



International Journal of Combinatorial
Optimization Problems and Informatics

E-ISSN: 2007-1558

editor@ijcopi.org

International Journal of Combinatorial
Optimization Problems and Informatics
México

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International Journal of Combinatorial Optimization Problems and Informatics, vol. 4, núm. 1, enero-
abril, 2013, pp. 54-64

International Journal of Combinatorial Optimization Problems and Informatics
Morelos, México

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ITIL, COBIT and EFQM: Can They Work Together?

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Abstract. Information Technology Governance and Service Management (ITGSM) is one of the priorities in organizations. In order to achieve it, it must be set the right policies for Information Technology (IT) Service and Processes Management (ITSM). One of the final objectives of any ITSM policy must be to guarantee an adequate quality of ITSM. In this sense, the use of action frameworks, e.g. Information Technology Infrastructure Library (ITIL) or Control Objectives for Information and Related Technologies (COBIT) are essential. However, in order to measure the quality, it is necessary to complement them with other frameworks, because they do not include the appropriate mechanisms. This paper proposes the use of two established frameworks ITIL and COBIT and the use of European Foundation for Quality Management (EFQM) model to measure the quality of services and processes.

Keywords: ITSM, IT Services Quality, COBIT, ITIL, EFQM.

1 Introduction

Organizations are often very dependent on their IT services and they do not only expect that these services support them. These IT services have to provide new options for achieving their objectives [19]. Various definitions of IT Governance have been proposed [20] in the literature. In 2001, the IT Governance Institute (ITGI) suggested that the “IT Governance is the responsibility of the Board of Directors and executive management. It is an integral part of enterprise Governance and consists of the leadership and organizational structures and processes that ensure that the organization’s IT sustains and extends the organization’s strategy and objectives”. Key to this definition is the notion of alignment of the IT with the Business also referred to as Strategic Alignment [20].

The evolution of IT organizations from technology providers into service providers requires taking a different perspective on IT management. IT Service Management puts the delivered services by IT at the centre of IT management and it is commonly defined [21] as “a set of processes that cooperate to ensure the quality of live IT services, according to the levels of service agreed with the customer.”

For the last decade, ITSM [1] has been known as the process and service-focused approach of what was initially known as IT Management. The shift of this management from infrastructure to processes has paved the way for the term IT Service Management as a process and a customer-focused discipline. Every process must have an objective. The aim of IT Service Management processes is to contribute to the quality of IT services. Quality Management and process control are part of the organization and its policies. If we were talking about company’s processes, ITIL’s final objective is that the product resulting from the production has a more consistent quality for consumer satisfaction [2]. ITIL provides a library of “best-practices” for IT Service Management.

ITIL defines a framework for ITSM. It is based on industry best practices and it indicates IT organization’s roadmap without clarifying the way to do it. With ITIL, it is up to the IT staff to flesh out the details of process flow and to create detailed work instructions.

Apart from ITIL, organizations are using other IT frameworks. IT Governance Institute (ITGI) helps ensure that boards and executive management have tools and information that they need for IT. COBIT framework is such tool. COBIT provides a high-level, comprehensive IT governance and control framework based on the harmonization of more than 50 IT good practice sources published by various international standard bodies, governments and other institutions [7].

Received Oct 5, 2012 / Accepted Dec 5, 2012

The quality of a service or product is another important topic: it is evaluated once it is provided. The quality can be defined as the ability to achieve the desired operational objectives. IT services are usually keys to organization's processes [4], thus quality of IT services and processes is necessary to measure, evaluate and improve. In this context, principles and quality management practices can be useful to meet these needs [16]. Therefore, the purpose of quality is to provide to the customer a suitable offer with controlled processes while ensuring that this improvement does not result in additional costs. It is possible to improve a large number of problems at a low cost. However, when the perfection is closer, the costs are higher.

ITIL and COBIT are complementary rather than competing. COBIT is a framework of policies, processes, procedures, and metrics that can give governance-related direction to IT operations and associated ITIL processes. Importantly, COBIT can help guide an organization in what should be covered in processes and procedures (whereas ITIL provides guidance on how the processes or procedures should be designed).

The important thing about ITSM and therefore ITIL or COBIT is to improve the quality of IT services. To see if it is achieved, the quality should be measured. But neither COBIT nor ITIL measures the quality, so it is necessary to use other methodologies. Authors proposed for this purpose the use of EFQM, because it is the best methodology to measure the quality [9]. EFQM is an advanced tool for improvement of organization based on principles of the Total Quality Management (TQM) [9]. The EFQM Model defines the guidelines and requirements, which must be fulfilled in each organization's areas. Simultaneously it is a tool for self-assessment of the organization and it is giving a picture of its strong sides and which can be improved [6, 10].

This paper presents the use of ITIL, COBIT and EFQM. When used together ITIL and COBIT, provide a top-to-bottom approach to IT governance and, thus, service management COBIT guides management's priorities and objectives within a holistic and complete approach to a full range of IT activities. ITIL supports this with best practices for service management. As a complement of ITIL and COBIT, this paper discusses also how using the EFQM model in an organization which has implemented ITIL + COBIT to measure the quality of their processes. In summary, ITIL provides the how for service management aspects, COBIT helps to define what should be done and EFQM defines and measures the how of quality improvement. Together, they can make a great combination for improving the quality of IT service.

The outline of this paper is as follows: Sections 2 and 3 describe ITIL and COBIT frameworks respectively. Section 4 defines EFQM standard. Sections 5 and 6 provide the relationships between ITIL and EFQM and COBIT and EFQM; finally section 7, based on these frameworks and standards, a comprehensive framework will be proposed.

2 ITIL v3 Overview

ITIL was created by the UK's Office of Government Commerce (OGC) to organize IT management in the public sector. ITIL is now managed by the Information Technology Service Management Forum (ITSMF). One of the main goals of ITIL is to transform IT departments into service-oriented organizations.

Service management is a set of specialized organizational capabilities for providing value to customers in the form of services [14].

At present ITIL is the most widely accepted approach to IT Service Management in the world. It has an iterative, multidimensional and lifecycle from structure.

The Service Management Lifecycle is described in five core books described in Table 1: Service Strategy (ST), Service Design (SD), Service Transition (ST), Service Operation (SO) and Service Continual Improvement (SCI). The lifecycle emphasizes the need for development and operations to be integrated throughout the lifecycle.

Table 1. ITIL v3 Overview

Book	Description
Service Strategy (ST) [14]	Provide guidance on how to design, develop and implement service management, whilst providing direction for growth not only as organizational capability, but as a strategic asset. Processes: <ul style="list-style-type: none"> • Financial Management • Service Portfolio Management • Demand Management
Service Design (SD) [11]	Provide guidance to design appropriate and innovate IT services, including their architectures, processes, policies and documentation, to meet current and future agreed business requirements. Processes: <ul style="list-style-type: none"> • Service Catalogue Management • Service Level Management • Capacity Management • Availability Management • Information Security Management • Supplier Management • IT Service Continuity Management
Service Transition (ST) [15]	Provide guidance on delivering services that are required by the business into operational use by releasing and deploying service changes through controlled planning, testing, evaluation and minimization of risk. Processes: <ul style="list-style-type: none"> • Change Management • Service Asset and Configuration Management • Release and Deployment Management • Knowledge Management • Service Validation and Testing • Evaluation
Service Operation (SO) [13]	Provide guidance to coordinate and carry out the activities and processes required to deliver and manage services at agreed levels to business users and customers by the ongoing management of the technology that it is used to deliver and support services. Processes: <ul style="list-style-type: none"> • Incidence Management • Event Management • Problem Management • Access Management • Request Fulfilment
Continual Service Improvement (CSI) [12]	Provide guidance on maintaining the value for customers through the continual evaluation and improvement of the quality of services and overall maturity of ITSM service lifecycle and underlying processes.

ITIL provides IT processes, but is not strong in IT quality measurement. It is often used as the delivery mechanism, where it describes how.

3 COBIT 4.1 Overview

COBIT is a set of best practices (framework) for information technology management created by the Information Systems Audit and Control Association (ISACA), and the ITGI in 1992. COBIT was released and used primarily by the IT community. Later Management Guidelines were added, and COBIT became the internationally accepted framework for IT governance and control [8].

COBIT provides managers, auditors, and IT users with a set of generally accepted measures, indicators, processes and best practices to assist them in maximizing the benefits derived through the use of information technology and developing appropriate IT governance and control in a company.

In its version 4.1, COBIT has 34 high-level processes that cover 210 control objectives categorized in four domains: Plan and Organize (PO), Acquire and Implement (AI), Deliver and Support (DS) and Monitor and Evaluate (ME). Each of these domains is described in Table 2.

Table 2. COBIT 4.1 Overview

Domain	Description
Plan and Organize (PO)	<p>This domain provides directions to solutions' delivery (AI) and service delivery (DS).</p> <ul style="list-style-type: none"> • PO1. Define a Strategic IT Plan and Direction. • PO2. Define the Information Architecture. • PO3. Determine Technological Direction. • PO4. Define the IT Processes, Organization and Relationships. • PO5. Manage the IT Investment. • PO6. Communicate Management Aims and Direction. • PO7. Manage IT Human Resources. • PO8. Manage Quality. • PO9. Assess and Manage IT Risks. • PO10. Manage Projects.
Acquire and Implement (AI)	<p>This domain provides the solutions and passes them on to be turned into services in the next domain.</p> <ul style="list-style-type: none"> • AI1. Identify Automated Solutions. • AI2. Acquire and Maintain Application Software. • AI3. Acquire and Maintain Technology Infrastructure. • AI4. Enable Operation and Use. • AI5. Procure IT Resources. • AI6. Manage Changes. • AI7. Install and Accredite Solutions and Changes.
Deliver and Support (DS)	<p>This domain receives the solutions and makes them usable for end users.</p> <ul style="list-style-type: none"> • DS1. Define and Manage Service Levels. • DS2. Manage Third-party Services. • DS3. Manage Performance and Capacity. • DS4. Ensure Continuous Service. • DS5. Ensure System Security. • DS6. Identify and Allocate Costs. • DS7. Educate and Train Users. • DS8. Manage Service Desk and Incidents. • DS9. Manage the Configuration. • DS10. Manage Problems. • DS11. Manage Data. • DS12. Manage the Physical Environment. • DS13. Manage Operations.
Monitor and Evaluate (ME)	<p>This domain monitors all processes to ensure that the direction provided is followed.</p> <ul style="list-style-type: none"> • ME1. Monitor and Evaluate IT Processes. • ME2. Monitor and Evaluate Internal Control. • ME3. Ensure Regulatory Compliance. • ME4. Provide IT Governance.

COBIT provides IT controls and IT metrics. COBIT is oriented toward the objectives and scope of IT governance, ensuring that its control framework is comprehensive, in alignment with organization governance principles but it is not strong in IT quality measurement.

4 EFQM Overview

As it is described before in this paper, ITIL and COBIT does not include mechanisms to evaluate the reference quality levels or measurement of quality improvement, so it is interesting to use ITIL and/or COBIT with one of the Models of Excellence in Management, as proposed by the European Foundation for Quality Management EFQM.

EFQM was introduced at the beginning of 1992 as the framework for assessing organizations for the European Quality Awarded.

EFQM is the model Excellence Assessment currently most widely used by European organizations [3], [6], [18] and one of the most popular today [9].

An important advantage of the EFQM self-assessment is its quantitative character, in other words, its result can be compared against other organizations and it can be compared to previous assessments of same organization or between different business units within the same organization.

The EFQM Excellence Model is applied by thousands of European organizations to improve their management systems. It covers all the most important organization's functional areas, and it defines exactly what requirements should be fulfilled in these areas. Thanks to this described before, the Model serves as a complex tool of self-assessment and its aim is simultaneously the example of excellence to follow, taking into account the suitable activities in each distinguished areas. Self-assessment informs to the organization about its strong sides as well as permits to identify areas, which should be improved [5]. It permits on many ways of approach to achieve the permanent excellence in all aspects of the organization activity.

The EFQM Excellence Model consists of nine criteria, which are divided, in two groups: Enablers criteria and Results criteria. First criteria deal with what the organization does and they refer to causal factors whose effects take form in the second criteria. The criteria about results are about the organization achieves. The results are the consequence of enablers and enablers are improved using feedback from results [18].

The criteria are not only interrelated within each group: they are related within the whole model. Each criterion is composed by different sub-component (32 sub-criteria in total), and they are deployed on different elements to consider too.

Part of EFQM criteria and sub-criteria are enumerated in Table 3. Because it is a theoretical and generic study, criteria Customers, People, Society and Key Performance Results cannot be evaluated because it is necessary to apply the EFQM model to a specific organization to check if they are doing a good work or not to improve their quality.

- Leadership. This criterion explores the activities and behaviours of the leadership.
- Policy and Strategy. This criterion explores how the organization develops, implements and reviews its strategy in line with stakeholders' needs and expectations.
- People. This criterion examines how the organization manages, develops and releases the potential of its people, in order to support strategy and the effective operation of its processes.
- Partnership and Resources. This criterion evaluates how the organization manages partnership and resources in order to support strategy and effective operation of its processes.
- Processes. This criterion assesses how the organization manages its processes, products and services in order to ensure the full satisfaction of its stakeholders.

Table 3. EFQM Sub-criteria

EFQM criteria	EFQM sub-criteria
Leadership	<p>1a. Leaders develop the mission, vision and values and are role models of a culture of excellence.</p> <p>1b. Leaders are personally involved in ensuring the organization's management system is developed, implemented and continuously improved.</p> <p>1c. Leaders are involved with customers, partners and representatives of society.</p> <p>1d. Leaders motivate, support and recognize the organization's people.</p> <p>1e. Leaders identify and master organizational change.</p>
Policy and Strategy	<p>2a. Policy and strategy are based on the present and future needs and expectations of stakeholders.</p> <p>2b. Policy and strategy are based on information from performance measurement, research, learning and creativity related activities.</p> <p>2c. Policy and strategy are developed, reviewed and updated.</p> <p>2d. Policy and strategy are deployed through a framework of key processes.</p> <p>2e. Policy and strategy are communicated and implemented.</p>
People	<p>3a. People resources are planned, managed and improved.</p> <p>3b. People's knowledge and competencies are identified, developed and sustained.</p> <p>3c. People are involved and empowered.</p> <p>3d. People and the organization have a dialogue.</p> <p>3e. People are rewarded, recognized and cared for.</p>
Partnership and Resources	<p>4a. External partnerships are managed.</p> <p>4b. Finances are managed.</p> <p>4c. Buildings, equipment & materials are managed.</p> <p>4d. Technology is managed.</p> <p>4e. Information and knowledge are managed.</p>
Processes	<p>5a. Processes are systematically designed and managed</p> <p>5b. Processes are improved, as needed, using innovation in order to fully satisfy and generate increasing value for customers and other stakeholders.</p> <p>5c. Products and services are designed and developed based on customer needs and expectations.</p> <p>5d. Products and services are produced, delivered and serviced.</p> <p>5e. Customer relationships are managed and enhanced.</p>

5 ITIL Related To EFQM

Organizations looking to adopt ITIL need to establish a quality process to ensure success. ITIL does not include mechanisms to evaluate the reference quality levels or measurement of quality improvement, so it is interesting to use ITIL with one of the Models of Excellence in Management, as proposed by the European Foundation for Quality Management EFQM (<http://www.efqm.org>). EFQM is such process that brings additional benefits to ITIL.

As it is described in [17], there are some relationships between ITIL processes and EFQM criteria. In [17], it is measured the quality of processes in the implementation of ITIL in an organization using the EFQM model. For this purpose, it is showed a proper correlation of ITIL processes and EFQM criteria. Thus the authors say that if an organization implements ITIL, some questions that EFQM model raises to obtain EFQM Excellence are covered.

Both ITIL as EFQM models, have as one of its basic principles and requirements to study and analyze processes. Both include and promote the process approach as an important element for obtaining efficient results because it allows and requires its measurement and improvement [17]. But there are also some differences like EFQM is concerned with the quality of general business processes (TQM) and ITIL is concerned with IT-Services (ITSM).

This relationship can be showed in Table 4. Some comments about this table:

- Because it is a theoretical and generic study, criteria Customers, People, Society and Key Performance Results cannot be evaluated because it is necessary to apply the EFQM model to a specific organization to check if they are doing a good work or not to improve their quality.

- Since ITIL is composed by different processes, these processes must be well documented and optimized (processes and procedures manuals, service catalogue, ...), therefore, this criterion (5. Processes) of EFQM, there is a good relationship with all processes in ITIL.

Table 4. Compare ITIL to EFQM

ITIL	EFQM
Financial Management (SS)	2b, 3a, 4a, 4b
Service Portfolio Management (SS)	1d, 4a, 4d
Demand Management (SS)	1b, 1c, 2a, 2b, 2c, 4a
Service Catalogue Management (SD)	1a, 1d, 4a, 4d
Service Level Management (SD)	1a, 4b
Capacity Management (SD)	1b, 2c, 3b, 4b, 4c
Availability Management (SD)	3b, 4c
Information Security Management (SD)	2d, 4c, 4e
Supplier Management (SD)	1c, 4a
Change Management (ST)	1b, 1c, 1e, 2d, 4d
Knowledge Management (ST)	1a, 1b, 1e, 2b, 2d, 3a, 3b, 3c, 3d, 3e, 4a, 4b, 4e
Service Validation and Testing (ST)	2d
Evaluation (ST)	1b, 2b, 2c, 2d, 4c, 4d
Incidence Management (SO)	2c, 4c
Event Management (SO)	4c
Problem Management (SO)	2c, 4c
Access Management (SO)	4c
Service Strategy Service Design Service Transition Service Operation	5a, 5b, 5c, 5d, 5e

As ITIL bets by the best process management to achieve the best quality results of IT services to customers, people and society in general, EFQM can help to get these quality results (as it is showed in Table 4): different EFQM sub-criteria can be applied to the different ITIL processes to measure its quality and to evaluate if it is necessary to improve it.

The innovative aspect of ITIL is that it focuses on the processes of the Model EFQM excellence in quality from the perspective of the life cycle of IT services (Strategy, Design, Transition, Operation and Continual Service Improvement).

6 COBIT Related To EFQM

COBIT and EFQM can be valuable for organization targets. Implementers should use COBIT for metrics, benchmarks and audits and EFQM to assess the organization excellence and to measure the quality.

COBIT can be used at the highest level, providing an overall control framework based on an IT process model that should suit every organization generically. EFQM is not a specific IT framework but it can be applied for the assessment and evaluation of quality levels of the organization. Applying EFQM, one organization can measure its quality about IT services and how this quality can be improved.

The purpose of this section is to analyze and describe COBIT and EFQM mapping for improved performance, value transparency and to evaluate the reference quality levels or measurement of quality improvement. To better understand mapping amongst COBIT and EFQM, each of the 34 COBIT Control Objectives has been mapped to EFQM sub-criteria. If there is a mapping between a Control Objective and sub-criteria, it is shown in next figures.

Mapping between PO (Plan & Organize), AI (Acquire & Implement), DS (Deliver & Support) and ME (Monitor & Evaluate) Control Objectives and EFQM sub-criteria are displayed in Figures 1, 2, 3 and 4. These figures represents what EFQM sub-criteria can be applied to each process to measure its quality and if it can be improved. If there is relation between any Control Objective/process with any EFQM sub-criterion, there is a “grey square”.

COBIT PO	EFQM sub-criteria																									
	1a	1b	1c	1d	1e	2a	2b	2c	2d	2e	3a	3b	3c	3d	3e	4a	4b	4c	4d	4e	5a	5b	5c	5d	5e	
PO1																										
PO2																										
PO3																										
PO4																										
PO5																										
PO6																										
PO7																										
PO8																										
PO9																										
PO10																										
TOTAL																										

Fig. 1. Plan and Organize Control Objectives and EFQM sub-criteria.

As it is showed in the previous figure (Figure 1), all COBIT Control Objectives of Plan and Organize domain can be complemented by some sub-criterion EFQM to measure their quality. Only sub-criteria 1c, 2b, 2d, 2e, 4a and 5e are not applicable to this domain (see TOTAL row in Figure 1).

COBIT AI	EFQM																								
	1a	1b	1c	1d	1e	2a	2b	2c	2d	2e	3a	3b	3c	3d	3e	4a	4b	4c	4d	4e	5a	5b	5c	5d	5e
AI1																									
AI2																									
AI3																									
AI4																									
AI5																									
AI6																									
AI7																									
TOTAL																									

Fig. 2. Acquire and Implement Control Objectives and EFQM sub-criteria.

For Acquire and Implement Domain, there are not so much connections between its Control Objectives and EFQM (see Figure 2). In this sense, only sub-criteria 1c, 1e, 4c, 4e and 5a can be applied to AI Domain. In the other hand, there are two Control Objectives (AI7 and AI5) in which there is not any EFQM sub-criterion to map. This is the worst domain to apply EFQM.

COBIT DS	EFQM																								
	1a	1b	1c	1d	1e	2a	2b	2c	2d	2e	3a	3b	3c	3d	3e	4a	4b	4c	4d	4e	5a	5b	5c	5d	5e
DS1																									
DS2																									
DS3																									
DS4																									
DS5																									
DS6																									
DS7																									
DS8																									
DS9																									
DS10																									
DS11																									
DS12																									
DS13																									
TOTAL																									

Fig. 3. Deliver and Support Control Objectives and EFQM sub-criteria.

In this domain (Deliver and Support), there are not many relations between it and EFQM sub-criteria (Figure 3). For instance, criterion 3 (People) cannot be applied to Deliver and Support to improve their quality. Criterion 5 (Processes) can be applied to this domain to measure and to improve their quality.

COBIT ME	EFQM																								
	1a	1b	1c	1d	1e	2a	2b	2c	2d	2e	3a	3b	3c	3d	3e	4a	4b	4c	4d	4e	5a	5b	5c	5d	5e
ME1																									
ME2																									
ME3																									
ME4																									
TOTAL																									

Fig. 4. Monitor and Evaluate Control Objectives and EFQM sub-criteria.

7 Conclusion

ITIL, COBIT and EFQM can be valuable for organization targets. Implementers should use ITIL to define strategies, plans and processes, use COBIT for metrics, benchmarks and audits.

Whilst ITIL and COBIT were created from different perspectives and by different entities, the Office of Government Commerce (OGC) and ISACA/ITGI respectively, there is substantial commonality. Importantly, it should be recognized that both COBIT and ITIL provide guidance on a range of good (or best) practices for IT Service Management (ITSM).

IT best practices need to be aligned with business requirements and integrated with one another and with internal procedures. COBIT helps to define what should be done and ITIL provides the how for service management aspects. COBIT can be used at the highest level, providing an overall control framework based on an IT process model that should generically suit every organization. Specific practices and standards such as ITIL cover discrete areas and can be mapped to the COBIT framework, thus providing a hierarchy of guidance materials.

ITIL and COBIT are complementary rather than competing. COBIT is a framework of policies, processes, procedures, and metrics that can give governance-related direction to IT operations and associated ITIL processes. Importantly, COBIT can help guide an organization in what should be covered in processes and procedures (whereas ITIL provides guidance on how the processes or procedures should be designed).

When implemented properly, both COBIT and ITIL provide the necessary framework of good practices that enable an IT organization to clearly align itself with the goals of the business, manage its resources to enable those goals through the optimized delivery of information needed by the business, and the deliver IT services and provide for their direct support.

But ITIL neither COBIT include mechanisms to evaluate the reference quality levels or measurement of quality improvement, so combining them with EFQM, one organization can measure its quality about IT services and how this quality can be improved.

ITIL, COBIT and EFQM (to measure and evaluate the quality) relationships are described below in Table 5.

Table 5. Compare ITIL, COBIT and EFQM

ITIL	COBIT	EFQM
Financial Management (SS)	PO1, PO5, DS6	2b, 3a, 4a, 4b
Service Portfolio Management (SS)	PO1, PO4, PO5, DS1, DS6	1d, 4a, 4d
Demand Management (SS)	PO1, PO8, DS1	1b, 1c, 2a, 2b, 2c, 4a
Service Catalogue Management (SD)	PO4, DS1, DS6	1a, 1d, 4a, 4d
Service Level Management (SD)	PO4, PO8, AI2, AI5, DS1, DS2, ME1	1a, 4b
Capacity Management (SD)	PO3, AI1, DS1, DS3, DS13	1b, 2c, 3b, 4b, 4c
Availability Management (SD)	DS3, DS4	3b, 4c
Information Security Management (SD)	AI3, DS5	2d, 4c, 4e
Supplier Management (SD)	AI5, DS2	1c, 4a
Change Management (ST)	PO4, AI6	1b, 1c, 1e, 2d, 4d
Knowledge Management (ST)	PO2, AI4	1a, 1b, 1e, 2b, 2d, 3a, 3b, 3c, 3d, 3e, 4a, 4b, 4e
Service Validation and Testing (ST)	PO8, AI3, AI7, ME1	2d
Evaluation (ST)	PO9, AI6, AI7	1b, 2b, 2c, 2d, 4c, 4d
Incidence Management (SO)	DS8	2c, 4c
Event Management (SO)	DS3, DS8, DS13	4c
Problem Management (SO)	AI2, AI4, DS10	2c, 4c
Access Management (SO)	DS5	4c

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