

Applying ITIL Based Software Inside University's ICT Centre toward Continual Service Improvement

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ABSTRACT

ITIL (Information Technology Infrastructure Library) is a framework consists of best practices for IT service management. University as an educational institution that has the IT infrastructure, need to improve the quality of service. Adoption of ITIL in a university aims realizing Continual Service improvement (CSI) especially in IT service management. There are many open source software, comply with ITIL framework that can be used to manage the IT services. One of the software, namely osTicket, is based on open tickets and can be used free of charge will be used as case study in this paper.

This article was written based on best practice in the implementation of osTicket version 1.6 at Ahmad Dahlan University. Existing IT services are presented into three major groups of services, namely Information Systems, Networks & Communication group and Website & Social Media Group. Data obtained from the implementation will be used to develop a knowledge base service system. Additionally, the implementation of osTicket version 1.6 can give us some information about utilization of ICT services and an overview of user behavior in utilize ICT infrastructure. But unfortunately, osTicket version 1.6 should be replaced with version 1.7 to display the knowledge base at user's initial page.

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1. INTRODUCTION

IT (Information Technology) infrastructure is a critical item in supporting business requirements. IT provides essential services for the organization to support its business. The organization should manage both their IT technology and employ best practices processes to optimize IT services. This is the focus of IT Infrastructure Library (ITIL) and IT Service Management (ITSM) [1].

University as an educational institution must always improve the quality of IT management to align with organizational goals. Adoption of ITIL in a university aims to improve the quality of ICT services, reduce operating costs, improve user satisfaction, and increased productivity. In other word, this framework will helpful in realizing Continual Service improvement (CSI).

There are many open source software, comply with ITIL framework that can be used to manage the IT services, i.e. osTicket, OTRS, Trellis Desk etc. One of the software, namely osTicket, is based on open tickets and can be used free of charge will be used as case study in this paper [4].

University of Ahmad Dahlan (UAD) is a private university located in Yogyakarta has more than 500 staffs. Most of UAD's staff using computer and network to do their daily jobs. All of IT infrastructures are managed by ICT center, called BISKOM (stands for Biro Sistem Informasi dan Komunikasi).

This article was written based on best practice in the implementation of osTicket version 1.6 at IT Centre of Ahmad Dahlan University. This implementation served as SPOC (Single Point of Contact). Existing IT services are presented into three major groups, namely Information Systems group, and Networks

& Communication group and website group. The management of IT services in Ahmad Dahlan University should be improving from manual (phone based system) to software based system.

Complaint handling of IT services has been done manually. The user sends a report via telephone, SMS and email. Incoming reports directly handled by the technician, but not recorded in an orderly manner. There are some complaints were forgotten so the services impressed slowly. Additionally, Biskom does not have any daily activity documentation that must be shown when internal auditing is conducted.

Under these conditions, we need a system to manage the IT services. The system that needed is an open ticket system, without a user name and password and can be accessed by all users of all campus locations. This improvement aims to make easier for incident handling and documentation. Data obtained from this implementation will be used to understand information about utilization of IT services and an overview of user behavior in utilize IT infrastructure. Once the report is obtained, it can be seen how many incidents are handled properly, how many are not handled as well as how long it takes to complete each of these incidents. Furthermore, the quality of IT services will be improved continuously.

Additionally, the data also will be used to develop a knowledge base service system. Furthermore, this knowledge base will be displayed at helpdesk's website. This knowledge base will be managed as FAQ (Frequently Asked Question) format, so that it can be accessible by all users as a clue to solve their technical issues surrounding ICT.

1.1. ITIL & ITSM

ITIL (Information Technology Infrastructure Library) is a framework consists of best practices for IT service management, to realize the IT services that focus on aligning IT services with the needs of the institution [1]. On the other hands, ITIL is simply a set of practices that people just like you have documented because they work well. ITIL is not a document how to do things. It simply documents what can and should be done. ITIL focuses on the measurements that are performed continuously to develop, enhance and improve the quality of IT services both from a business and customer perspective [2].

ITIL has a service lifecycle, consists of 5 stages. As depicted at figure 1, the service lifecycle are started from **creating a strategy** for services to be built, making the **design of the IT services** that will be developed, aligning IT services with the organization will be running, **doing the implementation** of the IT services and finally perform **improvement within IT services** that have been built. There are some specific processes to finalize each stage of this lifecycle [2], [3].



Figure 1. ITIL service lifecycle [3].

ITSM (Information Technology Service Management) is a set of process based on ITIL standards to enable and optimize IT services in order to satisfy business requirements and manage the IT infrastructure both tactically and strategically. Most ITSM implementation methods provide solutions that comprise services, in whole or in part, for all major ITIL Service Delivery and Service Support areas. ITSM implementation methods are designed with multiple-entry points where numerous primary ITIL areas in various phases of initiation or completion and can be accomplished in parallel. ITSM concern on balancing about four aspects of IT infrastructure namely process, partner/supplier, people, product/technology, and known as **4P**.

1.2 Services & Service Desk

A service means delivering some values to costumers by facilitating outcomes customers want to achieve without the ownership to specific costs and risks. Service has a variety of form and sizes to suit the business needs of an organization [2].

Service Desk, sometimes called as helpdesk, serves as the single point of contact (SPOC) between the service provider and users. The main goal of the service desk is as a bridge of communication between service providers and users. The service desk manage the incident (incident management), service request (fulfillment management), questions and feedback (compliments and complaints).

Service desk implementations vary in each organization. There are some service desk structures, namely *Local Service Desk*, *Centrals Service Desk* and *Virtual Service Desk*. One of the other is not comparable, which one is better or better than the other. In fact, some organizations combine service desk structure an others provide multiple levels of Service Desk. Many organizations use a “follow the sun” technique to provide service desk [2].

To realize the Service Desk, it takes a piece of software with some features supporting the ITIL processes. Some of the features that needs are:

- **Service Desk** – The single point of contact between IT Users and IT Service Management
- **Incident Management** – The process to restore IT services as fast as possible to ensure little disruptions
- **Problem Management** – The process to resolve root cause of incidents and identify known errors [4]

1.3 OsTicket

OsTicket is open source ITIL based helpdesk system software. This software can be used by organizations as key enablers to their ITIL processes [4]. This software is available for free, can be found at the official web site <http://osticket.com/>. User just need a web server that supports PHP and MySQL database and mail account from which user would like to read tickets. Tickets can be created directly in this system. Customers can any time access them and view whole conversation. osTicket have some features, some of them are described at table 1 below [5].

Table 1. Some of osTicket features

Item	Description
Web-based Platform	Web-based multi-user customer support platform. No local installation required
Auto responder	Configurable automatic reply sent out when a new ticket is opened or a message is received
Role-based Access	Control staff's access level based on assigned groups, departments and teams
Ticket Assignment	Assign tickets to a staff or a team. Assignment notes are logged as internal notes
Email Templates	Manage and configure email templates used for auto-reply, alerts, notices and responses. Ticket variables supported for personalized messages.
Service Level Agreements	SLA supports allow you to track tickets and due dates without the hassle. Get overdue alerts and notices on missed due dates, and priority escalation
Knowledge Base	Searchable FAQs and help documents portal for users and staff.
Customer Portal	All support requests and responses are archived online. User can login using email and ticket ID. No user account or registration required to submit a ticket.
Email Integration	Tickets can be created via email, online forms or phone (created by staff). Flexible configuration and mapping
Ticket Transfer	Transfer tickets between departments to make sure it's being handled by the correct staff.
Alerts & Notices	Staff and clients are kept up to date with email alerts. Configurable and flexible settings
Ticket Filters	Apply conditional rules to route incoming tickets to the right departments or staff members, and action triggers

2. RESEARCH METHOD

This research is about osTicket's implementation to realize a SPOC as a service desk to manage IT services at UAD. OsTicket is configured to utilize some of the features described in Table 1, and also follow the ITIL service lifecycle. This paper focused at Service Operation stage especially incident management, and also restricted to the incidents of Networks & Communication group

Below are the implementation steps:

- **SERVICE STRATEGY** : as an internal unit, Biskom provide IT services to align UAD's requirement

- SERVICE DESIGN : the services are defined and then grouped into three main groups, according the department name of BISKOM, to provide service catalog, namely:
 - Information System Applications : Financial, Digital Library, Academic and Scheduling.
 - Networks & Communication : Printer, PC Desktop, Networking, LCD Projector, Laptop & Netbook, Telephoni, Windows App., Monitor
 - Web & Social Media : Email, website and blog
- SERVICE OPERATION :
 - Incident management :
 - Identification and Logging: submitted by staff and lecturer as the client of SPOC
 - Categorization and Prioritization : submitted via input screen and assign to the staff automatically
 - Investigation & Diagnosis : manually by technicians
 - Incident Closure : Closing ticket after confirmation
 - Setting – features :
 - Web-based Platform : OSTicket is installed under Apache and MySQL, can be accessed by URL (http://helpdesk.uad.ac.id)
 - Auto responder : User will receive e-mail notification after sending a ticket directly.
 - Role-based Access : Each staff is configured to be a member of their department
 - Ticket Assignment : Each opening ticket will be forwarded to staff at each department and the manager directly.
 - Service Level Agreements : Each opening ticket will be answered within 2 x 24 hours
 - Knowledge Base : Presented as FAQ to guide user find the solution of their incident
 - Alerts & Notices : Each staff will received email notification when a new ticket is opened
 - Ticket Filters : Every closed ticket is analyzed to get the trend
- SERVICE TRANSITION :
 - Release and Deployment Management: socialization SPOC to the academic community, namely staff, lecturer and also several level of leader.
 - Knowledge management :
 - Observation and handling incidents during the treatment duration from January to April 2013
 - Analysis of incident, restricted to the incidents of Networks & Communication group
 - Organize incidents experience as Knowledge base in FAQ format
- CONTINUAL SERVICE IMPROVEMENT :
 - Observe the OSTicket report to grab user behavior and how long incident can be solved

3. RESULTS AND ANALYSIS

3.1 Screen Capture And Number Of Incidents

Main feature of SPOC application with OSTicket is a open new ticket screen for user as depicted at figure 2.

The screenshot shows the 'Open a New Ticket' form. The header includes 'HelpDesk Center' and 'BISKOM SMP MELAYU ANIDA'. The navigation bar has 'Support Center BISKOM', 'FAQs', 'Buka Tiket Baru', and 'Cek Progres / Status Tiket'. The form fields are: Full Name (Tawar), Email Address (tawar@uad.ac.id), Telephone (05132001972 Ext: 1225), Help Topic (BISKOM-Tekni Printer), Subject (rinta bocor), and Message (Cartridge printer error, rinta bocor Printer Canon MP 258). A CAPTCHA test shows 'CE542' and 'CE542'. Buttons for 'Create Ticket', 'Reset', and 'Cancel' are at the bottom.

Figure 2. Screen capture of Open New Ticket

The screenshot shows the 'Frequently Asked Questions' page. The header is the same as Figure 2. The page has a search bar and a dropdown menu for 'All Help Topics'. Below, it lists categories: Jaringan/LAN dan Hotspot (4), Komputer Desktop (3), LCD Projector (2), and Printer (4). Each category has a brief description of the documents available.

Figure 3. Screen capture of FAQ's page

Figure 3 is a capture about FAQ's page, presented to guide the user to get the solution of their incident. Briefly, number of incident that occurred from January to April 2013 are shown in Table 2, detailed at table 3a & 3b.

Table 2. Number of incidents during 2013, January – April

Subgroups	Tahun 2013				Sum of incidents	%
	Jan	Feb	Mar	Apr		
Printer	27	7	4	20	58	45%
PC Desktop	8	4	5	13	30	23%
Network	3	4	5	8	20	16%
LCD Projector		2	3	5	10	8%
Laptop & Netbook	1		1	2	4	3%
Telephon	2	1			3	2%
Windows App.			1	2	3	2%
Monitor	1				1	1%
Number of Incidents	42	18	19	50	129	100%

Meanwhile, the highest number of incidents in detail are shown at table 3(a-d) below :

Table 3. Incidents with highest number in detail

a. Incidents about printer

Printer's Problem	Incidents	%
Refill Inkjet Printer	27	47%
Printer Error	7	12%
Color Cartridge trouble	6	10%
Refill Laserjet Printer	4	7%
Failed Printing	3	5%
Paper Jam	3	5%
Driver Installation	2	3%
Sharing Printer	2	3%
Setup New Printer	1	2%
printout is not clear (vary)	3	6%
Number of incidents	58	100%

b. Incidents about PC Desktop

PC Desktop's Problem	Incidents	%
PC Death/Err	10	34%
Reinstall OS	5	17%
Setup New Pc	3	10%
Mouse / Keyboard Trouble	1	10%
Pc Running Slowly	2	7%
Part Of Mainboard Damage	1	3%
Vga Error	1	3%
Power Supply Fan Is OFF	1	3%
Reinstall Ms Office	1	3%
PC Can Not Startup	1	3%
Setup New Speaker	1	3%
Network OFF	1	3%
Number of incidents	30	100%

3.2 Analysis

Table 2 and table 3a-b are obtained from OSTicket's database, as the result of Service Operation stage. Table 2, shows the infrastructures with the highest number of incident, namely printer, PC Desktop, network and LCD Projectors sequentially. The printer with the highest number of incidents suggests that high levels of printer usage. This condition contributes to the high use of paper, in this case means not meet the paperless paradigm.

Most of reported incidents are simple, like **Refill Inkjet Printer** (table 3a). Users should be able to resolve these incidents with small guidance from technicians. But this time all incidents are reported and resolved by technicians, so the technicians workload is high enough and incident resolution time is sometimes long.

Completion of incident experience, can be organized into technical instructions document and displayed on the screen of helpdesk application as product of knowledge management process. This document will be useful for all users to solve their technical issues surrounding ICT.

It is expected to help accelerate incident resolution and reduce the workload of technicians. But unfortunately, osTicket version 1.6 can not display knowledge base at the client screen, it should be replaced with version 1.7 to display the knowledge base at user's initial page.

4. CONCLUSION

The SPOC based on osTicket which has been implemented at UAD, can help BISKOM in managing IT and make some activity documentations. Experience in solving problems, have been documented into a knowledge base in a FAQ format. This FAQ has been featured on the initial page of SPOC website, it can be used by any user to help solving some simple problems around IT. The FAQ that has been created should be socialized as a guidance to solve the incidents.

With the display of this FAQ, means there is a service improvement in managing IT, namely shortens troubleshooting time will reduce the workload of BISKOM's staff, because the simple incidents can be solved by them self. Additionally, the high levels of printer usage indicates that user behavior does not fully comply with paperless paradigm, contradictory with global policy. Under this condition, UAD should take care about its staff's behavior about paperless.

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