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Synthesis of Elements of Digital Library Service Management on International Standard

Kanita Saengkrajang* & Namon Jeerungsuan

Faculty of Technical Education, King Mongkut's University of Technology North Bangkok, Bangkok 10800, Thailand

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Abstract

This research intends to synthesize data collected on elements of Digital Library Service Management on International Standard. The researcher compiled relevant research that meets the standards of and referenced in ITIL 2011: Information Technology Infrastructure Library and Cobit 5: Control Objectives for Information and Related Technology, being the standard for information technology services management. The intention is to meet policy goals and to meet target goals and the institution's strategy, help reduce risk occurrence and increase efficiency of information technology processes to meet user requirements as necessary for the continued running processes of the information technology aspects of the digital library into the future. This research applies Content Analysis to provide information of digital library service components with international standards. The result of the synthesis is that to 5 service components relevant to the stated goals as defined by the standardized metrics; 1) Digital Library Service Strategy: DLSS 2) Digital Library Service Design: DLSD 3) Digital Library Service Transition: DLST 4) Digital Library Service Operation: DLSO 5) Digital Library Continual Service Improvement: DLCSI.

Introduction

Currently, the Institution of Education's digital library provides an online service to increase service potential. Each library provides a curated resource service, stores subject matter and connects it to digital resources, including videos, audio and text as the method of searching and accessing the information to allow the user to connect with the information resources they require and share the resources they have, providing access to the communication network through

information technology and the opportunity for all users to access the information resources equally. For example, e-books services, journals, information resources research, education resources, and online question and answer services. The library provides and manages a digital database for library services (Sun, & Yuan, 2012) consisting of two parts; 1) printed media, for example, books, journals and thesis, and 2) electronic media, referring to information in a digital format, or information that may be recorded in a digital format altered to facilitate storage by the digital library, for example,

journal databases, ThaiLis database, academic journal databases, education support databases, knowledge databases, are online digital resource research tools and knowledge support tools that are provided to allow users to achieve the highest possible benefits from education and research. (Chen & Lin, 2014) This effectively enables the digital library to introduce information technology systems through good processes as a service tool to meet information technology user requirements.

Digital library service provision according to world standards to develop best practice based on what is held to be important for the development of the same, consist of the following:

1. ITIL 2011: Information Technology Infrastructure Library compiling knowledge recognized as world-standard developed by Central Computer and Telecommunication Agency: CCTA is an organization under the government of England which became the United Kingdom's Office of Government Commerce: OGC (Ahmad & Shamsudin, 2013) ITIL 2011 compiles knowledge recognized at a global standard, and was developed by CCTA, an organization under the government of England which then became United Kingdom's OGC (Mayla, Emmanuel & Noel, 2017) focused on providing services and processes with quality and has been internationally accepted as best practice for information technology structures from service provision institutions to practical applications as the standard for organizations updating to provide information technology services. The beginning of IT development is cooperation between private and government entities meeting together to solve problems in service provision quality. Accordingly, the regulation of information technology principles occurred between 1992-1998 distributing the first IT version, ITIL Version 1 and in 2000-2004 distributed ITIL Version 2 and in 2007 distributed ITIL Version 3 (Barros, et al., 2015) After this, in 2011, version 3 was updated to increase variety of information technology service providers by separating service processes (Pultorak & Associates, 2011) into the following 5 process; 1) Service Strategy 2) Service Design 3) Service Transition 4) Service Operation 5) Continual Service Improvement

Table 1 ITIL 2011 processes and functions across the lifecycle

Service Strategy (SS)	Service Operation (SO)
1. Strategy Management	1. Event Management
2. Service Portfolio Management	2. Incident Management
3. Financial Management	3. Request Fulfillment
4. Demand Management	4. Problem Management
5. Business Relationship Management	5. Access Management
Service Design (SD)	Service Transition (ST)
1. Design Coordination	1. Transition Planning and Support
2. Service Catalogue Management	2. Change Management
3. Service Level Management	3. Service Asset and Configuration Management
4. Availability Management	4. Release and Deployment Management
5. Capacity Management	5. Service Validation and Testing
6. IT Service Continuity Management	6. Change Evaluation
7. Information Security Management	7. Knowledge Management
8. Supplier Management	
Continual Service Improvement (CSI)	
Seven-Step Improvement	

2. Cobit 5: Control Objectives for Information and Related Technology, being an information technology standard aligned with good governance principles developed in the year of 1992 with The Information Systems Audit and Control Association: ISACA and Information Technology Governance Institute: ITGI is the current caretakers. It is a suite of intra-organizational information technology management processes, covering risk and practical application regulated according to information technology regulations, it is a tool used in good IT Governance. (Kusumah & Rosmansyah, 2014) Cobit was developed from a base of several practices with different techniques and methods for efficiency of information technology internal control. (Information Systems Audit and Control Associations, 2013) comprising of 5 processes, separated into different domains, containing the following processes 1) Align Plan and Organise (APO) 13 processes 2) Build, Acquire and Implement (BAI) 10 processes 3) Deliver Service and Support (DSS) 6 processes 4) Monitor, Evaluate and Assess (MEA) 3 processes 5) Evaluate, Direct and Monitor (EDM) 5 processes.

Table 2 Cobit 5 processes and functions across the lifecycle

Align, Plan and Organise (APO)	Build, Acquire and Implement (BAI)
1. Manage the IT Management Framework (APO1)	1. Manage Programmers and Projects (BA11)
2. Manage Strategy (APO2)	2. Manage Requirements Definition (BA12)
3. Manage Enterprise Architecture (APO3)	3. Manage Solutions Identification and Build (BA13)
4. Manage Innovation (APO4)	4. Manage Availability and Capacity (BA14)
5. Manage Portfolio (APO5)	5. Manage Organizational Change Enablement (BA15)
6. Manage Budget and Costs (APO6)	
7. Manage Human Resources (APO7)	
8. Manage Relationships (APO8)	

Table 2 (Continued)

Align, Plan and Organise (APO)	Build, Acquire and Implement (BAI)
9. Manage Service Agreements (APO9)	6. Manage Changes (BAI6)
10. Manage Suppliers (APO10)	7. Manage Change Acceptance and Transitioning (BAI7)
11. Manage Quality (APO11)	8. Manage Knowledge (BAI8)
12. Manage Risk (APO12)	9. Manage Assets (BAI9)
13. Manage Security (APO13)	10. Manage Configuration (BAI10)
Deliver, Service and Support (DSS)	Monitor, Evaluate and Assess (MEA)
1. Manage Operations (DSS1)	1. Monitor, Evaluate and Assess Performance and Conformance (MEA1)
2. Manage Service Requests and Incidents (DSS2)	2. Monitor, Evaluate and Assess the System of Internal Control (MEA2)
3. Manage Problems (DSS3)	3. Monitor, Evaluate and Assess Compliance With External Requirements (MEA3)
4. Manage Continuity (DSS4)	
5. Manage Security Services (DSS5)	
6. Manage Business Process Controls (DSS6)	
Evaluate, Direct and Monitor (EDM)	
1. Ensure Governance Framework Setting and Maintenance (EDM1)	
2. Ensure Benefits Delivery (EDM2)	
3. Ensure Risk Optimization (EDM3)	
4. Ensure Resource Optimization (EDM4)	
5. Ensure Stakeholder Transparency (EDM5)	

If observed from the perspective of what world standards consider important, increasing developmental capabilities is commonly considered certification criteria or requirement in world standards when building a quality service for digital libraries for unity, connection, communication and resource accessibility. By integrating different standards as part of best practice methodology as part of an organization or institute's operating systems enables achievement of goals set by the organization. Digital libraries in Thailand are not found to have service management on an international standard, but are found to have only standard libraries that focus on budget management, personnel, information resources, buildings, facilities and equipment, network services and general library quality assessment. As such, the researcher realized that studying the world standards of digital libraries for the development of services appropriate to organizations can solve problems directly. This synthesis of components using assessable and analyzable base needs of users relevant to their use of digital libraries and their interaction with information technology processes.

Objectives

To synthesis elements of service provision aspects of Digital Library Service Management based on the International Standard.

Research Methodology

This research applies content analysis as the method for summarizing any form of content by various aspects of the content. By systematically evaluating texts (e.g., document international standard, and research paper) to provide information of digital library service components with international standards., To achieve the digital library service management to be based on the international standard, the five main components are: (1) Digital Library Service Strategy: DLSS (2) Digital Library Service Design: DLSD (3) Digital Library Service Transition: DLST (4) Digital Library Service Operation: DLSO (5) Digital Library Continual Service Improvement: DLCSI. And in terms of the digital library service management to be based on international standard the tool of synthesizing elements of services of digital library service management to be based on an international standard form.

Results

The results of this synthesis can be applied to standardized best practice methodology, passed two best practice standards, being 1) ITIL 2011: Information Technology Infrastructure Library from the United Kingdom's Office of Government Commerce: OGC (Cannon, 2013; Hunnebeck, 2013; Steinberg, 2013; Rance, 2013; Lloyd, 2013; National Science and Technology Development Agency: NSTDA, 2017) and 2) Cobit 5: Control Objectives for Information and related Technology from The Information Systems Audit and Control Association : ISACA and Information Technology Governance Institute: ITGI (Information Systems Audit and Control Associations, 2012, 2013) according to the details in Table 3

2.1 Design Coordination: Project and event coordination within the digital library strategy system to align these with the digital library service design, for example, digital library systems, structures and architecture.

2.2 Service Catalogue Management and Service Level Management: Creating information technology service provision tables, or information systems within the digital library, to clearly identify services and responsibilities of service providers and identify agreements or service contracts between digital library operators in inter-organizational interactions, digital library users, and service providers.

2.3 Availability Management and Capacity Management: Detailed service specifications and potential requirement levels by observation of incidents affecting digital library services, in order to improve readiness according to predetermined agreements, and future-proofing digital library service systems against unusual events, for the service to meet the needs of the digital library.

2.4 IT Service Continuity Management: Detailing roles and continual service operation of the digital library, to ensure continual operation of information systems against disaster or unusual operation events, decreasing losses for the organizations.

2.5 Information Security Management: Management of system services security for the digital library and specifying safety policies, for example, investigation and analysis, for use in the preservation of the safety of the digital library in the future.

2.6 Supplier Management: Service provider level and quality specifications, in order that operation of the digital library receives quality services from providers who are ready and appropriate to the needs of the organization.

3. Digital Library Service Transition: DLST

3.1 Transition Planning and Support: Coordination of resources to the service management of the digital library and needs specifications in order to prevent risk occurring from process changes.

3.2 Change Management: Standardized stepwise process specifications for urgent and non-urgent procedures for clarity of operation, with adjustments made to cover different aspects of the digital library.

3.3 Service Asset and Configuration Management: Specification of digital library service installation values for confidence in information network construction parameters, being maintained, monitored

and operated within the set values.

3.4 Manage Change Acceptance and Transitioning: Development planning and management within the digital library, for confidence in adjustments made on important services. Planning of digital library service testing to ensure alignment with user needs and specification of good operation level when changing operations with testing and assessments of operation procedures according to user needs.

3.5 Knowledge Management: Knowledge management, or knowledge management within the work group servicing the digital library, by recording problems within the database for educational purposes.

4. Digital Library Service Operation: DLSO

4.1 Event Management: in which caretakers can construct their own service systems, using predictive analysis to anticipate critical problems before they happen.

4.2 Incidents and Requests Management: Digital library service system incident management. Encouraged to use low risk systems. Self-reliant users, or Self Service systems, to reduce work for the Service Desk.

4.3 Problem Management: Problem solving database structure service system for use in the digital library in dealing with frequently occurring problems, able to decrease the effects of unusual operating events, identify cause of the problems and fix them as they arise.

4.4 Access Management: Holistic access management, denying unauthorized access.

5. Digital Library Continual Service Improvement: DLCSI

5.1 Seven-Step Improvement: Specifying digital library system update methodology to maintain continual updates, to regulate adjustments made during the service cycle.

Discussion

This synthesis of elements and terms of Digital Library Service Management on International Standard found similarities in digital library operation standards, differing only in the importance attached to different procedures and service provision procedures according to the different organizations. The standard had 21 methods, with characteristics of note being, importance attached to service provision processes and quality of the same, extensively considered to be best practice in line with digital library operation, in accordance to

information technology good governance quality principles to respond to continuing user needs. The results of the component synthesis are a methodology that the Institute of Education can use as data to assist in standardizing operation procedure of the digital library and assist in operating the digital library according to world standards, with efficiency, improving problem solving and decision making.

Suggestion

Results of synthesis data collected on elements of Digital Library Service Management on International Standard to IOC: Index of Item Objective Congruence and selection of Elements and Terms of Digital Library Service Management on International Standard is appropriate to create a Digital Library Service Model for International Standard in accordance with international standards accepted by the expert group.

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