main questions: how far are we from our target and what bottlenecks prevent us from achieving better results?

Figure 5.5 shows the contribution of measurement and reporting to the service value chain, with the practice being involved in all value chain activities:

- **Plan** Measurement and reporting enables strategy and service portfolio decisions by providing details on current performance of products and services.
- **Improve** Performance is constantly monitored and evaluated to support continual improvement, alignment, and value creation.



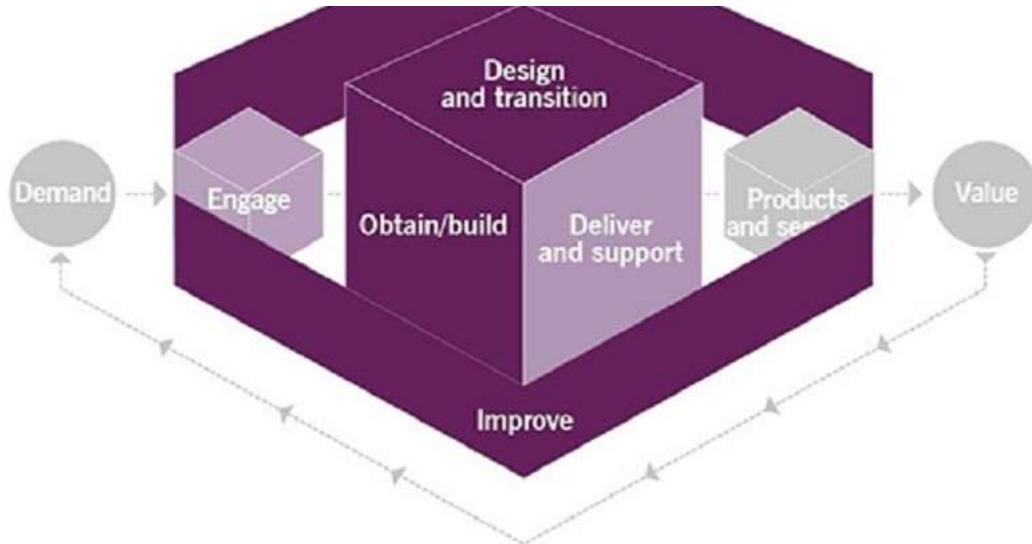


Figure 5.5 Heat map of the contribution of measurement and reporting to value chain activities

5.1.6 Organizational change management

Organizational change management contributes to every part of the SVS, wherever the cooperation, participation, and enthusiasm of the people involved are required. For an improvement initiative to be successful, no matter what the level or scope of the change is, there are certain elements that are essential to addressing the human factor. Organizational change management must ensure that the following are established and maintained throughout the change:

- **Clear and relevant objectives** To gain support, the objectives of the change must be clear and make sense to the stakeholders, based on the context of the organization. The change must be seen to be of real value.
- **Strong and committed leadership** It is critical that the change has the active support of sponsors and day-to-day leaders within the organization. A sponsor is a manager or business leader who will advocate, and can authorize, the change. Leaders should visibly support and consistently communicate their commitment to the change.
- **Willing and prepared participants** To be successful, a change needs to be made by willing participants. In part, this willingness will come from the participants being convinced of the importance of the change. In addition, the more prepared participants feel they are to make the changes asked of them through relevant training, awareness, and regular communications, the keener they will be to get forward.
- **Sustained improvement** Many changes fail because, after some time has passed, the initial excitement wears off and the organization loses its focus. Sustained improvement requires a long-term perspective and a commitment to continuous learning and adaptation.

people revert to old ways of working. Organizational change management sees to continually reinforce the value of the change through regular communication, addressing any impacts and consequences of the change, and the support of

practices with important links to organizational change management include measurement and reporting, workforce and talent management, and relationship management.

The various audiences affected by the change must be identified and their characteristics defined. Not all people will respond to the same messaging or be motivated by the same drivers. It is particularly important in organizational change management to take cultural differences into consideration, whether they are based on geography, nationality, corporate history, or other factors.

Unlike other practices, accountability for organizational change management cannot be transferred to an external supplier. Someone within the organization itself must be accountable for organizational change management, even if the execution of some or most of the organizational change management activities is delegated to other people or groups including suppliers. External expertise may, however, be sought to supplement the organizational change management capabilities of an organization. Sometimes organizations struggle with the key skillsets needed for organizational change management and can benefit from the support and guidance of an external supplier. Even if external help is used, the overall leadership support must still come from the organization itself.

Figure 5.6 shows the contribution of organizational change management to the service value chain, with the practice being involved in all value chain activities:



- **Improve** Without proper organizational change management, improvement cannot be sustained.
- **Engage** The organizational change management practice actively engages with stakeholders at all stages of a change.
- **Design and transition** Organizational change management is essential for the deployment of a new service or a significant change to an existing one.
- **Obtain/build** Organizational change management ensures engagement and cooperation within and across projects.
- **Deliver and support** Organizational change management continues during live

operations and support to ensure that the change has been adopted and is sustained.

5.1.7 Portfolio management



Key message

The purpose of the portfolio management practice is to ensure that the organization has the right mix of programmes, projects, products, and services to execute the organization's strategy within its funding and resource

- Analysing and tracking investments based on the value of products, services, programmes, and projects to the organization and its customers.
- Monitoring the performance of the overall portfolio and proposing adjustments in response to any changes in organizational priorities.
- Reviewing the portfolios in terms of progress, outcomes, costs, risk, benefits, strategic contribution.

Portfolio management plays an important role in how resources are allocated, deployed, and managed across the organization. This facilitates the alignment of resources and capabilities with customer outcomes as part of the strategy execution within the ITIL SVS.

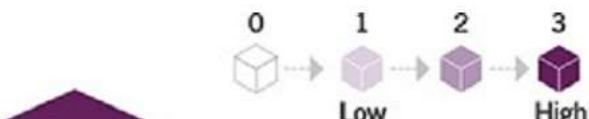
Portfolio management encompasses a number of different portfolios, including the following:

- **Product/service portfolio** The product/service portfolio is the complete set of products and/or services that are managed by the organization, and it represents the organization's commitments and investments across all its customers and market spaces. It also represents current contractual commitments, new product and service development, and ongoing improvement plans initiated as a result of continual improvement. The portfolio may also include third-party products and services, which are an integral part of offerings to internal and external customers.
- **Project portfolio** The project portfolio is used to manage and coordinate projects that have been authorized, ensuring objectives are met within time and cost.

extent to which implementation has been completed on time and within budget, and has delivered the required outputs, outcomes, and benefits. In many cases, however, organizations have struggled to demonstrate a return on their investment from change, and there is an increasing recognition that true success is only possible if the programme or project was the ‘right’ initiative to implement in the first place. Agile portfolio management takes this further, with an increased focus on visualizing strategic themes and the ability to reprioritize the portfolio swiftly, increase workflow, reduce batch sizes of work, and control the length of longer-term development queues.

Traditional portfolio management is focused on top-down planning with work laid out over longer time periods, but Agile portfolio management takes the concept of build–measure–learn cycles used by individual Agile teams and applies it on an organization-wide basis. Teams work together, use modular design, and share findings. This results in tremendous flexibility, which shifts the focus from continuing to execute an inflexible plan to delivering value and making tangible progress according to business strategy and goals.

Organizations practising Agile portfolio management communicate as much as possible across the business. They share knowledge and break barriers between organizational silos.



- **Plan** Portfolio management provides important information about the status of projects, products, and services currently in the pipeline or catalogue and what strategic objectives they have been designed to meet, which is essential for planning. Portfolio management also includes reviewing the portfolios in terms of progress, value creation, costs, risk, benefits, and strategic contribution.
- **Improve** Portfolio management identifies opportunities to improve efficiency and increase collaboration, eliminate duplication between projects, and identify and mitigate risks. Improvement initiatives are prioritized and if approved may be added to the relevant portfolio.
- **Engage** When opportunities or demand are identified by the organization, the decisions on how to prioritize these are made based upon the organization’s strategy plus the risk assessment and resource availability.
- **Design and transition, obtain/build, and deliver and support** Portfolio management is responsible for ensuring that products and services are clearly defined and linked to the achievement of business outcomes, so that these value chain activities are aligned with value.

5.1.8 Project management



known upfront (and unlikely to significantly change), and where definition of work is more important than the speed of delivery.

- The Agile method works best where requirements are uncertain and likely to evolve rapidly over time (for example, as business needs and priorities change) and where speed of delivery is often prioritized over the definition of precise requirements.

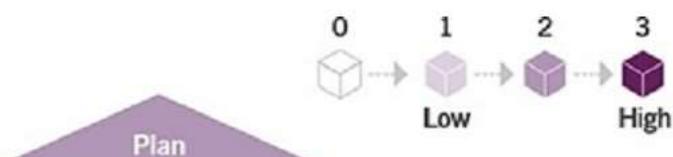
Successful project management is important as the organization must balance its need to:

- maintain current business operations effectively and efficiently
- transform those business operations to change, survive, and compete in the market place
- continually improve its products and services.

This balance between projects and ‘business as usual’ can potentially impact a number of areas, including resources (people, assets, finances), service levels, customer relationships, and productivity, and so the organization’s capacity and capability must be considered as part of its project management approach.

Projects depend on the behaviour of people both within the project team and the wider organization. The best project plan amounts to very little if the right people are not involved at the right time. The relationship between the project and the organization also needs to be considered, as many project team members will be seconded from business operations on a full- or part-time basis.

management practice ensures this happens.



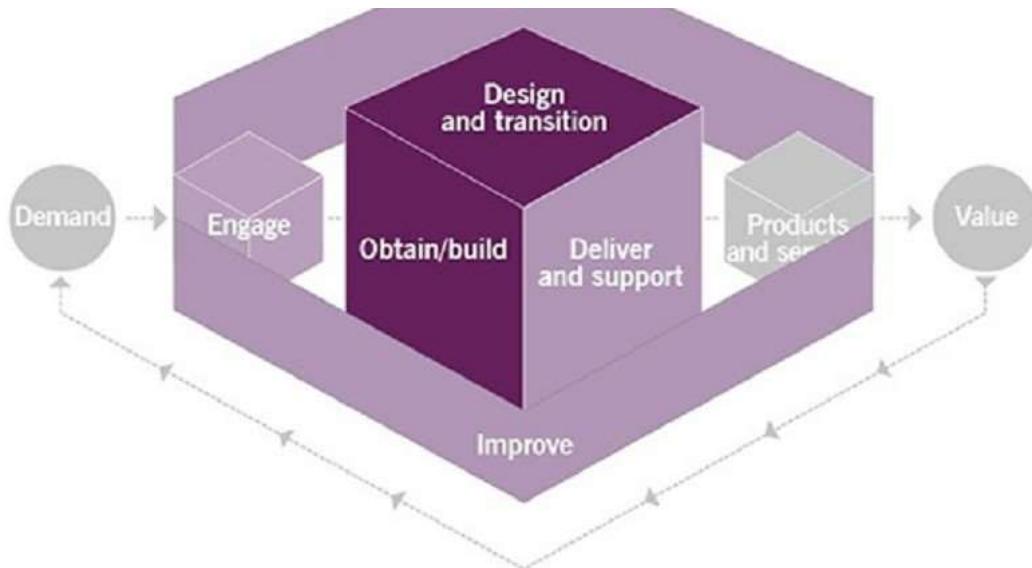


Figure 5.8 Heat map of the contribution of project management to value chain activities

5.1.9 Relationship management

with desired business outcomes, are effectively established and articulated

- any stakeholders' complaints and escalations are handled well through a sympathetic (yet formal) process
- products and services facilitate value creation for the service consumers as well as for the organization
- the organization facilitates value creation for all stakeholders, in line with its strategy and priorities
- conflicting stakeholder requirements are mediated appropriately.

Service providers quite naturally focus most of their efforts on their relationships with service consumers (sponsors, customers, and users). It is a very important stakeholder group; however, organizations should ensure that they understand and manage their relationships with various stakeholders, both internal and external. The relationship management practice should apply to all relevant parties. This means that the practice contributes to all service value chain activities and multiple value streams.

Figure 5.9 shows the contribution of relationship management to the service value chain, with the practice being involved in all value chain activities:

- **Plan** Relationship management provides information on the requirements and expectations of internal and external customers. It also assists with strategic assessment and prioritization across portfolios as well as evaluating current a

future market spaces, which are essential aspects of planning.

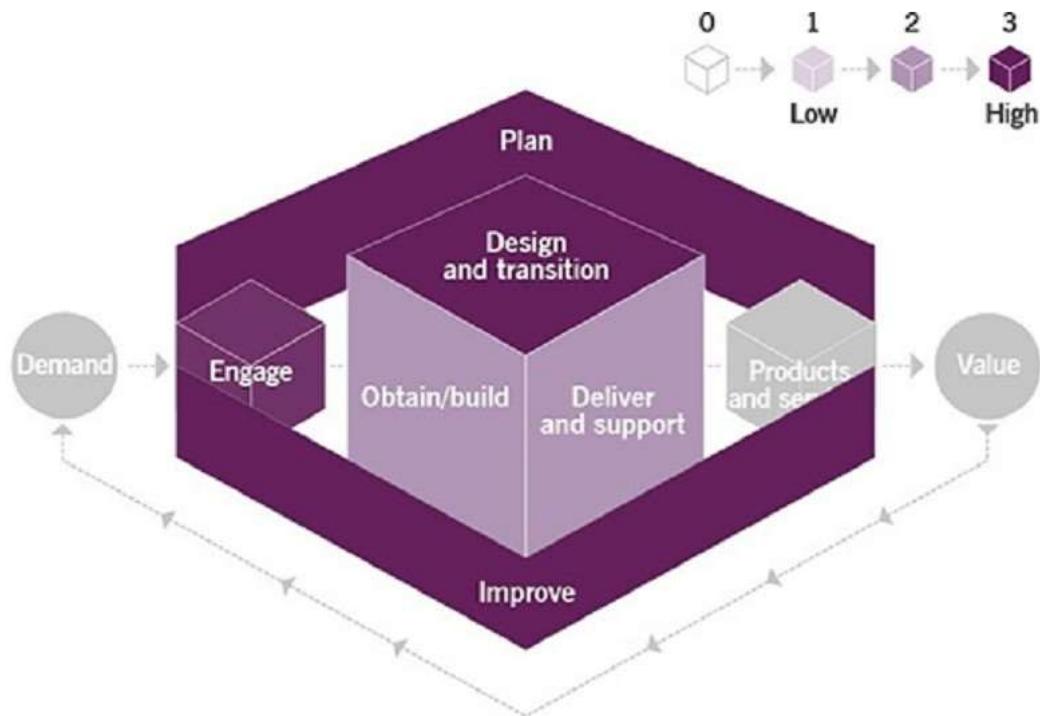


Figure 5.9 Heat map of the contribution of relationship management to value chain activities

5.1.10 Risk management

for customers, the organization, and other stakeholders. Otherwise, those products and services can represent threats due to the possibility of failure associated with the demand patterns they attract, the commitments they require, and the costs they generate. Implementing strategy often requires changes to the product and service portfolio, which means managing associated risks.

Decisions about risk need to be balanced so that the potential benefits are worth more to the organization than the cost to address the risk. For example, innovation is inherently risky but could provide major benefits in improving products and services, achieving competitive advantage, and increasing agility and resilience. The ability of the organization to limit its exposure to risk will also be of relevance. The aim should be to make an accurate assessment of the risks in a given situation, a

analyse the potential benefits. The risks and opportunities presented by each course of action should be defined to identify appropriate responses.

For risk management to be effective, risks need to be:

- **Identified** Uncertainties that would affect the achievement of objectives within the context of a particular organizational activity. These uncertainties must be considered and then described to ensure that there is common understanding.
- **Assessed** The probability, impact, and proximity of individual risks must be estimated so they can be prioritized and the overall level of risk (risk exposure) associated with the organizational activity understood.
- **Treated** Appropriate responses to risks must be planned, assigning owners and actionees, and then implemented, monitored, and controlled.

- understanding that effective risk management is vital for the sustainability of the organization and supports the achievement of business goals
- using proactive risk management behaviours
- ensuring transparency and clarity of risk management procedures, roles, responsibilities, and accountabilities
- actively encouraging and following up the reporting of risks, incidents, and opportunities
- ensuring remuneration structures support desired behaviours (i.e. this should not discourage the reporting of incidents nor encourage over-reporting)
- actively encouraging learning and growth in maturity from the organization's experiences and the experiences of other organizations.

ISO 31000:2018 Risk management

These guidelines provide an overall and general perspective of the purpose and principles of risk management. They are applicable at all levels in any type of organization. ISO 31000 states that 'the purpose of risk management is the creation and protection of value' and that risk management 'improves performance, encourages innovation and supports the achievement of objectives'.

with the practice being involved in all value chain activities:

- **Plan** Risk management provides essential inputs to the organization's strategy and planning, with a focus on risks that can drive variability of outcomes. These include:
 - shifts in customer demand and priorities
 - legal and regulatory changes
 - competitors
 - dependencies on suppliers and partners
 - technological changes
 - conflicting stakeholder requirements.
- **Improve** All improvement initiatives should be assessed and continually controlled by risk management. The practice establishes an important perspective for improvement prioritization, planning, and review.
- **Engage** The risk management practice helps to identify key stakeholders and optimize engagement based on such information as risk appetite and risk profiles.
- **Design and transition** Products and services should be designed to address prioritized risks. For example, they should be scalable to support changes in demand over time. For the organization, new or changed services carry varying levels of risk which should be identified and assessed before the change is approved. If approved, the risks should be managed as part of the change, including releases, deployments, and projects.

Service financial management supports decision-making by the governing body and management of the organization regarding where to best allocate financial resources. It provides visibility into the budgeting, costing, and accounting activities related to the products and services. To be effective in the context of the SVS, the practice needs to be aligned with the organization's policies and practices for portfolio management, project management, and relationship management.

Finance is the common language which allows the organization to communicate effectively with its stakeholders. Service financial management is responsible for managing the budgeting, costing, accounting, and charging for the activities of an organization, acting as both service provider and service consumer:

- **Budgeting/costing** This is an activity focused on predicting and controlling the income and expenditure of money within the organization. Budgeting consists of a periodic negotiation cycle to set budgets and ongoing monitoring of the current budgets. To accomplish this objective, it focuses on capturing forecast and actual service demand. It translates this demand into anticipated operating costs and revenue.

and project costs used for setting budgets and rates to ensure adequate funding for products and services. Service-based budgeting seeks to understand the budget and establish funding models based on the full cost of providing or consuming a service.

- **Accounting** This activity enables the organization to account fully for the way money is spent, allowing it to compare forecast vs actual costs and expenditure (particularly the ability to identify usage and costs by customer, service, and

most important. The practice supports this value chain activity by providing financial information.

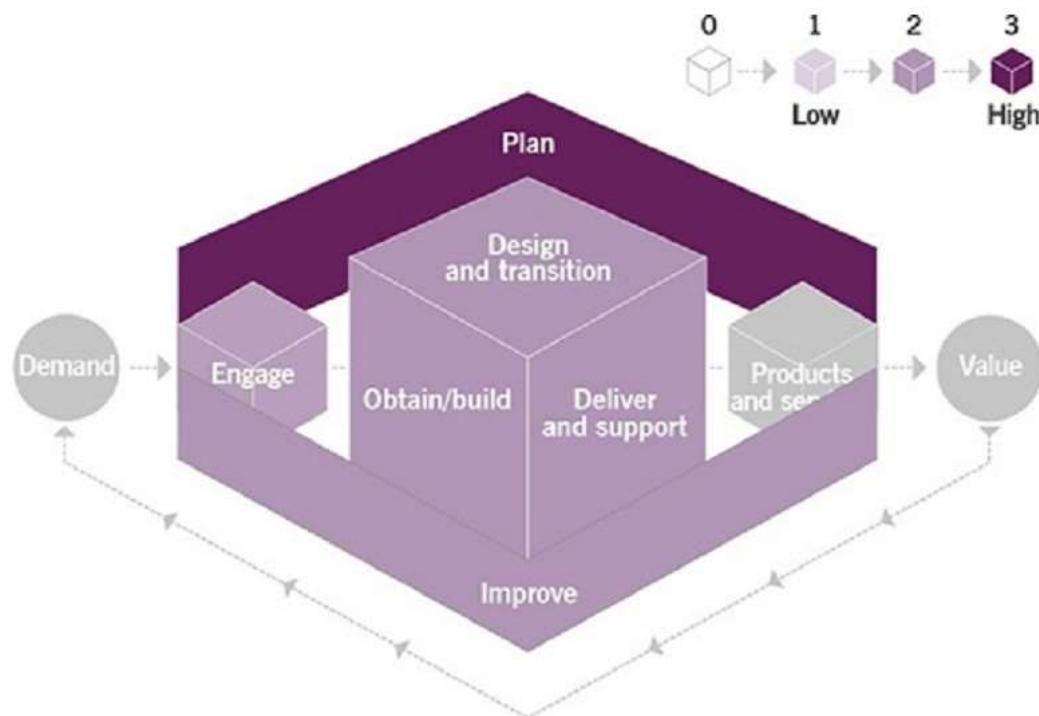


Figure 5.11 Heat map of the contribution of service financial management to value chain activities

- **Design and transition** Service financial management helps to keep this activity cost-effective by providing the means for financial planning and control. It also

Many technological developments have impacted upon financial management but the three key innovations are the introduction of a greater number of digital technologies, blockchain, and IT budgets and payment models.

Digital technologies

Major financial institutions are now analysing and using the latest technologies

such as the cloud, big data, analytics, and artificial intelligence (AI) to gain, or even just to maintain, competitive advantage in the market place. However, new financial organizations are also using these technologies and starting operations without any legacy IT, technical debt, or bureaucratic processes, which means they tend to be more Agile.

Big data and analytics are being used by financial organizations to gain deeper insight into, and understanding of, their customers. The amount of data being captured is phenomenal and requires scalable computing power to process the data efficiently and cost-effectively. In return, this deeper customer understanding is causing financial organizations to develop new and innovative products and services. Data is now being referred to as the 'new oil', as organizations are scrambling to capture, analyse, and exploit it.

Blockchain

Another evolution in financial management is happening through a specific innovation called blockchain, again enabled only through cloud-based services. Initially blockchain was developed to enable the de-centralized management

of evolution has been enabled by cloud computing, and this seems likely to continue for the foreseeable future. This has led to a major change in how IT services are obtained, funded, and paid for by organizations.

Traditionally, IT resources were obtained using upfront capital expenditure (CAPEX). However, under the cloud model, the provision of IT infrastructure, platforms, and software is provided 'as a service'. This model generally uses subscription-based or pay-as-you-use charging mechanisms which are paid for out of operational expenditure (OPEX).

Another area that has seen change is the organization's approach to setting and managing IT budgets. Flexible IT budgets are required to meet the costs of scaling cloud-based services in an Agile and on-demand way. Fixed IT budgets, often forecast months in advance, struggle to account for the scaling of IT resources in this way.

Procurement rules within organizations are also having to change. There remains a place for fixed-price IT projects and services; however, cloud-based digital services are generally sold under a variable-price model, i.e. the more you use and consume, the more you pay, and vice versa. Therefore, those organizations that have not updated their procurement rules to allow them to buy variable-priced IT resources will face a large self-made barrier preventing them from using cloud-based digital services. To be as effective as possible, organizations must update their policies and educate their staff to ensure that they can purchase IT under a variable-priced model.

organization and define the desired outcomes. The strategy of the organization establishes criteria and mechanisms that help to decide how to best prioritize resources, capabilities, and investment to achieve those outcomes, while the practice ensures that the strategy is defined, agreed, maintained, and achieved.

The objectives of strategy management are to:

- analyse the environment in which the organization exists to identify opportunities that will benefit the organization
- identify constraints that might prevent the achievement of business outcome and define how those constraints could be removed or their effects reduced
- decide and agree the organization's perspective and direction with relevant stakeholders, including its vision, mission, and principles
- establish the perspective and position of the organization relative to its customers and competitors. This includes defining which services and products will be delivered to which market spaces and how to maintain competitive advantage
- ensure that the strategy has been translated into tactical and operational plans for each organizational unit that is expected to deliver on the strategy
- ensure the strategy is implemented through execution of the strategic plans and coordination of efforts at the strategic, tactical, and operational levels
- manage changes to the strategies and related documents, ensuring that strategies keep pace with changes to internal and external environments and other relevant factors.

valuable to its customers; it must therefore define the organization's approach for delivering better value. The need for a strategy is not limited to larger organizations; it is just as important for smaller ones, allowing them to have a clear perspective, positioning, and plans to ensure that they remain relevant to their customers.

Customers want solutions that break through performance barriers and achieve higher-quality outcomes with little or no increase in cost. Such solutions are usually made available through innovative products and services. The strategy should balance the organization's need to deliver both efficient and effective operations with innovation and future-focused activities.

The value of products and services from either the customer's or the organization's perspective may alter over time due to changing conditions, events, or other factors outside an organization's control. Strategy management ensures a carefully

~~outside an organization's control. Strategy management ensures a carefully considered approach to the organization's relationships with customers, as well as both agility and resilience in dealing with the variations in value that define those relationships.~~

A high-performance strategy is one that enables an organization to consistently outperform competing alternatives over time, across business cycles, during industry disruptions, and when changes in leadership occur. It should be focused on what needs to be done across the organization to facilitate value creation.

Figure 5.12 shows the contribution of strategy management to the service value chain, with the practice being involved in all value chain activities:

Figure 5.12 Heat map of the contribution of strategy management to value chain activities

- **Improve** Strategy management provides strategy and objectives to be used to prioritize and evaluate improvements.
- **Engage** When opportunities or demand are identified by the organization, the decisions about how to prioritize these are based upon the organization's strategy plus the risk assessment and resource availability.
- **Design and transition, obtain/build, and deliver and support** Strategy management ensures the strategy is implemented through execution of the strategic plans in coordination with these activities. It also provides feedback to enable the measurement and evaluation of products and services during design and transition.

5.1.13 Supplier management



Key message

The purpose of the supplier management practice is to ensure that the organization's suppliers are able to meet its needs for products and services.

and operating products and services, working closely with procurement and

performance management.

- **Managing supplier performance** Supplier performance should be monitored to ensure that they meet the terms, conditions, and targets of their contracts and agreements, while aiming to increase the value for money obtained from suppliers and the products/services they provide.

5.1.13.1 Sourcing, supplier strategy, and relationships

The supplier strategy, sometimes called the sourcing strategy, defines the organization's plan for how it will leverage the contribution of suppliers in the achievement of its overall service management strategy.

Some organizations may adopt a strategy that dictates the use of suppliers only in very specific and limited circumstances, while another organization may choose to make extensive use of suppliers in product and service provision. A successful sourcing strategy requires a thorough understanding of an organization's objectives, the resources required to deliver that strategy, the environmental (e.g. market) factors, and the risks associated with implementing specific approaches.

There are different types of supplier relationship between an organization and its suppliers that need to be considered as part of the organization's sourcing strategy. These include:

- **Insourcing** The products or services are developed and/or delivered internally

Individual suppliers can provide support services and products that independently have a relatively minor and fairly indirect role in value generation, but collectively make a much more direct and important contribution to this and the implementation of the organization's strategy.

5.1.13.2 Evaluation and selection of suppliers

The organization should evaluate and select suppliers based on:

- **Importance and impact** The value of the service to the business, provided by the supplier
- **Risk** The risks associated with using the service
- **Costs** The cost of the service and its provision.

Other important factors in evaluating and selecting suppliers include the willingness or feasibility of a supplier to customize its offerings or work cooperatively in a multi-supplier environment; the level of influence of the organization or service integration on the supplier's performance; and the degree of dependence of one supplier or other suppliers.

5.1.13.3 Activities

Activities of the supplier management practice include:

requirements or clauses and make warranty claims when a warranty issue arises in conjunction with performance management.

- **Performance management** This activity includes the setup and continuous tracking of operational measures that have been mutually agreed with internal and external suppliers. It focuses on the key measures, which can then be consolidated on a supplier scorecard. Monitoring will allow for the identification of systemic problems and improvement opportunities and provide a basis for reporting.
- **Contract renewal and/or termination** This procedure aims to manage contract renewals and terminations, which are triggered by either specific or periodic reviews of supplier performance.

5.1.13.4 Service integration

Service integration is responsible for coordinating or orchestrating all the suppliers involved in the development and delivery of products and services. It focuses on end-to-end provision of service, ensuring control of all interfaces and outcomes from suppliers, and facilitating collaboration between suppliers. An organization can either perform the role of service integrator itself, or use a third-party service integrator. It is possible to develop a hybrid model, where the organization is responsible for some of the service integration function and augments that capability with that of an external service integrator. The service integration function can also be operated by a lead supplier. The service integrator is also responsible for assurance; this includes performance management and reporting.

Figure 5.13 Heat map of the contribution of supplier management to value chain activities

Figure 5.13 shows the contribution of supplier management to the service value chain, with the practice being involved in all value chain activities:

- **Plan** Supplier management provides the organization's approved sourcing strategy and plan.

- **Improve** The practice identifies opportunities for improvement with existing suppliers, is involved in the selection of new suppliers, and provides ongoing supplier performance management.
 - **Engage** Supplier management is responsible for engaging with all suppliers and for the evaluation and selection of suppliers; for negotiating and agreeing contracts and agreements; and for ongoing management of supplier relationships.
 - **Design and transition** Supplier management is responsible for defining requirements for contracts and agreements related to new or changed products or services, in alignment with the organization's needs and service targets.
 - **Obtain/build** Supplier management supports the procurement or obtaining of products, services, and service components from third parties.
 - **Deliver and support** Supplier performance for live services is managed by this practice to ensure that suppliers meet the terms, conditions, and targets of the contracts and agreements.
-



software development.



Marco: Greater digitalization at Axle means more opportunity to build IT into our service offerings. The Axle app makes it possible to book and pay for car hire via personal devices. The Axle Aware system is installed in every car and is supported by IT and our partners. Fleet maintenance is planned based on the hire history of our vehicles, and controlled by our IT systems.



Henri: Because of this, Axle's business is now heavily dependent on IT and non-IT suppliers. Integrating and coordinating these services is part of supplier management. We expect our suppliers to provide a consistent level of quality for Axle and our customers.

5.1.14 Workforce and talent management



Key message

The purpose of the workforce and talent management practice is to ensure

focus on creating an effective and actionable people strategy, and to execute the strategy at various levels within the organization. A good strategy should support the identification of roles and associated knowledge, as well as the skills and attitudes needed to keep an organization running day to day. It should also address the emerging technologies and leadership and organizational change capabilities required to position the organization for future growth.

The idea of managing and developing an organization's workforce and talent is not new. However, with the increased use of third-party suppliers and the rapid adoption of automation for repeatable work, traditional roles are changing dramatically. Because of this, workforce and talent management should be the responsibility of leaders and managers at every level throughout the organization.



Definitions

- **Organizational velocity** The speed, effectiveness, and efficiency with which an organization operates. Organizational velocity influences time to market, quality, safety, costs, and risks.
- **Competencies** The combination of observable and measurable knowledge, skills, abilities, and attitudes that contribute to enhanced employee performance and ultimately result in organizational success.

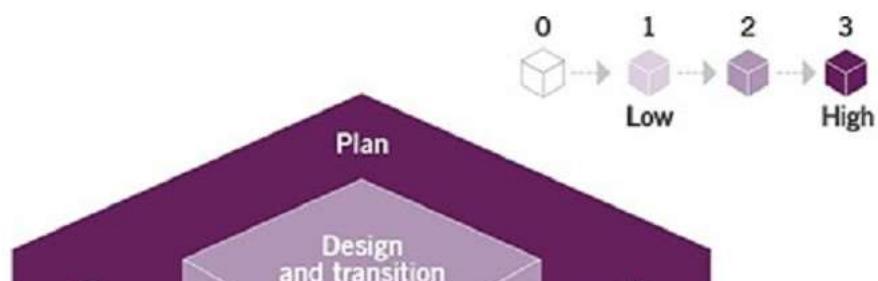
- **Recruitment** The acquisition of new employees and contractors to fill identified gaps related to desired capabilities.
- **Performance measurement** The delivery of regular performance measurements and assessments against established job roles based on pre-defined competencies.
- **Personal development** An employee's use of published job roles and competency frameworks to proactively plan personal growth and advancement.
- **Learning and development** Targeted education and experiential learning opportunities using various formal and non-formal methods.
- **Mentoring and succession planning** Formal mentoring, engagement, and succession planning activities provided by leadership.

Figure 5.14 presents the activities of workforce and talent management.



Improve All improvements require sufficiently skilled and motivated people.

- workforce and talent management practice ensures understanding and fulfilment of these requirements.
- **Engage** Workforce and talent management is closely linked to this value chain activity. It works with practices such as relationship management, service request management, and service desk to understand and forecast changing service demand requirements, and how this will impact and direct workforce planning and talent management activities.
- **Design and transition** Talent management is important to this value chain activity. Specific focus is given to knowledge, skills, and abilities related to systems and design thinking.
- **Obtain/build** Talent management focuses specifically on knowledge, skills, and abilities related to collaboration, customer focus, quality, speed, and cost management.
- **Deliver and support** Specific focus by talent management is given to knowledge, skills, and abilities related to customer service, performance management, and customer interactions and relationships.



Key message

The purpose of the availability management practice is to ensure that services deliver agreed levels of availability to meet the needs of customers and users.



Definition: Availability

The ability of an IT service or other configuration item to perform its agreed function when required.

Availability management activities include:

- negotiating and agreeing achievable targets for availability
- designing infrastructure and applications that can deliver required availability levels

effective way to do this is to design anti-fragile solutions, which recover automatically and very quickly, with virtually no business impact. For some services even a very short failure can be catastrophic, and for these it is more important to focus on increasing MTBF.

The way that availability is defined must be appropriate for each service. It is important to understand users' and customers' views on availability and to define appropriate metrics, reports, and dashboards. Many organizations calculate percentage availability based on MTBF and MTRS, but these percentage figures rarely match customers' experience, and are not appropriate for most services. Other things that should be considered include:

- which vital business functions are affected by different application failures
- at what point is slow performance so bad that the service is effectively unusable
- when does the service need to be available, and when can the service provider carry out maintenance activities.

Measurements that work well for some services include:

- User outage minutes Calculated by multiplying incident duration by the number of users impacted, or by adding up the number of minutes each user is affected.

This works well for services that directly support user productivity; for example an email service.

- **Number of lost transactions** Calculated by subtracting the number of transactions from the number expected to have happened during the time

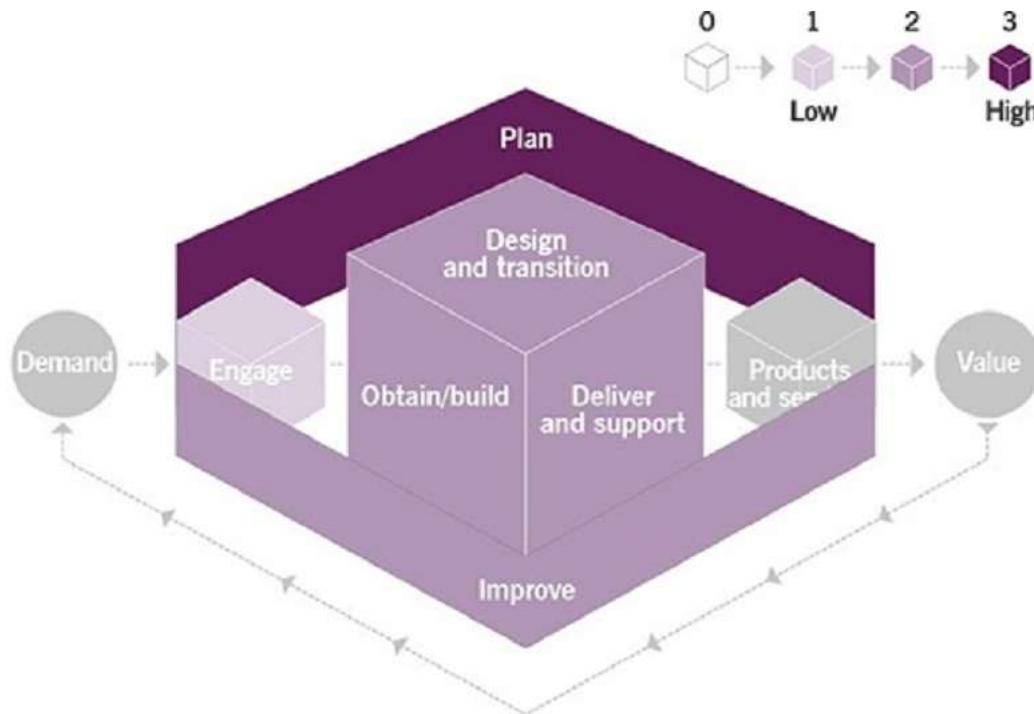


Figure 5.16 Heat map of the contribution of availability management to value chain activities

Most organizations do not have dedicated availability management staff. The activities needed are often distributed around the organization. Some organizations include availability management activities as part of risk management, while others combine it with service continuity management or with capacity and performance management. Some organizations have site reliability engineers (SREs) who man-

- **Deliver and support** This activity includes measurement of availability and reacting to events which might affect the ability to meet availability targets.

5.2.2 Business analysis



Key message

The purpose of the business analysis practice is to analyse a business or some element of it, define its associated needs, and recommend solutions to address these needs and/or solve a business problem, which must facilitate value creation for stakeholders. Business analysis enables an organization to communicate its needs in a meaningful way, express the rationale for change, and design and describe solutions that enable value creation in alignment with the organization's objectives.

Analysis and solutions should be approached in a holistic way that includes consideration of processes, organizational change, technology, information, policy and strategic planning. The work of business analysis is performed primarily by business analysts (BAs), although others may contribute.

validating these with stakeholders.

Business requirements can be utility-focused or warranty-focused.



Definitions

- **Warranty requirements** Typically non-functional requirements captured as inputs from key stakeholders and other practices. Organizations should aim to manage a library of pre-defined warranty acceptance criteria for use in practices such as project management and software development and management.
- **Utility requirements** Functional requirements which have been defined by the customer and are unique to a specific product.

Business analysis should ensure the most efficient and comprehensive achievement of these activities, but not make the error of analysis without intent of subsequent action. An organization should not attempt to analyse an issue so deeply or for so long that a timely solution cannot be achieved, or try to solve every problem with a single, massive initiative that fails to facilitate value creation in enough time to be practical use. The processes associated with this practice should guard against th

Without the right information, business analysis cannot be successful, and to be effective, it needs access to all information related to the area under analysis. For business processes, for example, business analysts will need access to all process documentation, including process flows, procedures and work instructions, policy and process metrics. They may need to interview not only the person responsible for the business process, but also those who participate in each part of the process to compile a clear view of the process and the related issues.

The technologies deployed usually include whatever system the organization uses to gather and document requirements, as well as project management systems and reporting tools for gathering and processing data and information for analysis. Other technologies that can be of assistance when presenting the results of analysis are visual modelling and mapping tools and features of many of the typical office productivity suites such as spreadsheets, presentation software, and word processing.

As with all practices, business analysis cannot ensure successful solutions in isolation. For example, strategy management practices provide high-level guidance to business analysis, which then directs analysis and solution recommendations. In turn, the recommendations from business analysis can influence technical and operational strategies. To ensure the participation of the right parties, business analysis relies on relationship management. Furthermore, the natural progression through the service value chain requires interaction between business analysis activities and those from service design, software development and management, measurement and reporting, and many others.

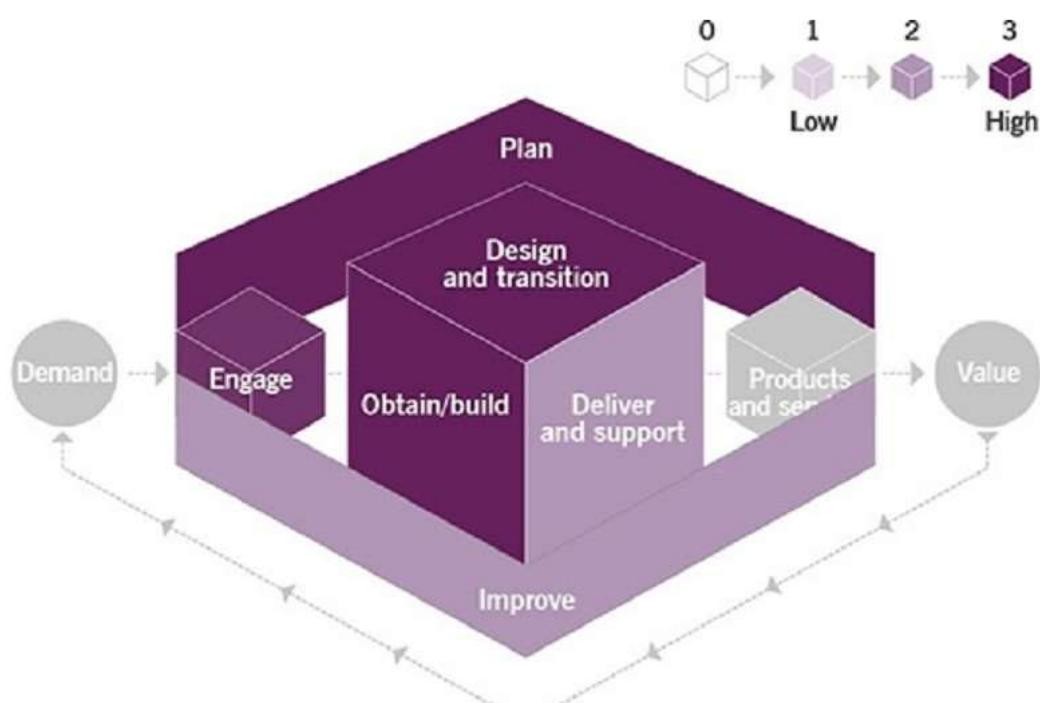


Figure 5.17 Heat map of the contribution of business analysis to value chain activities

5.2.3 Capacity and performance management



Service performance is usually associated with the number of service actions performed in a timeframe and the time required to fulfil a service action at a given level of demand. Service performance depends on service capacity, which is defined as the maximum throughput that a CI or service can deliver. Specific metrics for capacity and performance depend on the technology and business nature of the service or CI.

The capacity and performance management practice usually deals with service performance and the performance of the supporting resources on which it depends such as infrastructure, applications, and third-party services. In many organizations the capacity and performance management practice also covers the capacity and performance of the personnel.

The capacity and performance management practice includes the following activities:

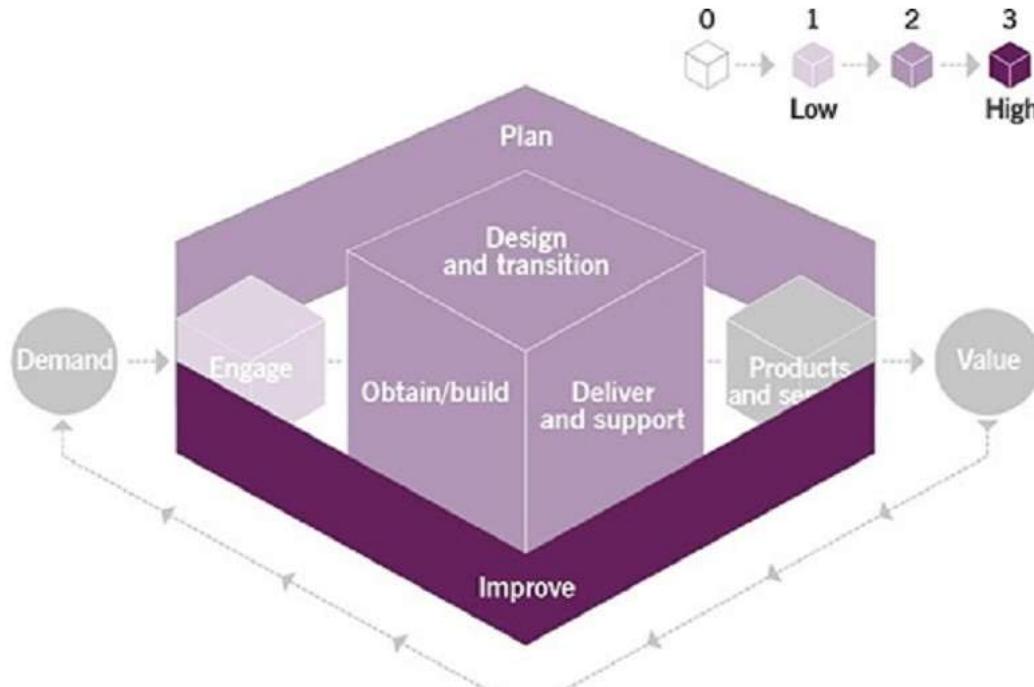
- service performance and capacity analysis:
 - research and monitoring of the current service performance
 - capacity and performance modelling
- service performance and capacity planning:
 - capacity requirements analysis
 - demand forecasting and resource planning
 - performance improvement planning.

product and service design: it helps to ensure that new and changed services are designed for optimum performance, capacity, and scalability.

- Obtain/build Capacity and performance management helps to ensure that components and services being obtained or built meet performance needs of

organization.

- **Deliver and support** Services and service components are supported and tested by performance and capacity targets, metrics and measurement, and reporting targets and tools.



Definition: Change

The addition, modification, or removal of anything that could have a direct or indirect effect on services.

The scope of change control is defined by each organization. It will typically include all IT infrastructure, applications, documentation, processes, supplier relationships and anything else that might directly or indirectly impact a product or service.

It is important to distinguish change control from organizational change management. Organizational change management manages the people aspects of changes to ensure that improvements and organizational transformation initiatives are implemented successfully. Change control is usually focused on changes in products and services.

Change control must balance the need to make beneficial changes that will deliver additional value with the need to protect customers and users from the adverse effect of changes. All changes should be assessed by people who are able to

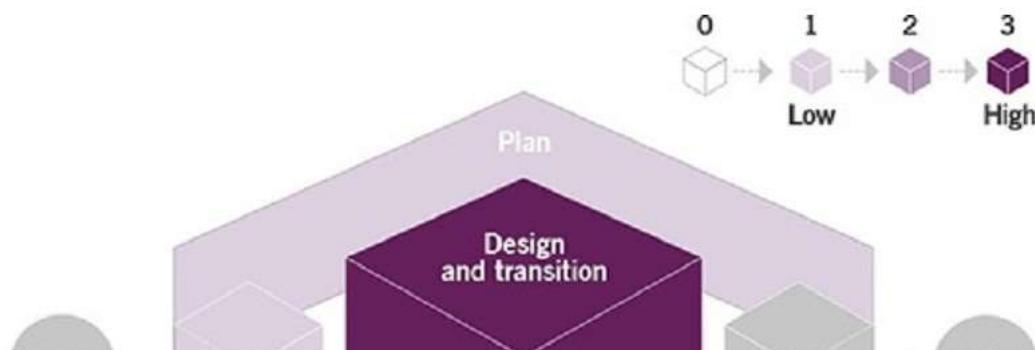
understand the risks and the expected benefits; the changes must then be authorized before they are deployed. This assessment, however, should not introduce unnecessary delay.

low risk, and the change authority for these is usually someone who can make rapid decisions, often using automation to speed up the change. Other normal changes are very major and the change authority could be as high as the management board (or equivalent). Initiation of a normal change is triggered by the creation of a change request. This may be created manually, but organizations that have an automated pipeline for continuous integration and continuous deployment often automate most steps of the change control process.

- **Emergency changes** These are changes that must be implemented as soon as possible; for example, to resolve an incident or implement a security patch. Emergency changes are not typically included in a change schedule, and the process for assessment and authorization is expedited to ensure they can be implemented quickly. As far as possible, emergency changes should be subject to the same testing, assessment, and authorization as normal changes, but it may be acceptable to defer some documentation until after the change has been implemented, and sometimes it will be necessary to implement the change with less testing due to time constraints. There may also be a separate change authority for emergency changes, typically including a small number of senior managers who understand the business risks involved.

The change schedule is used to help plan changes, assist in communication, avoid conflicts, and assign resources. It can also be used after changes have been deployed to provide information needed for incident management, problem management, and improvement planning. Regardless of who the change authority is, they may need to communicate widely across the organization. Risk assessme

this value chain activity. These people may also play a part in assessing and authorizing changes.



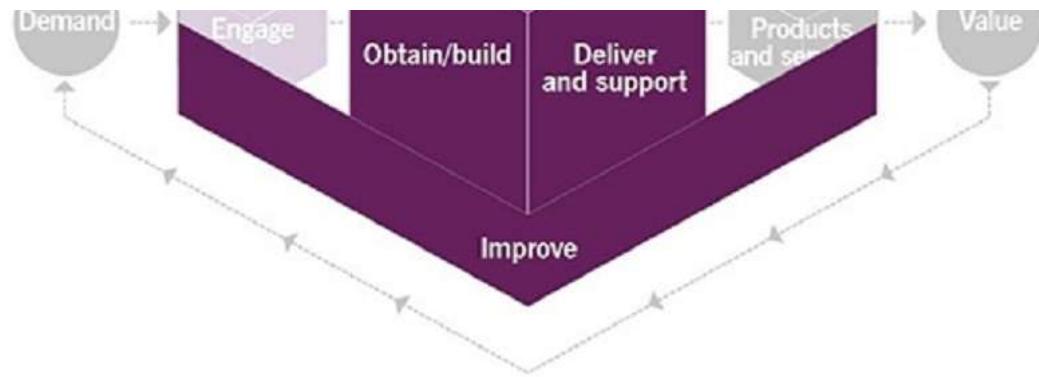


Figure 5.19 Heat map of the contribution of change control to value chain activities

The ITIL story: Change control

5.2.5 Incident management



Key message

The purpose of the incident management practice is to minimize the negative impact of incidents by restoring normal service operation as quickly as possible.



Definition: Incident

An unplanned interruption to a service or reduction in the quality of a service.

Incident management can have an enormous impact on customer and user satisfaction and can have a significant financial impact on the organization.

It is important that people working on an incident provide good-quality updates in a timely fashion. These updates should include information about symptoms, business impact, CIs affected, actions completed, and actions planned. Each of these should have a timestamp and information about the people involved, so that the people involved or interested can be kept informed. There may also be a need for good collaboration tools so that people working on an incident can collaborate effectively.

Incidents may be diagnosed and resolved by people in many different groups, depending on the complexity of the issue or the incident type. All of these groups need to understand the incident management process, and how their contribution to this helps to manage the value, outcomes, costs, and risks of the services provided:

- Some incidents will be resolved by the users themselves, using self-help. Use of specific self-help records should be captured for use in measurement and improvement activities.
- Some incidents will be resolved by the service desk.
- More complex incidents will usually be escalated to a support team for resolution. Typically, the routing is based on the incident category, which should help to identify the correct team.
- Incidents can be escalated to suppliers or partners, who offer support for their products and services.
- The most complex incidents, and all major incidents, often require a temporary

until it becomes clear which of them is best placed to continue and which can move on to other tasks.

Third-party products and services that are used as components of a service require support agreements which align the obligations of the supplier with the commitments made by the service provider to customers. Incident management may require frequent interaction with these suppliers, and routine management of this aspect of supplier contracts is often part of the incident management practice. A supplier can also act as a service desk, logging and managing all incidents and escalating them to subject matter experts or other parties as required.

There should be a formal process for logging and managing incidents. This process does not usually include detailed procedures for how to diagnose, investigate, or resolve incidents, but can provide techniques for making investigation and diagnosis more efficient. There may be scripts for collecting information from users during initial contact, and this may lead directly to diagnosis and resolution of simple incidents. Investigation of more complicated incidents often requires knowledge

Incidents. Investigation of more complicated incidents often requires knowledge and expertise, rather than procedural steps.

Dealing with incidents is possible in every value chain activity, though the most visible (due to effect on users) are incidents in an operational environment.

Figure 5.20 shows the contribution of incident management to the service value chain, with the practice being applied mainly to the engage, and deliver and support value chain activities. Except for plan, other activities may use information about

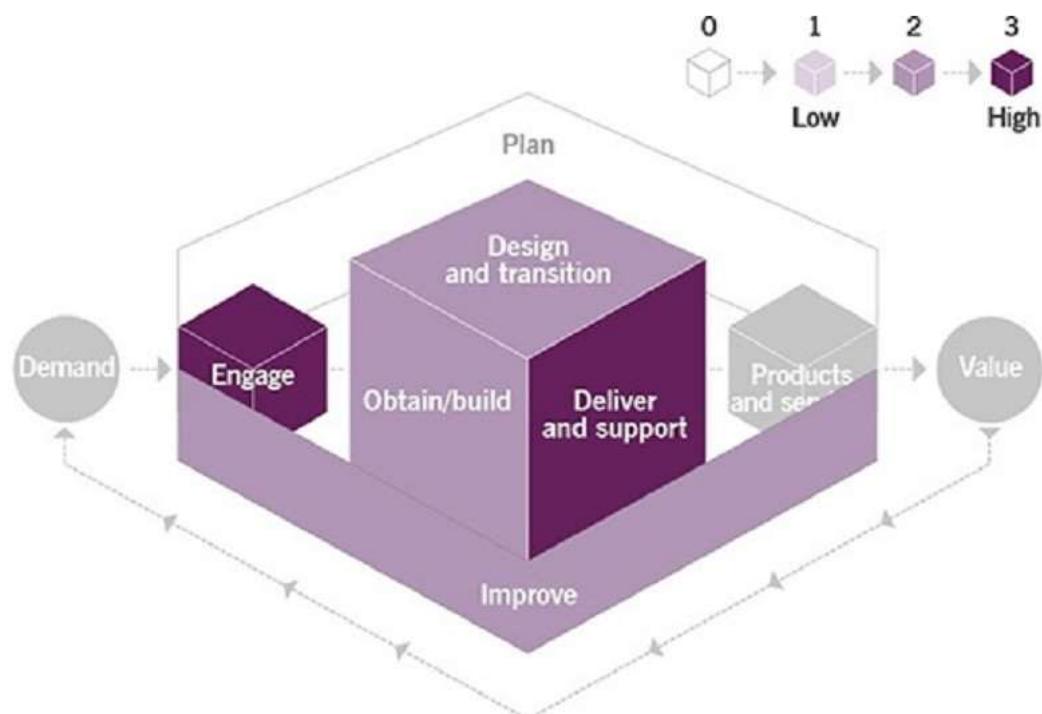


Figure 5.20 Heat map of the contribution of incident management to value chain activities

The ITIL story: Axle's incident management



Radhika: Axle faces many potential IT and non-IT incidents. Cars can break down, road accidents might occur, or our customers might face challenges

5.2.6 IT asset management





Key message

The purpose of the IT asset management practice is to plan and manage the full lifecycle of all IT assets, to help the organization:

- maximize value
- control costs
- manage risks
- support decision-making about purchase, re-use, retirement, and disposal of assets
- meet regulatory and contractual requirements.



infrastructure.

IT asset management (ITAM) is a sub-practice of asset management that is specifically aimed at managing the lifecycles and total costs of IT equipment and infrastructure.

Software asset management (SAM) is an aspect of IT asset management that is specifically aimed at managing the acquisition, development, release, deployment, maintenance, and eventual retirement of software assets. SAM procedures provide effective management, control, and protection of software assets.

Understanding the cost and value of assets is essential to also comprehending the cost and value of products and services, and is therefore an important underpinning factor in everything the service provider does. IT asset management contributes the visibility of assets and their value, which is a key element to successful service management as well as being useful to other practices.

IT asset management requires accurate inventory information, which it keeps in the asset register. This information can be gathered in an audit, but it is much better to capture it as part of the processes that change the status of assets, for example, when new hardware is delivered, or when a new instance of a cloud service is requested. If IT asset management has good interfaces with other practices,

including service configuration management, incident management, change control and deployment management than the asset status information can be maintained.

manage these in the same way as other IT assets. Each individual use of a cloud service may be relatively cheap, but by spending in small amounts it is easy to consume much more resource than was planned, leaving the organization with a correspondingly large bill. Again, good IT asset management can help to control these costs.

The activities and requirements of IT asset management will vary for different types of asset:

- Hardware assets must be labelled for clear identification. It is important to know where they are and to help protect them from theft, damage, and data leakage. They may need special handling when they are re-used or decommissioned; for example, erasure or shredding of disk drives depends on information security requirements. Hardware assets may also be subject to regulatory requirements such as the EU Waste Electrical and Electronic Equipment Directive.
- Software assets must be protected from unlawful copying, which could result in unlicensed use. The organization must ensure that licence terms are adhered to and that licences are only re-used in ways that are allowed under the contract. It is important to retain verified proof of purchase and entitlement to run the software. It is very easy to lose software licences when equipment is decommissioned, so it is important that the IT asset management process recovers these licences and makes them available for re-use where appropriate.
- Cloud-based assets must be assigned to specific products or groups so that costs can be managed. Funding must be managed so that the organization has the flexibility to invoke new instances of cloud use when needed, and to remove instances that are not needed, without the risk of uncontrolled costs.

In some organizations there is a centralized team responsible for IT asset management. This team may also be responsible for configuration management. In other organizations, each technical team may be responsible for management of the IT assets they support; for example, the storage team could manage storage assets while the networking team manages network assets. Each organization must consider its own context and culture to choose the appropriate level of centralization. However, having some central roles helps to ensure asset data quality and the development of expertise on specific aspects such as software licensing and inventory systems.

IT asset management typically includes the following activities:

- Define, populate, and maintain the asset register in terms of structure and

- Define, populate, and maintain the asset register in terms of structure and content, and the storage facilities for assets and related media
- Control the asset lifecycle in collaboration with other practices (for example, upgrading obsolete software or onboarding new staff members with a laptop and mobile phone) and record all changes to assets (status, location, characteristics, assignment, etc.)
- Provide current and historical data, reports, and support to other practices about IT assets
- Audit assets, related media, and conformity (particularly with regulations, and licence terms and conditions) and drive corrective and preventive improvement to deal with detected issues.

Figure 5.21 shows the contribution of IT asset management to the service value

- Deliver and support IT asset management helps to locate IT assets, trace their movements, and control their status in the organization.

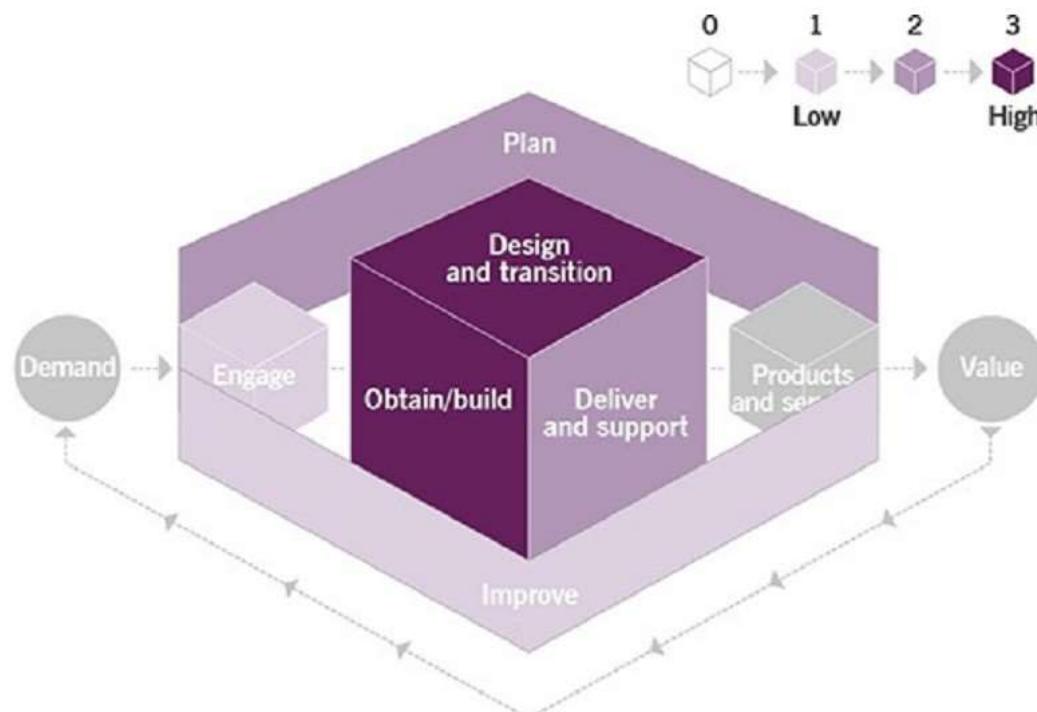


Figure 5.21 Heat map of the contribution of IT asset management to value chain activities

5.2.7 Monitoring and event management



Definition: Event

Any change of state that has significance for the management of a service or other configuration item (CI). Events are typically recognized through notifications created by an IT service, CI, or monitoring tool.

The monitoring and event management practice manages events throughout the lifecycle to prevent, minimize, or eliminate their negative impact on the business

The monitoring part of the practice focuses on the systematic observation of services and the CIs that underpin services to detect conditions of potential significance. Monitoring should be performed in a highly automated manner, and can be done actively or passively. The event management part focuses on record and managing those monitored changes of state that are defined by the organization as an event, determining their significance, and identifying and initiating the correct control action to manage them. Frequently the correct control action will be to initiate another practice, but sometimes it will be to take no action other than to continue monitoring the situation. Monitoring is necessary for event management to take place, but not all monitoring results in the detection of an event.

changes of state will be treated as events, and choosing criteria to define each type of event (informational, warning, or exception)

- establishing and maintaining policies for how each type of detected event should be handled to ensure proper management
- implementing processes and automations required to operationalize the defined thresholds, criteria, and policies.

This practice is highly interactive with other practices participating in the service value chain. For example, some events will indicate a current issue that qualifies an incident. In this case, the correct control action will be to initiate activity in the incident management practice. Repeated events showing performance outside of desired levels may be evidence of a potential problem, which would initiate activity in the problem management practice. For some events, the correct response is to initiate a change, engaging the change control practice.

Although the work of this practice, once put in place, is highly automated, human intervention is still required, and is in fact essential. For the definition of monitoring strategies and specific thresholds and assessment criteria, it can help to bring in a broad range of perspectives, including infrastructure, applications, service owners,

broad range of perspectives, including infrastructure, applications, service owner service level management, and representation from the warranty-related practice. Remember that the starting point for this practice is likely to be simple, setting the stage for a later increase in complexity, so it is important that the expectations of participants are managed.

Organizations and people are also critical to providing an appropriate response to

such as infrastructure management, are partially or wholly outsourced to a supplier they may be reluctant to expose monitoring or event data related to the elements they manage. Don't ask for data that is not truly needed, but if data is required, make sure that the provision of that data is explicitly part of the contract for the supplier's services.

Figure 5.22 shows the contribution of monitoring and event management to the service value chain, with the practice being involved in all value chain activities except plan:

- **Improve** The monitoring and event management practice is essential to the continuous observation of the environment to evaluate and proactively improve its health and stability.
- **Engage** Monitoring and event management may be the source of internal engagement for action.
- **Design and transition** Monitoring data informs design decisions. Monitoring is an essential component of transition: it provides information about the transition's success in all environments.
- **Obtain/build** Monitoring and event management supports development environments, ensuring their transparency and manageability.
- **Deliver and support** The practice guides how the organization manages internal support of identified events, initiating other practices as appropriate.



Key message

The purpose of the problem management practice is to reduce the likelihood of problems occurring and to minimize their impact when they do occur.

The purpose of the problem management practice is to reduce the likelihood and impact of incidents by identifying actual and potential causes of incidents, and managing workarounds and known errors.



Definitions

- Problem A cause, or potential cause, of one or more incidents.
- Known error A problem that has been analysed but has not been resolved.



Problem identification activities identify and log problems. These include:

- performing trend analysis of incident records
- detection of duplicate and recurring issues by users, service desk, and technical support staff
- during major incident management, identifying a risk that an incident could re
- analysing information received from suppliers and partners
- analysing information received from internal software developers, test teams and project teams.

Other sources of information can also lead to problems being identified.

Problem control activities include problem analysis, and documenting workarounds and known errors.

Problems are prioritized for analysis based on the risk that they pose, and are managed as risks based on their potential impact and probability. It is not essential to analyse every problem; it is more valuable to make significant progress on the highest-priority problems than to investigate every minor problem that the organization is aware of.

Incidents typically have many interrelated causes, and the relationships between them can be complex. Problem control should consider all contributory causes, including causes that contributed to the duration and impact of incidents, as well as those that led to the incidents happening. It is important to analyse problems fully.

likelihood of incidents.

An effective incident workaround can become a permanent way of dealing with some problems when resolving the problem is not viable or cost-effective. In this case, the problem remains in the known error status, and the documented workaround is applied should related incidents occur. Every documented workaround should include a clear definition of the symptoms to which it applies; in some cases, workaround application can be automated.

For other problems, a way to fix the error should be found. This is a part of error control. Error control activities manage known errors, which are problems where initial analysis has been completed; it usually means that faulty components have been identified. Error control also includes identification of potential permanent solutions which may result in a change request for implementation of a solution, only if this can be justified in terms of cost, risks, and benefits.

Error control regularly re-assesses the status of known errors that have not been resolved, including overall impact on customers, availability and cost of permanent resolutions, and effectiveness of workarounds. The effectiveness of workarounds should be evaluated each time a workaround is used, as the workaround may be improved based on the assessment.

Problem management activities are very closely related to incident management. The practices need to be designed to work together within the value chain. Activities from these two practices may complement each other (for example

investigate, diagnose, and resolve problems.

- Problem management activities can identify improvement opportunities in all four dimensions of service management. Solutions can in some cases be treated as improvement opportunities, so they are included in a continual improvement register (CIR), and continual improvement techniques are used to prioritize and manage them, sometimes as part of a product backlog.

Many problem management activities rely on the knowledge and experience of staff, rather than on following detailed procedures. People responsible for diagnosing problems often need the ability to understand complex systems, and think about how different failures might have occurred. Developing this combination of analytical and creative ability requires mentoring and time, as well as suitable training.

The ITIL story: Axle's problem management



Henri: *Axle participates in feedback programmes with all our car manufacturers. We share maintenance and repair data with them to help them to continually improve their services. In return, they alert us to any potential problems in our vehicles.*



Radhika: *Recently, we were alerted to a potential problem in our fleet. A car manufacturer had recalled a popular model in our fleet to fix an error found in the airbag activation system.*

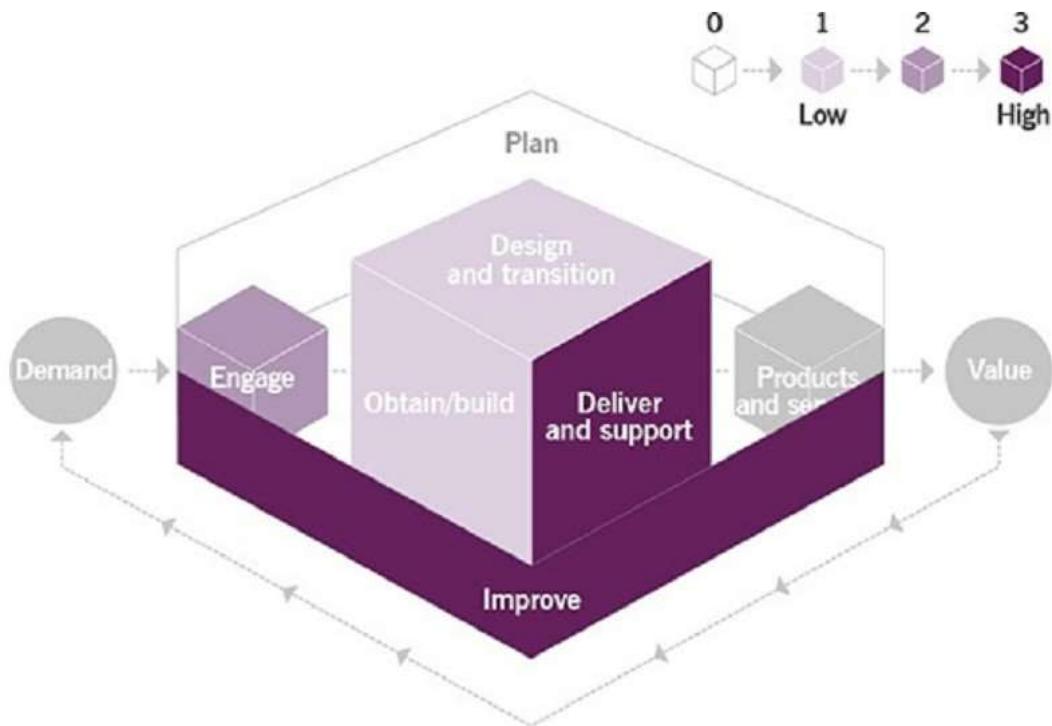


Figure 5.24 Heat map of the contribution of problem management to value chain activities

Problem management is usually focused on errors in operational environments. Figure 5.24 shows the contribution of problem management to the service value chain, with the practice being applied mainly to the improve, and deliver and support value chain activities:

- **Improve** This is the main focus area for problem management. Effective probl



Key message

The purpose of the release management practice is to make new and changed services and features available for use.



Definition: Release

A version of a service or other configuration item, or a collection of configuration items, that is made available for use.

A release may comprise many different infrastructure and application components that work together to deliver new or changed functionality. It may also include documentation, training (for users or IT staff), updated processes or tools, and any other components that are required. Each component of a release may be

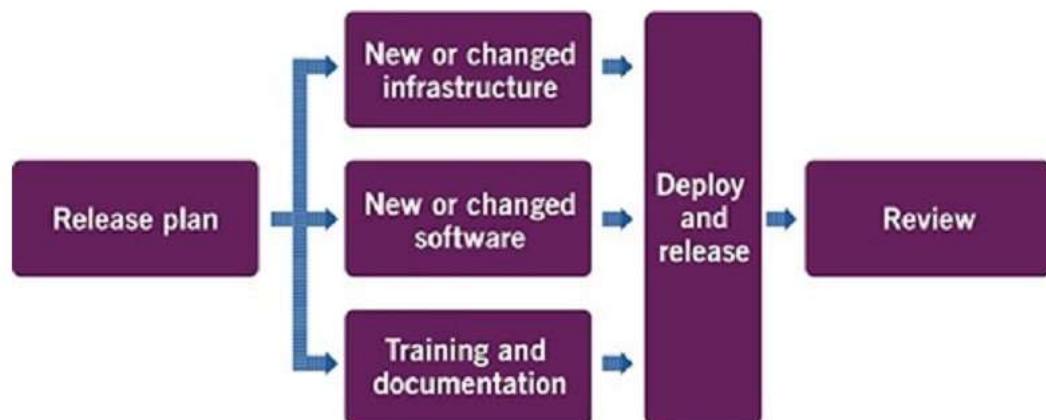


Figure 5.25 Release management in a traditional/waterfall environment



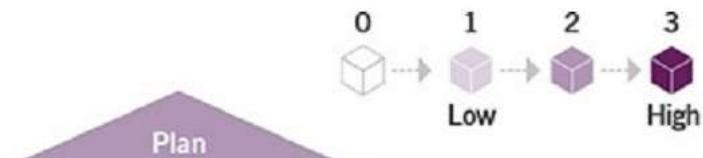
Figure 5.26 Release management in an Agile/DevOps environment

Figure 5.25 shows how release management is handled in a traditional/waterfall environment. In these environments release management and deployment may

- Feature flags enable specific features to be released to individual users or groups in a controlled way. The new functionality is deployed to the production environment without being released. A user configuration setting then releases the new functionality to individual users (or groups of users) as needed.

In a DevOps environment, release management is often integrated with the continuous integration and continuous delivery toolchain. The tools of release management may be the responsibility of a dedicated person, but decisions about the release can be made by the development team. In a more traditional environment, releases are enabled by the deployment of the components. Each release is described by a release record on an ITSM tool. Release records are linked to CIs and change records to maintain information about the release.

Components of a release are often provided by third parties. Examples of third-party components include cloud infrastructure, software as a service component and third-party support. It is also common to include third-party software, or open source software, as part of application development. Release management needs to work across organizational boundaries to ensure that all components are compatible and to provide a seamless experience for users. It also needs to consider the impact of changes to third-party components, and to plan for how these will be released.



- **Plan** Policies, guidance, and timelines for releases are driven by the organizational strategy and service portfolio. The size, scope, and content of each release should be planned and managed.
- **Improve** New or changed releases may be required to deliver improvements, these should be planned and managed in the same way as any other release.
- **Engage** The content and cadence of releases must be designed to match the needs and expectations of customers and users.
- **Design and transition** Release management ensures that new or changed

- ~~Design and transition~~ ~~Release management ensures that new or changed services are made available to customers in a controlled way.~~
- **Obtain/build** Changes to components are normally included in a release, delivered in a controlled way.
- **Deliver and support** Releases may impact on delivery and support. Training, documentation, release notes, known errors, user guides, support scripts, etc are provided by this practice to facilitate service restoration.

The ITIL story: Axle's release management



Marco: When we release updates to our booking app, we make sure they're accompanied by user awareness and marketing campaigns for our users, customers, and teams. We provide specific training for the service desk and support teams that are internal and external.



Radhika: Some changes may need extra support or the introduction of new

single source of consistent information on all services and service offerings, and to ensure that it is available to the relevant audience.

The list of services within the service catalogue represents those which are currently available and is a subset of the total list of services tracked in the service provider's service portfolio. Service catalogue management ensures that service and product descriptions are expressed clearly for the target audience to support stakeholder engagement and service delivery. The service catalogue may take many forms such as a document, online portal, or a tool that enables the current list of services to be communicated to the audience.

5.2.10.1 Service catalogue management activities

The service catalogue management practice includes an ongoing set of activities related to publishing, editing, and maintaining service and product descriptions and their related offerings. It provides a view on the scope of what services are available, and on what terms. The service catalogue management practice is supported by roles such as the service owner and others responsible for managing, editing, and keeping up to date the list of available services as they are introduced, changed, or retired.

Tailored views

While multiple views of the service catalogue are possible, the creation of separate or isolated service catalogues within different technology systems should be avoided if possible as this will promote segregation, variability, and complexity.

For the service catalogue to be perceived as useful by the customer organization must do more than provide a static platform for publishing information about IT services. Unless the service catalogue enables customer engagement by supporting discussions related to standard and non-standard service offerings and/or automates request and order fulfilment processes, the chances of its ongoing adoption as a useful and meaningful resource are minimal. For this reason, the views of many organizations on the service catalogue are focused on the consumable or orderable elements of service offerings. These are often called request catalogues.



Figure 5.28 shows the contribution of service catalogue management to the serv

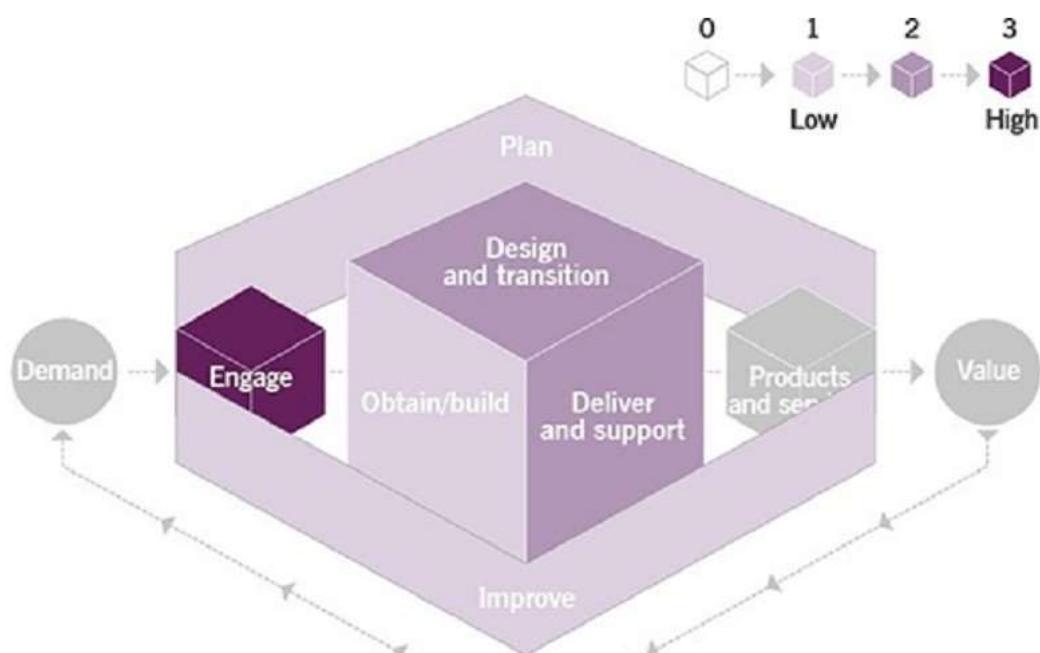


Figure 5.28 Heat map of the contribution of service catalogue management to value chain activities

- **Design and transition** The service catalogue ensures both the utility and warra aspects of services are considered and published, including the information security policy, IT service continuity levels, service level agreements, and serv offerings. Additional activities include the definition and creation of service descriptions, request models, and views to be published.

them.



Definition: Configuration item

Any component that needs to be managed in order to deliver an IT service.

Service configuration management collects and manages information about a wide variety of CIs, typically including hardware, software, networks, buildings, people, suppliers, and documentation. Services are also treated as CIs, and configuration management helps the organization to understand how the many CIs that contribute to each service work together. Figure 5.29 is a simplified diagram showing how multiple CIs contribute to an IT service.

Configuration management provides information on the CIs that contribute to each service and their relationships: how they interact, relate, and depend on each other to create value for customers and users. This includes information about dependencies between services. This high-level view is often called a service map, service model, and forms part of the service architecture.

IT service

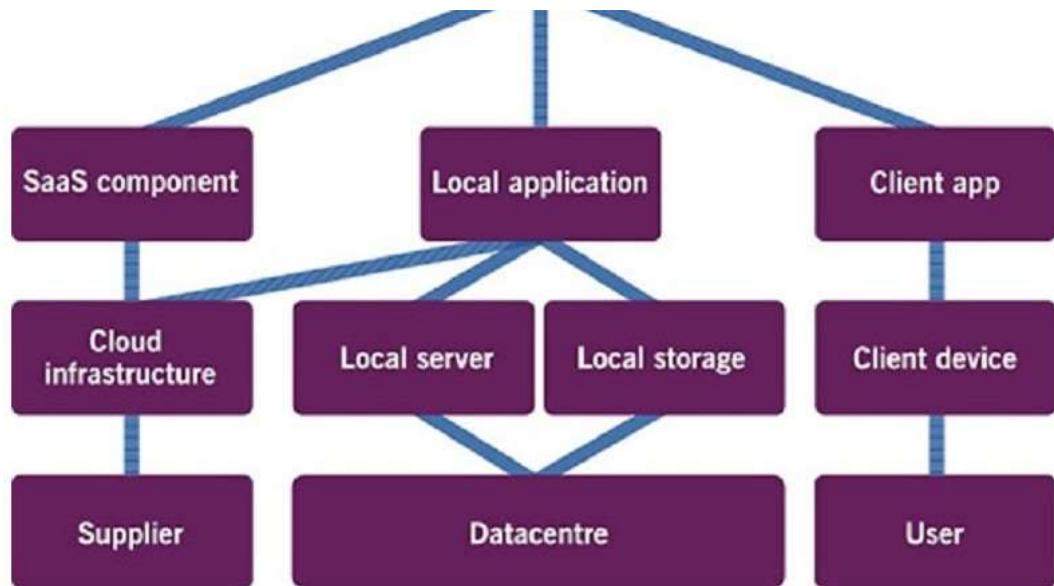


Figure 5.29 Simplified service model for a typical IT service



Definition: Configuration management system

configuration records. For example, an organization trying to identify problems with a service may need to find incidents related to a specific software version, or model of disk drive. The understanding of the need for this information helps to establish what CI attributes should be stored for this organization; in this case software versions and disk drive models. To diagnose incidents, visibility of recent changes to the affected CIs may be needed, so relationships between CIs and changes must be maintained.

Many organizations use data collection tools to gather detailed configuration information from infrastructure and applications, and use this to populate a CMS. This can be effective, but can also encourage the collection of too much data without sufficient information on relationships, and how the components work together to create a service. Sometimes configuration information is used to actually create the CI, rather than just to document it. This approach is used for ‘infrastructure as a code’, where information on the infrastructure is managed in a data repository and used to automatically configure the environment.

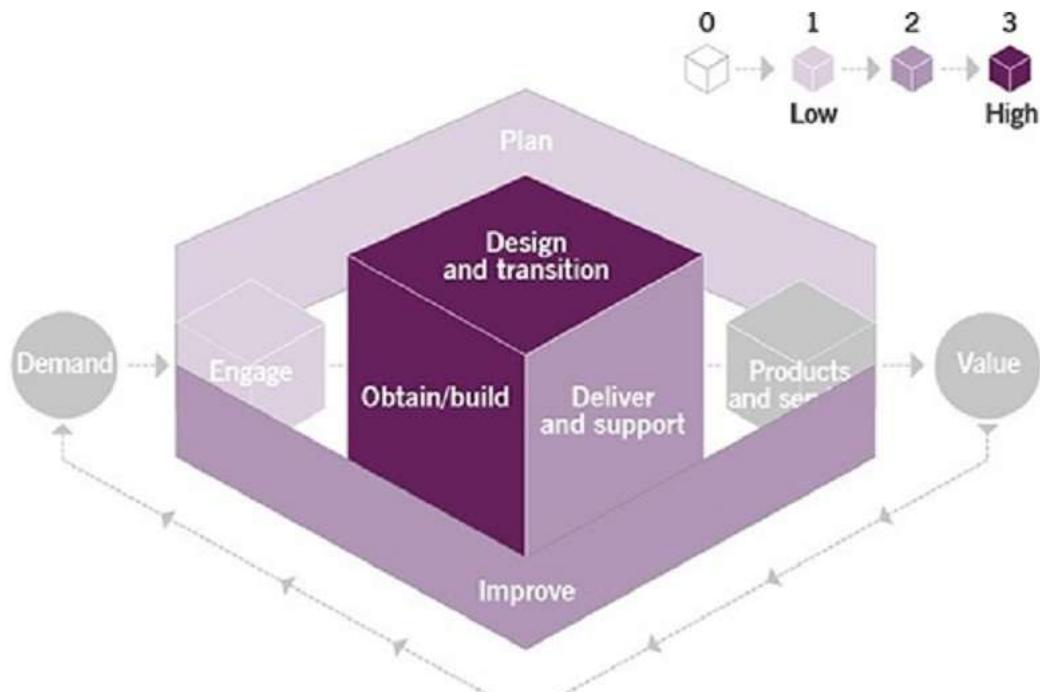
A large organization may have a team that is dedicated to configuration management. In other organizations this practice can be combined with change control, or there can be a team responsible for change, configuration, and release management. Some organizations apply a distributed model where functional teams take ownership of updating and maintaining the CIs within their control area.

oversight.

Configuration management typically needs processes to:

together to create a service. This information is used to support many value chain activities, and is updated as part of the transition activity.

- **Obtain/build** Configuration records may be created during this value chain activity, describing new or changed services and components. Sometimes configuration records are used to create the code or artefact that is being built.
- **Deliver and support** Information on CIs is essential to support service restoration. Configuration information is used to support activities of the incident management and problem management practices.



Service continuity management supports an overall business continuity management (BCM) and planning capability by ensuring that IT and services can be resumed within required and agreed business timescales following a disaster or crisis. It is triggered when a service disruption or organizational risk occurs on a scale that is greater than the organization's ability to handle it with normal response and recovery practices such as incident and major incident management. An organizational event of this magnitude is typically referred to as a disaster.

Each organization needs to understand what constitutes a disaster in its own context.

context. Establishing what is meant by a disaster must be considered and defined prior to a trigger event at both an organizational and on a per-service level using business impact analysis. The Business Continuity Institute defines a disaster as:

‘...a sudden unplanned event that causes great damage or serious loss to an organization. It results in an organization failing to provide critical business functions for some predetermined minimum period of time.’

The sources that trigger a disaster response and recovery are varied and complex. These include natural disasters such as earthquakes, floods, and fires, as well as human-made disasters such as terrorist attacks, cyber-attacks, and industrial accidents. The number of stakeholders involved in a disaster can also vary greatly, from a small number of individuals to a large number of organizations and government agencies. The impact of a disaster can be significant, causing financial losses, disruption to business operations, and even loss of life.

Table 5.3 Examples of disaster sources, stakeholders involved, and organizational impact

maximum agreed time within which a product or an activity must be resumed, or resources must be recovered.

- Recovery point objective (RPO) The point to which information used by an activity must be restored to enable the activity to operate on resumption.
- Disaster recovery plans A set of clearly defined plans related to how an organization will recover from a disaster as well as return to a pre-disaster condition, considering the four dimensions of service management.
- Business impact analysis (BIA) A key activity in the practice of service continuity management that identifies vital business functions (VBFs) and their dependencies. These dependencies may include suppliers, people, other business processes, and IT services. BIA defines the recovery requirements for IT services. These requirements include RTOs, RPOs, and minimum target service levels for each IT service.

Service continuity management versus incident management

Service continuity management focuses on those events that the business considers significant enough to be treated as a disaster. Less significant events will be dealt with as part of incident management or major incident management. The distinction between disasters, major incidents, and incidents needs to be pre-defined, agreed, and documented with clear thresholds and triggers for calling the next tier of response and recovery into action without unnecessary delay and risk.

- **Engage** Engagement with various stakeholders to provide assurance with regard to an organization's readiness for disasters is supported by this practice.
- **Design and transition** Service continuity management ensures that products and services are designed and tested according to the organization's continuity requirements.

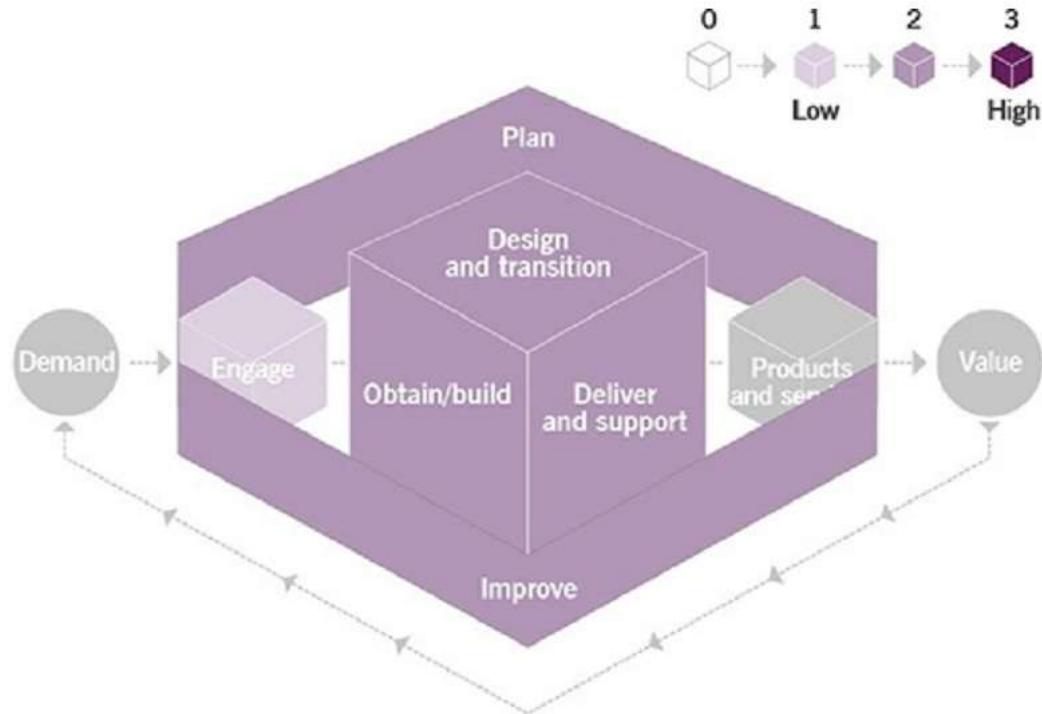


Figure 5.31 Heat map of the contribution of service continuity management to value chain activities

partners and suppliers, information, communication, technology, and practices for new or changed products and services, and the interaction between the organization and its customers.

If products, services, or practices are not designed properly, they will not necessarily fulfil customer needs or facilitate value creation. If they evolve without proper architecture, interfaces or controls, they are less able to deliver the overall vision and needs of the organization and its internal and external customers.

Even when a product or service is well designed, delivering a solution that addresses the needs of both the organization and customer in a cost-effective and resilient way can be difficult. It is therefore important to consider iterative and incremental approaches to service design, which can ensure that products and services introduced to live operation can continually adapt in alignment with the evolving needs of the organization and its customers.

In the absence of formalized service design, products and services can be unduly expensive to run and prone to failure, resulting in resources being wasted and the product or service not being customer-centred or designed holistically. It is unlikely that any improvement programme will ever be able to achieve what proper design could have achieved in the first place. Without service design, cost-effective products and services that deliver what customers need and expect are extremely hard to achieve.

~~Service design practice should also ensure that the customer's journey from~~

- ensure that new or changed products and services will be maintainable and cost effective.

It is important that a holistic, results-driven approach to all aspects of service design is adopted, and that when changing or amending any of the individual elements of service design, all other aspects are considered. It is for this reason that the coordination aspect of service design with the whole organization's SVS is essential. Designing and developing a new or changed product or service should not be done in isolation, but should consider the impact it will have on:

- other products and services
- all relevant parties, including customers and suppliers
- the existing architectures
- the required technology
- the service management practices
- the necessary measurements and metrics.

Consideration of these factors will not only ensure that the design addresses the functional elements of the service, but also that the management and operational requirements are regarded as a fundamental part of the design, and are not added as an afterthought.

Service design should also be used when the change being made to the product or service is its retirement. Unless the retirement of a product/service is carefully

~~planned, it could have a significant negative effect on customers and stakeholders.~~

- are managed and operated to an acceptable level of risk.

With many pressures on the organization, there can be a temptation to 'cut corners' on the coordination of practices and relevant parties for service design activities, to ignore them completely. This should be avoided, as integration and coordination

are essential to the overall quality of the products and services that are delivered

5.2.13.1 Design thinking

Design thinking is a practical and human-centred approach that accelerates innovation. It is used by product and service designers as well as organizations to solve complex problems and find practical, creative solutions that meet the needs of the organization and its customers. It can be viewed as a complementary approach to Lean and Agile methodologies. Design thinking draws upon logic, imagination, intuition, and systems thinking to explore possibilities and to create desired outcomes that benefit customers.

Design thinking includes a series of activities:

- Inspiration and empathy, through direct observation of people and how they work or interact with products and services, as well as identifying how they might interact differently with other solutions.
- Ideation, which combines divergent and convergent thinking. Divergent thinking is the ability to offer different, unique, or variant ideas, while convergent thinking is the ability to find the preferred solution to a given problem. Diverge

5.2.13.2 Customer and user experience

The CX and UX aspects of service design are essential to ensuring products and services deliver the desired value for customers and the organization. CX design is focused on managing every aspect of the complete CX, including time, quality, cost, reliability, and effectiveness. UX looks specifically at the ease of use of the product or service and how the customer interacts with it.

Lean user experience

Lean user experience (Lean UX) design is a mindset, a culture, and a process that embraces Lean–Agile methods. It implements functionality in minimum viable increments, and determines success by measuring results against an outcome hypothesis. Lean UX is incredibly useful when working on projects where Agile development methods are used. The core objective is to focus on obtaining feedback as early as possible so that it can be used to make quick decisions.

Typical questions for Lean UX might include: Who are the customers of this product/service and what will it be used for? When is it used and under what circumstances? What will be the most important functionality? What are the biggest risks?

biggest RISKS?

There may be more than one answer to each question, which creates a greater

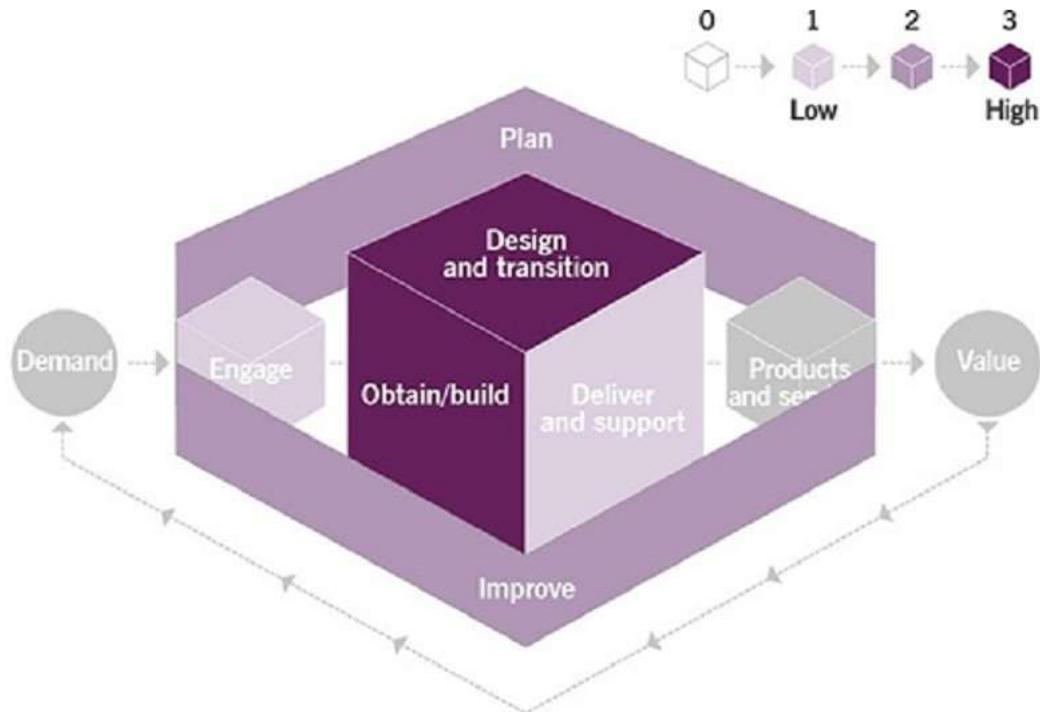


Figure 5.32 Heat map of the contribution of service design to value chain activities

Risk identification, assessment, and treatment are key requirements within all design activities; therefore risk management must be included as an integrated aspect of service design. This will ensure that the risks involved in the provision of products and services and the operation of practices, technology, and measurement methods are aligned with organizational risk and impact, because risk management is embedded within all design processes and activities.

- **Deliver and support** Service design manages the user's full journey, through operation, restoration, and maintenance of the service.

5.2.14 Service desk



Key message

The purpose of the service desk practice is to capture demand for incident resolution and service requests. It should also be the entry point and single point of contact for the service provider with all of its users.

Service desks provide a clear path for users to report issues, queries, and request and have them acknowledged, classified, owned, and actioned. How this practice managed and delivered may vary from a physical team of people on shift work to distributed mix of people connected virtually, or automated technology and bots. The function and value remain the same, regardless of the model.

With increased automation and the gradual removal of technical debt, the focus of the service desk is to provide support for 'people and business' rather than simpl

should be the empathetic and informed link between the service provider and its users.

With increased automation, AI, robotic process automation (RPA), and chatbots, service desks are moving to provide more self-service logging and resolution directly via online portals and mobile applications. The impact on service desks is reduced phone contact, less low-level work, and a greater ability to focus on excellent CX when personal contact is needed.

Service desks provide a variety of channels for access. These include:

- phone calls, which can include specialized technology, such as interactive voice response (IVR), conference calls, voice recognition, and others
- service portals and mobile applications, supported by service and request catalogues, and knowledge bases
- chat, through live chat and chatbots
- email for logging and updating, and for follow-up surveys and confirmations. Unstructured emails can be difficult to process, but emerging technologies based on AI and machine learning are starting to address this
- walk-in service desks are becoming more prevalent in some sectors, e.g. higher education, where there are high peaks of activity that demand physical presence
- text and social media messaging, which are useful for notifications in case of major incidents and for contacting specific stakeholder groups, but can also be used to allow users to request support

In other cases, a virtual service desk allows agents to work from multiple locations geographically dispersed. A virtual service desk requires more sophisticated supporting technology, involving more complex routing and escalation; these solutions are often cloud-based.

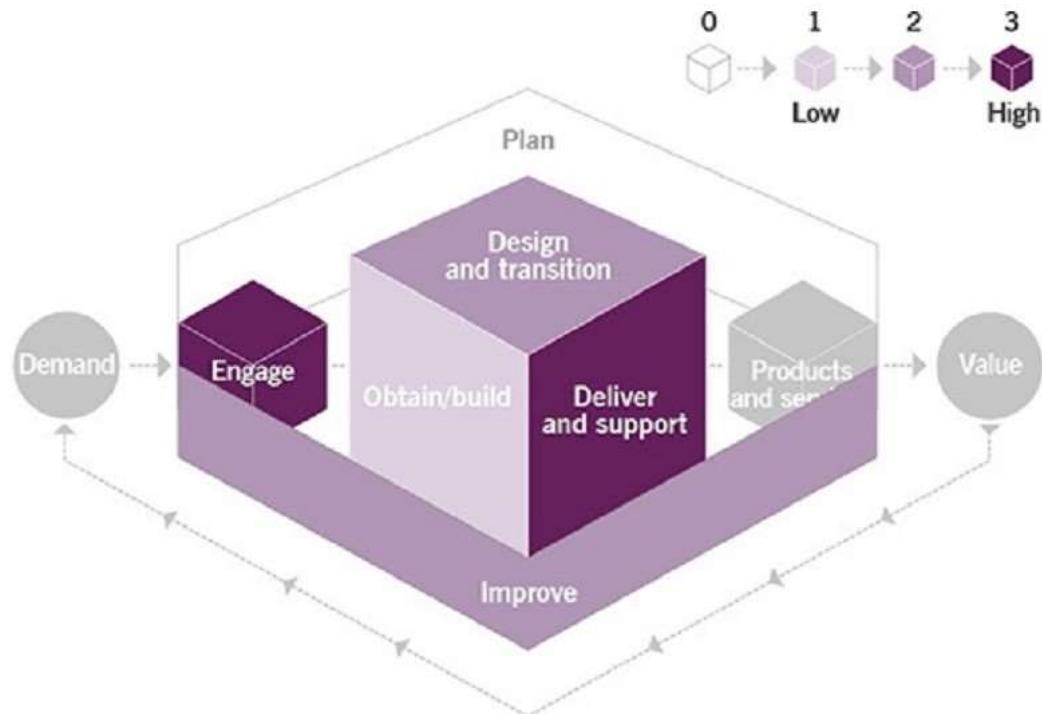


Figure 5.33 Heat map of the contribution of the service desk to value chain activities

Service desk staff require training and competency across a number of broad

- **Deliver and support** The service desk is the coordination point for managing incidents and service requests.

5.2.15 Service level management



Key message

The purpose of the service level management practice is to set clear business-based targets for service levels, and to ensure that delivery of services is properly assessed, monitored, and managed against these targets.



Definition: Service level

One or more metrics that define expected or achieved service quality.



Definition: Service level agreement

A documented agreement between a service provider and a customer that identifies both services required and the expected level of service.

Service level agreements (SLAs) have long been used as a tool to measure the performance of services from the customer's point of view, and it is important that they are agreed in the wider business context. Using SLAs may present many challenges; often they do not fully reflect the wider service performance and the user experience.

Some of the key requirements for successful SLAs include:

- They must be related to a defined 'service' in the service catalogue; otherwise they are simply individual metrics without a purpose, that do not provide adequate visibility or reflect the service perspective.
- They should relate to defined outcomes and not simply operational metrics. This can be achieved with balanced bundles of metrics, such as customer satisfaction and key business outcomes.

are often meaningless. For example, although a system availability of 99.6% is impressive, this still needs to align with key business requirements. The system may have an acceptable unavailability of 0.4%, but if that time falls when there is an important process happening (such as a commercial transaction, an operating theatre in use, or point-of-sale tills in use), then customer/user satisfaction will be low, regardless of whether the SLA has been met.

This can be problematic for the service provider if it thinks it is doing a great job (the reports are all green), when in fact its customers are dissatisfied with the service received and also frustrated that the provider doesn't notice this. This is known as the watermelon SLA effect, because like a watermelon, the SLA may appear green on the outside, but is actually red inside.

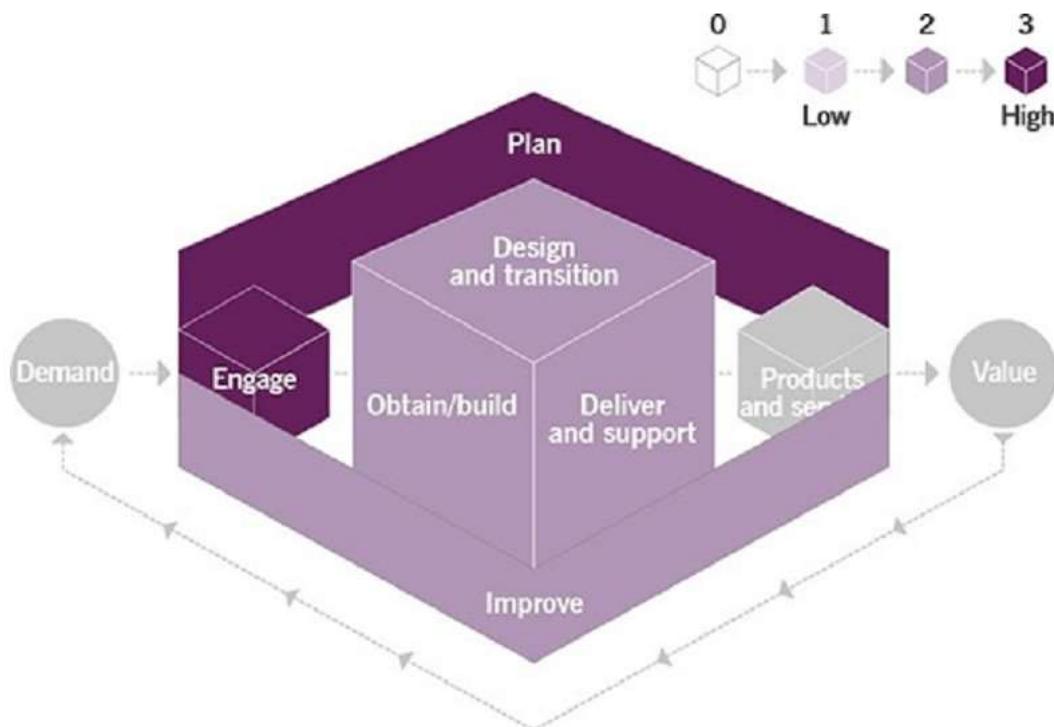
Service level management identifies metrics and measures that are a truthful reflection of the customer's actual experience and level of satisfaction with the whole service. These will vary across organizations and the only way to learn what these are is to find out directly from customers.

Service level management requires focus and effort to engage and listen to the requirements, issues, concerns, and daily needs of customers:

- Engagement is needed to understand and confirm the actual ongoing needs and requirements of customers, not simply what is interpreted by the service provider or has been agreed several years before.
 - What differentiates a good day from a bad day for you?
 - Which of these activities is most important to you?
 - What are your goals, objectives, and measurements for this year?
 - What is the best measure of your success?
 - On what do you base your opinion and evaluation of a service or IT/technology?
 - How can we help you more?
- **Customer feedback** This is ideally gathered from a number of sources, both formal and informal, including:
 - **Surveys** These can be from immediate feedback such as follow-up questions to incidents, or from more reflective periodic surveys that gauge feedback on the overall service experience. Both are event-based.
 - **Key business-related measures** These are measures agreed between the service provider and its customer, based on what the customer values as important. This could be a bundle of SLA metrics or a very specific business activity such as a sales transaction, project completion, or operational function such as getting an ambulance to the site of an accident within x minutes.
 - **Operational metrics** These are the low-level indicators of various operational activities and may include system availability, incident response and fix times, change and request processing times, and system response times.
 - **Business metrics** These can be any business activity that is deemed useful or

part of the feedback loop in transition.

- **Obtain/build** Service level management provides objectives for components of service performance, as well as for measurement and reporting capabilities of the products and services.
- **Deliver and support** Service level management communicates service performance objectives to the operations and support teams and collects the feedback as an input for service improvement.



5.2.16 Service request management



Key message

The purpose of the service request management practice is to support the agreed quality of a service by handling all pre-defined, user-initiated service requests in an effective and user-friendly manner.



Definition: Service request

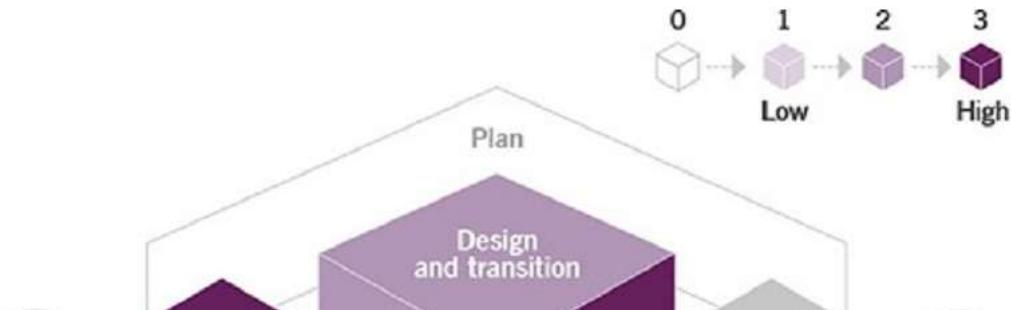
A request from a user or a user's authorized representative that initiates a service action which has been agreed as a normal part of service delivery.

For example, a service request could be a request for a new computer or a request for a new telephone number.

new employee, may be quite complex and require contributions from many team and systems for fulfilment. Regardless of the complexity, the steps to fulfil the request should be well-known and proven. This allows the service provider to agree times for fulfilment and to provide clear communication of the status of the request to users.

Some service requests require authorization according to financial, information security, or other policies, while others may not need any. To be handled successfully, service request management should follow these guidelines:

- Service requests and their fulfilment should be standardized and automated to the greatest degree possible.
- Policies should be established regarding what service requests will be fulfilled with limited or even no additional approvals so that fulfilment can be streamlined.
- The expectations of users regarding fulfilment times should be clearly set, based on what the organization can realistically deliver.



closure, allowing for a complete self-service experience. Examples include client

software installation or provision of virtual servers.

Service request management is dependent upon well-designed processes and procedures, which are operationalized through tracking and automation tools to maximize the efficiency of the practice. Different types of service request will have different fulfilment workflows, but both efficiency and maintainability will be improved if a limited number of workflow models are identified. When new service requests need to be added to the service catalogue, existing workflow models should be leveraged whenever possible.

Figure 5.35 shows the contribution of service request management to the service value chain, with the practice being involved in all service value chain activities except the plan activity:

- **Improve** Service request management can provide a channel for improvement initiatives, compliments, and complaints from users. It also contributes to improvement by providing trend, quality, and feedback information about fulfilment of requests.
- **Engage** Service request management includes regular communication to collect user-specific requirements, set expectations, and to provide status updates.
- **Design and transition** Standard service components may be transitioned to the live environment through service request fulfilment.
- **Obtain/build** Acquisition of pre-approved service components may be fulfilled through service requests.

and performance indicators that support the definition of assurance criteria and testing requirements.

5.2.17.1 Service validation

Service validation focuses on establishing deployment and release management acceptance criteria (conditions that must be met for production readiness), which are verified through testing. Acceptance criteria can be either utility- or warranty focused, and are defined through understanding customer, regulatory, business, management, and security requirements.

The service validation activities of this practice establish, verify, and document business-utility- and warranty-focused service assurance criteria and form the basis for the scope and focus of testing activities.

5.2.17.2 Testing

A test strategy defines an overall approach to testing. It can apply to an environment, a platform, a set of services, or an individual service. Testing should be carried out equally on both in-house developed systems and externally developed solutions. The test strategy is based on the service acceptance criteria, and should align with the requirements of appropriate stakeholders to ensure testing matches the risk appetite and is fit for purpose.

- **User acceptance test** The test performed by users of a new or changed system to approve a release.

Figure 5.36 shows the contribution of service validation and testing to the service value chain, with the practice being involved in all value chain activities except the plan activity:

- **Improve** Metrics of service validation and testing, such as escaped defects, test coverage, and service performance against SLAs are critical success measures required to improve CX and lower risk.
- **Engage** Involvement of some stakeholders in service validation and testing activities helps to engage them and improves visibility and adoption of the services.
- **Design and transition** Service design, knowledge management, performance management, deployment management, and release management are all tightly integrated with the service validation and testing practice.
- **Obtain/build** Service validation and testing activities are closely linked to all practices related to obtaining services from external service providers, as well as to project management and software development activities in both waterfall and Agile methods.
- **Deliver and support** Known errors are captured by service validation and testing and shared with the service desk and incident management practices to enable faster service restoration timeframes. Likewise, information regarding service disruption or escaped defects are fed back into service validation and testing.

Figure 5.36 Heat map of the contribution of service validation and testing to value chain activities

5.3 Technical management practices

5.3.1 Deployment management



Key message

The purpose of the deployment management practice is to move new or changed hardware, software, documentation, processes, or any other component to live environments. It may also be involved in deploying components to other environments for testing or staging.

Deployment management works closely with release management and change control, but is a separate practice. In some organizations the term 'provisioning' is used to describe the deployment of infrastructure, and deployment is only used to mean software deployment, but in this case the term deployment is used to mean

This allows users to control the timing of updates, and can be integrated with service request management to enable users to request software only when it is needed.

Components that are available for deployment should be maintained in one or more secure locations to ensure that they are not modified before deployment. These locations are collectively referred to as a definitive media library for software and documentation, and a definitive hardware store for hardware components.

Tools that support deployment are many and varied. They are often integrated with configuration management tools, and can provide support for audit and change management. Most organizations have tools for deploying client software, and these may be integrated with a service portal to support a request management practice.

Communication around deployments is part of release management. Individual deployments are not generally of interest to users and customers until they are released.

If infrastructure is provided as a service, then deployment of new or changed servers, storage, or networking is typically managed by the organization, often treating the infrastructure as a code, so that the organization can automate deployment. In these environments it is possible that some deployments may be under the control of the supplier, such as the installation of firmware updates, or they provide the operating system as well as the infrastructure they may deploy operating system patches. The IT organization must ensure that they know what

Figure 5.37 Heat map of the contribution of deployment management to value chain activities

If application development is provided as a service, then deployment may be carried out by the external application developer, by the in-house IT department, or by a service integrator. Again, it is essential that the organization is aware of all deployments so that a controlled environment can be maintained.

In an environment with multiple suppliers it is important to understand the scope and boundaries of each organization's deployment activities, and how these will interact. Most organizations have a process for deployment, and this is often supported with standard tools and detailed procedures to ensure that software is deployed in a consistent way. It is common to have different processes for different environments. For example, there may be one process for the deployment of client application software, and a completely different process for the deployment of server operating system patches.

Figure 5.37 shows the contribution of deployment management to the service value chain, with the practice being applied mainly to the design and transition, and obtain/build value chain activities, but also to the improve activity:

- **Improve** Some improvements may require components to be deployed before they can be delivered, and these should be planned and managed in the same way as any other deployment.
- **Design and transition** Deployment management moves new and changed components to their environments as it is a vital element of this value chain



Su: By the time the launch date arrived, we were ready to go. We made the cars available to hire that very day.



Henri: Partnering with our manufacturer meant we had a successful and well-prepared launch that created a buzz with our customers and with theirs.

5.3.2 Infrastructure and platform management





Key message

The purpose of the infrastructure and platform management practice is to oversee the infrastructure and platforms used by an organization. When carried out properly, this practice enables the monitoring of technology solutions available to the organization, including the technology of external service providers.

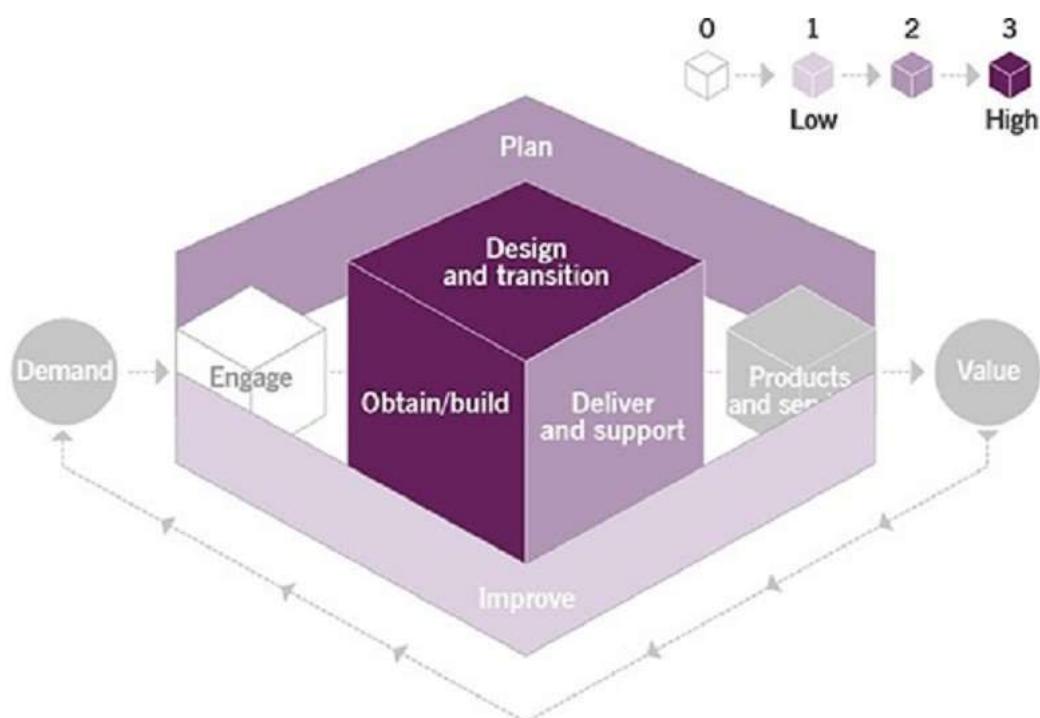


Figure 5.38 Heat map of the contribution of infrastructure and platform management to value chain activities

Figure 5.38 shows the contribution of infrastructure and platform management to the service value chain, with the practice being involved in all value chain activities except the engage activity:

- **Plan** Infrastructure and platform management provides information about

in the cloud infrastructure without having to control or even manage the underlying cloud infrastructure.

- Platform as a service (PaaS) The consumer can deploy onto the cloud acquired applications created using programming languages, services, libraries, and/or tools supported by the supplier without having to control or even manage the underlying cloud infrastructure. They have control over the deployed applications and sometimes the configuration settings for the application and hosting environment.
- Infrastructure as a service (IaaS) The consumer can get processing, storage and/or any other computing resources without having to control the underlying infrastructure.

Cloud service deployment models

Every service model can be deployed in several ways, either independently or using a mix of the following:

- Private cloud This type of cloud may be located within the organization's premises or outside of it. It is a cloud infrastructure or platform to be used exclusively by a specific organization which, at the same time, can have one or several consumers. This cloud is normally managed and owned by an organization, a provider, or a combination of both.
- Public cloud This type of cloud is located on the cloud provider premises. It

storage and IT services available at the touch of a button is one that many organizations struggle to deliver internally, not because the benefits are not there to be had, but rather because their own ITSM processes and controls have not been adapted to support a radically different way of working.

The management and control of IT services is a key skill of IT departments no matter where those services are physically located, and the processes and controls offered by ITIL are readily adaptable to support the management of those cloud services.

A coordinated response to the management of cloud services is essential. Organizations that attempt to address only a cloud service provision as an operational issue will suffer on the tactical front, just as an organization that attempts to control cloud services on a tactical front will suffer at the strategic level. A joined-up approach covering all three levels, strategic, tactical, and operational, is required.

Apart from the infrastructure and platform management practice, the operation and management of cloud-based services involves many other practices. It should be noted that this is not a comprehensive list:

- **Service financial management** One of the adjustments that IT departments often have to make for cloud computing is to their fiscal planning, which typically uses both traditional capital expenditure (CAPEX) and operational expenditure (OPEX). With the advent of cloud computing, OPEX is preferred over CAPEX, as cloud services are often consumed as utilities and paid out

changes to unlock the benefits that cloud platforms (and associated business models) provide.

- **Incident management** The focus of this practice will change from knowing how to fix in-house issues, to knowing which service is supported by which cloud provider, and what information they will require to resolve an issue. Greater care will be needed to support impacted customers and teams.
- **Deployment management** This practice will continue to be critical to IT departments, but the ability to safely onboard or offboard a cloud provider will become a common requirement for IT departments. Deployment management will be a key capability for successful IT organizations, to ensure new cloud capabilities are rapidly deployed and embedded within the in-house service offerings.

5.3.3 Software development and management



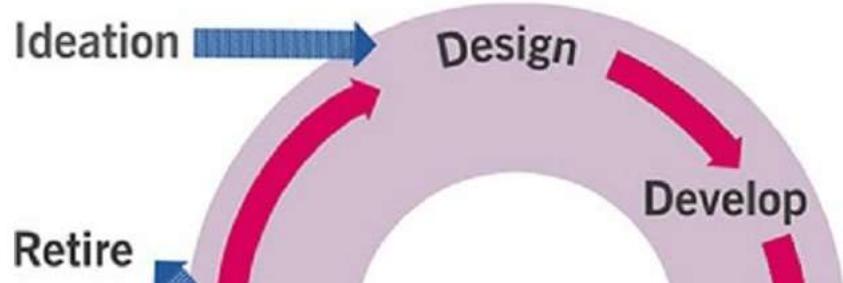
Key message

The purpose of the software development and management practice is to

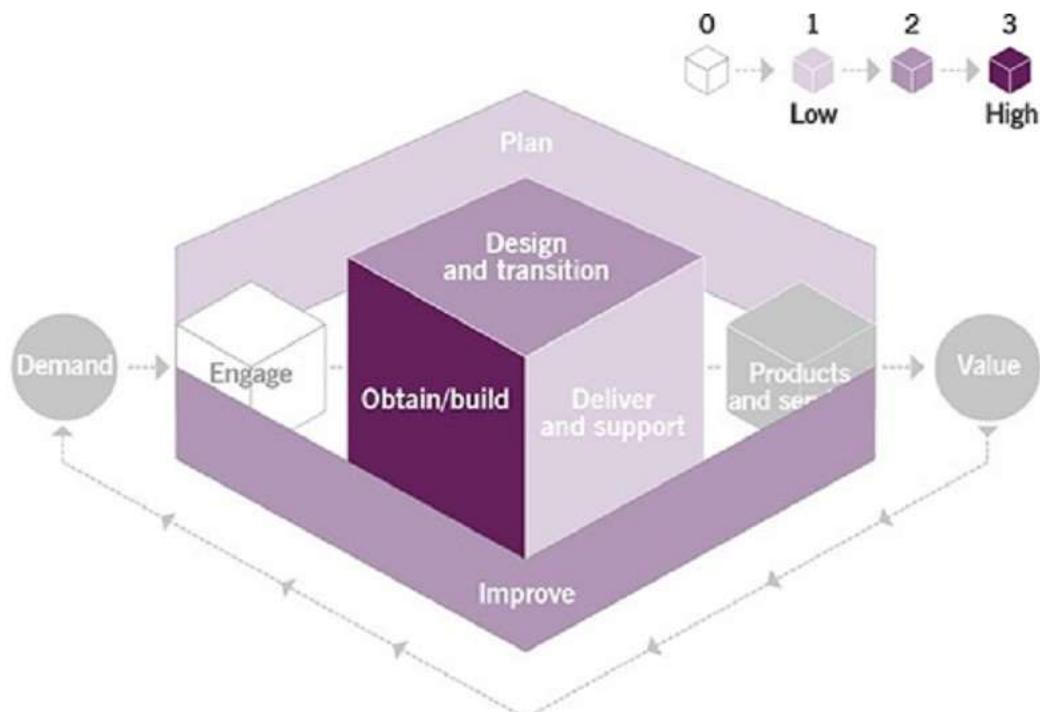
- software development
- software testing (which can include several components, such as unit testing, integration testing, regression testing, information security testing, and user acceptance testing)
- management of code repositories or libraries to maintain integrity of artefact
- package creation, for the effective and efficient deployment of the application
- version control, sharing, and ongoing management of smaller blocks of code.

The two generally accepted approaches to software development are referred to the waterfall and Agile methods (see section 5.1.8 for more information on these methods).

Software management is a wider practice, encompassing the ongoing activities of designing, testing, operating, and improving software applications so they continue to facilitate value creation. Software components can be continually evaluated throughout a lifecycle that tracks the component from ideation through to ongoing improvement, and eventually retirement. This lifecycle is represented in Figure 5



- **Design and transition** Software development and management allows the organization to holistically design and manage changes to products and services.
- **Obtain/build** The creation of in-house products and the configuration of products developed by partners and suppliers depend on this practice.
- **Deliver and support** Software development and management provides delivery and support teams with documentation needed to use products that facilitate the co-creation of value.



END NOTE

THE ITIL STORY, ONE YEAR ON

End note

The ITIL story, one year on

It has been a year since Henri joined Axle Car Hire. There has been significant positive change during this period. New services, such as biometrics and the advanced driver assistance system, are being widely adopted by Axle's consumer and the company continues to gain a reputation for fast and reliable service.

Customer loyalty has improved, with a large increase in the number of repeat

bookings. Axle has also been awarded Partner of the Year by two major clients, including Food for Fuel.

The Axle Green improvement initiative is well underway, with many targets to make the company more environmentally friendly already met. Efforts to make up half the Axle fleet with electric cars are also going well, and the company has made good progress towards hitting this target. Henri's vision to become the most recognizable car-hire brand in the world, offering a full travel experience, is within reach.

Axle sees how the concepts of ITIL are helping it to fulfil its objectives. The adoption and adaptation of ITIL guidance helps Axle to deliver high-quality services and create value streams.

APPENDIX A

EXAMPLES OF VALUE STREAMS

A Examples of value streams

This section demonstrates how the service value chain can be applied to practical situations and provides examples of value streams. These value streams show how activity might flow through the value chain. These are not models to be copied, but simply examples to give an understanding of how the value chain should be used.

The examples include some sample job roles. These are just roles that might exist in the fictional organization being described and are not recommended roles for every organization. To aid understanding, the first value stream is described in some detail; in subsequent examples only a table has been provided.

A.1 A user needs an incident to be resolved

In this first example of a value stream, the WiFi in a warehouse is not working properly because a wireless access point has failed. This has a significant impact on the business because the forklift driver cannot receive instructions quickly enough and as such there is a risk that a business deadline will be missed. This may seem like a relatively straightforward incident; however, it can't be resolved by simply mechanically following the steps of a predetermined incident management procedure.

times.

Table A.1 Value streams for incident resolution

| Value chain activity/ input/outcomes | Practices | Roles | Activities |
|---|---|--|---|
| Demand | | Warehouse manager, forklift driver | It is discovered that there is no WiFi coverage in one area of the warehouse. This means that the forklift driver needs to drive across the warehouse to pick up their instructions, causing delays and risking missed business deadlines. |
| Engage | Service desk, incident management | Warehouse manager, service desk agent | The warehouse manager phones the service desk and describes the issue. It is agreed that this is a Priority 2 incident, and the manager is notified of the expected resolution time. Information about this incident is logged by the service desk agent. |
| Deliver and support | Service desk, incident management | Service desk agent, network support engineer | The incident is rapidly escalated to the network support team. |
| Deliver and support, improve | Incident management, change control, service configuration management, IT asset management, continual improvement | Network support engineer | The network support engineer identifies that the wireless access point has failed and replaces it with a spare from the store. This is a standard change, so the engineer needs no additional approval. Information required to configure the new access point is obtained from the CMS. IT asset information is updated to show that this spare part has been consumed. The network engineer updates the incident management system and marks the case as resolved. The network engineer thinks about what happened and whether they could have predicted this issue or resolved it more quickly. |

| | | | |
|--------|-----------------------------------|---------------------------------------|---|
| Engage | Service desk, incident management | Service desk agent, warehouse manager | The service desk agent contacts the warehouse manager to check that everything is now working properly, then closes the incident. |
| Value | | Warehouse manager, forklift driver | WiFi coverage is restored and the forklift driver can now work efficiently. |

| Value chain activity/ input/outcomes | Practices | Roles | Activities |
|---|--|---|---|
| Demand | | Admin assistant | An admin assistant in an office is unable to enter an appointment in their calendar due to a bug in the software they are using. The software won't allow a non-standard character to be used in a room name. |
| Engage | Service desk, incident management | Admin assistant, service desk agent | The admin assistant phones the service desk and describes the issue. It is agreed that this is a Priority 3 incident, and the admin assistant is notified of the expected resolution time. Information about this incident is logged by the service desk agent. |
| Deliver and support | Incident management | Service desk agent | The service desk agent researches the vendor website and discovers that this particular issue is resolved in the latest version of the client software. |
| Deliver and support | Incident management, supplier management | Service desk agent, second-line support | The incident is escalated to second-line support. Second-line support checks the vendor contract, and the release notes for the client software. |
| Deliver and support, obtain/build, engage | Incident management, service request management, deployment management, service validation and testing | Second-line support, admin assistant | Second-line support contacts the user and arranges for them to test the new version of the client software to see if this resolves their issue. They then add this version to the service portal so that the user can install it. |
| Deliver and support | Incident management, service validation and testing, service request management | Admin assistant, service desk | The user installs the new version of the software using the service portal, and tests whether this resolves their issue. The service desk ensures that the user is satisfied with this solution. |
| Value | | Admin assistant | The software now works correctly and the user can add appointments to the calendar using non-standard characters in room names. |
| Engage, improve | Service desk, incident management, continual improvement | Admin assistant, service desk manager | A brief satisfaction survey is emailed to the admin assistant, which they complete and return. The scores are used to identify trends, and the comments are passed to the service desk manager for consideration. |
| Improve | Continual improvement, service validation and testing, service request management, release management, deployment management | Second-line support | Second-line support carries out more extensive testing of the new version of the client software before making it available to all users via the service portal. The upgrade to replace the previous version is then deployed in a controlled way. |

| Value chain activity/ input/outcomes | Practices | Roles | Activities |
|---|---|--|---|
| Demand | | Sales director, sales managers | The sales director and managers identify the need for a new website that allows customers to design and order personalized shoes. |
| Engage | Relationship management | Sales director, business relationship manager (BRM) | The sales director and BRM discuss the new website and agree to investigate the value, outcomes, costs, and risks of putting it in place to see if it is feasible. |
| Plan | Portfolio management, architecture management | BRM, IT strategy team, enterprise architect, development manager | The creation of the new service is discussed, and the costs and risks of various approaches are identified. This opportunity is prioritized above other work that is being done to decide if the resources are available to carry it out. |

| | | | |
|-----------------------------|---|--|--|
| Plan | Service financial management, risk management | Financial analyst, IT development manager, project management office | The potential costs and risks of various approaches are discussed and input is provided to portfolio management. |
| Engage | Relationship management | Sales director, BRM | The sales director and BRM discuss the expected value, outcomes, costs, and risks for the new service and agree that they want to continue. |
| Plan | Portfolio management | BRM, IT strategy team | The new service is added to the service portfolio and documented. |
| Plan, design and transition | Portfolio management, project management, service design | Project manager, development manager | The project manager and development manager start to plan the work needed to create the new service. People are assigned to do the necessary work. |
| Engage | Relationship management, project management, business analysis | Sales director, sales managers, business analysts, software development team | More detailed requirements for the utility and warranty of the first release of the new IT service are established. |
| Obtain/build | Software development and management, project management, service design | Software development team | The software development team build a backlog, identify the minimum viable product, and develop sufficient functionality that the business can review and comment on it. |
| Obtain/build, design | Software development and management, service validation and testing, service design | Software development team, BRM | The first iteration of the service is reviewed and feedback is used to refine the backlog. |

A.4 Regulatory change requires new software development

In this example a financial organization must get ready to meet new regulatory requirements.

Table A.4 Value streams for new software development

| Value chain activity/ input/outcomes | Practices | Roles | Activities |
|---|---|---|--|
| Demand | | Legal director, compliance manager | A number of IT services need to be updated to meet new regulatory requirements. |
| Engage | Relationship management | Legal director, compliance manager, CIO | The new regulatory requirements are discussed and it is agreed that a project will be created to manage the implementation. |
| Plan | Portfolio management, service financial management, risk management | CIO, IT strategy team, project manager, IT development manager | The costs and risks of various approaches are identified. Timescales and resources for the work are agreed. |
| Plan, engage, design and transition | Project management, service design, business analysis | Project manager, IT development manager, business analyst, product manager | Planning of the work begins. People are assigned to do the work. A communication plan is created and all staff who need to be involved are notified. |
| Obtain/build | Software development and management, service validation and testing, service design | Software development teams | Each software team manages a backlog and develops code for the areas assigned to them. Each team also develops tests for inclusion in the automated pipeline. |
| | | | All code is automatically integrated and tested twice a day, ensuring that code written by different teams works together. |
| Design and transition, engage | Project management, service design, service validation and testing | Project manager, IT development manager, software development teams, compliance manager | Release and deployment plans are discussed and agreed. The level of testing needed and who will authorize each deployment are agreed before deployment begins. |

| Value chain activity/ input/outcomes | Practices | Roles | Activities |
|---|-----------|-------|------------|
|---|-----------|-------|------------|

FURTHER RESEARCH

Further research

AXELOS publications

AXELOS (2018) *A Guide to AgileSHIFT™*. The Stationery Office, London.

AXELOS (2017) *Managing Successful Projects with PRINCE2®*. The Stationery Office, London.

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Goldratt, E. and Cox, J. (1992) *The Goal: A Process of Ongoing Improvement*. Norl

Websites

Agile Manifesto: <http://www.agilemanifesto.org>

COBIT® 2019: <http://www.isaca.org/Cobit/pages/default.aspx>

Cynefin Framework for decision making: <https://cognitive-edge.com>

International Organization for Standardization (ISO) 20000:
<https://www.iso.org/standard/70636.html>

Lean IT: <http://leanitassociation.com>

The IT4IT™ standards: <https://publications.opengroup.org/standards/it4it>

The Open Group Architecture Framework (TOGAF®) standards:
<https://publications.opengroup.org/standards/togaf>

The Standard + Case approach: applying Case management to ITSM:
<http://www.itskeptic.org/standard-case>

Three ways of DevOps: <https://itrevolution.com/?s=three+ways+of+devops>

GLOSSARY

Glossary

acceptance criteria

A list of minimum requirements that a service or service component must meet if it to be acceptable to key stakeholders.

Agile

An umbrella term for a collection of frameworks and techniques that together enable teams and individuals to work in a way that is typified by collaboration, prioritization, iterative and incremental delivery, and timeboxing. There are several specific methods (or frameworks) that are classed as Agile, such as Scrum, Lean, Kanban.

architecture management practice

The practice of providing an understanding of all the different elements that make up an organization and how those elements relate to one another.

asset register

A database or list of assets, capturing key attributes such as ownership and financial value.

business analysis practice

The practice of analysing a business or some element of a business, defining its needs and recommending solutions to address these needs and/or solve a business problem, and create value for stakeholders.

business case

A justification for expenditure of organizational resources, providing information about costs, benefits, options, risks, and issues.

business impact analysis (BIA)

A key activity in the practice of service continuity management that identifies vital business functions and their dependencies.

business relationship manager (BRM)

A role responsible for maintaining good relationships with one or more customers.

call

An interaction (e.g. a telephone call) with the service desk. A call could result in a new incident or a service request being logged.

call/contact centre

An organization or business unit that handles large numbers of incoming and outgoing calls and other interactions.

change control practice

The practice of ensuring that risks are properly assessed, authorizing changes to proceed and managing a change schedule in order to maximize the number of successful service and product changes.

change model

A repeatable approach to the management of a particular type of change.

change schedule

A calendar that shows planned and historical changes.

charging

The activity that assigns a price for services.

cloud computing

A model for enabling on-demand network access to a shared pool of configurable computing resources that can be rapidly provided with minimal management effort or provider interaction.

compliance

The act of ensuring that a standard or set of guidelines is followed, or that proper consistent accounting or other practices are being employed.

management.

configuration record

A record containing the details of a configuration item (CI). Each configuration record documents the lifecycle of a single CI. Configuration records are stored in configuration management database.

continual improvement practice

The practice of aligning an organization's practices and services with changing business needs through the ongoing identification and improvement of all elements involved in the effective management of products and services.

continuous deployment

An integrated set of practices and tools used to deploy software changes into the production environment. These software changes have already passed pre-defined automated tests.

continuous integration/continuous delivery

An integrated set of practices and tools used to merge developers' code, build and test the resulting software, and package it so that it is ready for deployment.

control

The means of managing a risk, ensuring that a business objective is achieved, or mitigating a threat.

customer experience (CX)

The sum of functional and emotional interactions with a service and service provider as perceived by a service consumer.

dashboard

A real-time graphical representation of data.

deliver and support

The value chain activity that ensures services are delivered and supported according to agreed specifications and stakeholders' expectations.

demand

Input to the service value system based on opportunities and needs from internal and external stakeholders.

deployment

The movement of any service component into any environment.

deployment management practice

The practice of moving new or changed hardware, software, documentation, processes, or any other service component to live environments.

design and transition

disaster

A sudden unplanned event that causes great damage or serious loss to an organization. A disaster results in an organization failing to provide critical business functions for some predetermined minimum period of time.

disaster recovery plans

A set of clearly defined plans related to how an organization will recover from a disaster as well as return to a pre-disaster condition, considering the four dimensions of service management.

driver

Something that influences strategy, objectives, or requirements.

effectiveness

A measure of whether the objectives of a practice, service or activity have been achieved.

efficiency

A measure of whether the right amount of resources have been used by a practice, service, or activity.

emergency change

A change that must be introduced as soon as possible.

event

Any change of state that has significance for the management of a service or other configuration item.

external customer

A customer who works for an organization other than the service provider.

failure

A loss of ability to operate to specification, or to deliver the required output or outcome.

four dimensions of service management

The four perspectives that are critical to the effective and efficient facilitation of value for customers and other stakeholders in the form of products and services.

goods

Tangible resources that are transferred or available for transfer from a service provider to a service consumer, together with ownership and associated rights and responsibilities.

governance

The means by which an organization is directed and controlled.

knowledge used to deliver services, and the information and technologies used to manage all aspects of the service value system.

information security management practice

The practice of protecting an organization by understanding and managing risks to the confidentiality, integrity, and availability of information.

information security policy

The policy that governs an organization's approach to information security management.

infrastructure and platform management practice

The practice of overseeing the infrastructure and platforms used by an organization. This enables the monitoring of technology solutions available, including solutions from third parties.

integrity

A security objective that ensures information is only modified by authorized personnel and activities.

feedback loop

A technique whereby the outputs of one part of a system are used as inputs to the same part of the system.

IT service

A service based on the use of information technology.

ITIL

Best-practice guidance for IT service management.

ITIL guiding principles

Recommendations that can guide an organization in all circumstances, regardless of changes in its goals, strategies, type of work, or management structure.

ITIL service value chain

An operating model for service providers that covers all the key activities required to effectively manage products and services.

Kanban

A method for visualizing work, identifying potential blockages and resource conflicts, and managing work in progress.

key performance indicator (KPI)

An important metric used to evaluate the success in meeting an objective.

knowledge management practice

maintainability

The ease with which a service or other entity can be repaired or modified.

major incident

An incident with significant business impact, requiring an immediate coordinated resolution.

management system

Interrelated or interacting elements that establish policy and objectives and enable the achievement of those objectives.

maturity

A measure of the reliability, efficiency and effectiveness of an organization, practice or process.

mean time between failures (MTBF)

A metric of how frequently a service or other configuration item fails.

mean time to restore service (MTRS)

A metric of how quickly a service is restored after a failure.

measurement and reporting

~~The practice of supporting good decision-making and continual improvement by measuring performance against agreed standards and targets.~~

modelling

The activity of creating, maintaining, and utilizing models.

monitoring

Repeated observation of a system, practice, process, service, or other entity to detect events and to ensure that the current status is known.

monitoring and event management practice

The practice of systematically observing services and service components, and recording and reporting selected changes of state identified as events.

obtain/build

The value chain activity that ensures service components are available when and where they are needed, and that they meet agreed specifications.

operation

The routine running and management of an activity, product, service, or other configuration item.

operational technology

The hardware and software solutions that detect or cause changes in physical processes through direct monitoring and/or control of physical devices such as valves, pumps, etc.

organizations and people

One of the four dimensions of service management. It ensures that the way an organization is structured and managed, as well as its roles, responsibilities, and systems of authority and communication, is well defined and supports its overall strategy and operating model.

outcome

A result for a stakeholder enabled by one or more outputs.

output

A tangible or intangible deliverable of an activity.

outsourcing

The process of having external suppliers provide products and services that were previously provided internally.

partners and suppliers

One of the four dimensions of service management. It encompasses the relationships an organization has with other organizations that are involved in the design, development, deployment, delivery, support, and/or continual improvement of services.

partnership

portfolio management practice

The practice of ensuring that an organization has the right mix of programmes, projects, products, and services to execute its strategy within its funding and resource constraints.

post-implementation review (PIR)

A review after the implementation of a change, to evaluate success and identify opportunities for improvement.

practice

A set of organizational resources designed for performing work or accomplishing objective.

problem

A cause, or potential cause, of one or more incidents.

problem management practice

The practice of reducing the likelihood and impact of incidents by identifying actual and potential causes of incidents, and managing workarounds and known errors.

procedure

A documented way to carry out an activity or a process.

outputs (or products) according to an agreed business case.

project management practice

The practice of ensuring that all an organization's projects are successfully delivered.

quick win

An improvement that is expected to provide a return on investment in a short period of time with relatively small cost and effort.

record

A document stating results achieved and providing evidence of activities performed.

recovery

The activity of returning a configuration item to normal operation after a failure.

recovery point objective (RPO)

The point to which information used by an activity must be restored to enable the activity to resume.

~~The point to which information used by an activity must be restored to enable an activity to operate on resumption.~~

recovery time objective (RTO)

The maximum acceptable period of time following a service disruption that can elapse before the lack of business functionality severely impacts the organization

and new services, which is made available for the user.

request for change (RFC)

A description of a proposed change used to initiate change control.

resolution

The action of solving an incident or problem.

resource

A person, or other entity, that is required for the execution of an activity or the achievement of an objective. Resources used by an organization may be owned by the organization or used according to an agreement with the resource owner.

retire

The act of permanently withdrawing a product, service, or other configuration item from use.

risk

A possible event that could cause harm or loss, or make it more difficult to achieve objectives. Can also be defined as uncertainty of outcome, and can be used in the context of measuring the probability of positive outcomes as well as negative outcomes.

service catalogue

Structured information about all the services and service offerings of a service provider, relevant for a specific target audience.

service catalogue management practice

The practice of providing a single source of consistent information on all services and service offerings, and ensuring that it is available to the relevant audience.

service configuration management practice

The practice of ensuring that accurate and reliable information about the configuration of services, and the configuration items that support them, is available when and where needed.

service consumption

Activities performed by an organization to consume services. It includes the management of the consumer's resources needed to use the service, service activation performed by users, and the receiving (acquiring) of goods (if required).

service continuity management practice

The practice of ensuring that service availability and performance are maintained at a sufficient level in case of a disaster.

service design practice

A documented agreement between a service provider and a customer that identifies both services required and the expected level of service.

service level management practice

The practice of setting clear business-based targets for service performance so that the delivery of a service can be properly assessed, monitored, and managed against these targets.

service management

A set of specialized organizational capabilities for enabling value for customers in the form of services.

service offering

A formal description of one or more services, designed to address the needs of a target consumer group. A service offering may include goods, access to resources and service actions.

service owner

A role that is accountable for the delivery of a specific service.

service portfolio

A complete set of products and services that are managed throughout their lifecycles by an organization.

service request

A request from a user or a user's authorized representative that initiates a service action which has been agreed as a normal part of service delivery.

service request management practice

The practice of supporting the agreed quality of a service by handling all pre-defined, user-initiated service requests in an effective and user-friendly manner.

service validation and testing practice

The practice of ensuring that new or changed products and services meet defined requirements.

service value system (SVS)

A model representing how all the components and activities of an organization work together to facilitate value creation.

software development and management practice

The practice of ensuring that applications meet stakeholder needs in terms of functionality, reliability, maintainability, compliance, and auditability.

sourcing

The activity of planning and obtaining resources from a particular source type, which could be internal or external, centralized or distributed, and open or

standard change

A low-risk, pre-authorized change that is well understood and fully documented, and which can be implemented without needing additional authorization.

status

A description of the specific states an entity can have at a given time.

strategy management practice

The practice of formulating the goals of an organization and adopting the course of action and allocation of resources necessary for achieving those goals.

supplier

A stakeholder responsible for providing services that are used by an organization

supplier management practice

The practice of ensuring that an organization's suppliers and their performance levels are managed appropriately to support the provision of seamless quality products and services.

support team

A team with the responsibility to maintain normal operations, address users' requests, and resolve incidents and problems related to specified products, services or other configuration items.

third party

A stakeholder external to an organization.

throughput

A measure of the amount of work performed by a product, service, or other system over a given period of time.

transaction

A unit of work consisting of an exchange between two or more participants or systems.

use case

A technique using realistic practical scenarios to define functional requirements and to design tests.

user

A person who uses services.

utility

The functionality offered by a product or service to meet a particular need. Utility can be summarized as 'what the service does' and can be used to determine whether a service is 'fit for purpose'. To have utility, a service must either support the performance of the consumer or remove constraints from the consumer. Ma

One of the four dimensions of service management. It defines the activities, workflows, controls, and procedures needed to achieve the agreed objectives.

vision

A defined aspiration of what an organization would like to become in the future.

warranty

Assurance that a product or service will meet agreed requirements. Warranty can be summarized as 'how the service performs' and can be used to determine whether a service is 'fit for use'. Warranty often relates to service levels aligned to the needs of service consumers. This may be based on a formal agreement, or it may be a marketing message or brand image. Warranty typically addresses such areas as the availability of the service, its capacity, levels of security, and continuity. A service may be said to provide acceptable assurance, or 'warranty', if all defined and agreed conditions are met.

warranty requirements

Typically non-functional requirements captured as inputs from key stakeholders other practices.

waterfall method

A development approach that is linear and sequential with distinct objectives for each phase of development.

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ITIL Foundation is the first book in the ITIL 4 suite of publications, the latest step in the evolution of best practice for IT service management. The ITIL framework for service management is recognized and adopted by corporations worldwide, and the guidance provided here can be adapted for all types of organization and service.

ITIL Foundation is suitable for a diverse audience, ranging from IT and business students taking their first steps towards a career in service management, through to seasoned professionals familiar with previous versions of ITIL. It describes the key concepts of service management, including the ITIL service value system, the service value chain, the four dimensions of service management, the ITIL guiding principles, and the ITIL management practices.

ITIL Foundation will:

- provide readers with a thorough understanding of the ITIL 4 service management framework and how it has evolved to incorporate modern technologies and ways of working
- explain the new holistic end-to-end view of service creation to support candidates studying for the ITIL 4 Foundation exam
- serve as a reference guide for industry best practice that practitioners can use in their work, further studies, and professional development.

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