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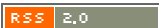
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Using COBIT-19 to Create Information Assurance of COVID-19 Application

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Abstract - In the new era of covid-19 Pandemic, there is some COVID-19 Alert system which record patients exposed to covid-19 in around the world and also each provinces of Indonesia. The research goal is to make model to audit the COVID-19 Alert System with the issue of information assurance. The proposed model offers the audit assessment model to calculate the capability system in the perspective of Information Assurance. The method of assessment model is based on COBIT 2019 and also ISO / IEC 15504-2:2003 about requirement for performing Software Process Assessment. The result is the audit model equipped by the design factor for assessment model of COVID-19 Alert System, some process activities of audit and chosen mapping of control objectives to alignment goals for enterprise architect and auditor.

Keywords: Assessment, COBIT 2019, Covid-19, assurance

1.   Introduction

The goal of this research is to propose audit model for COVID-19 Alert System. There are some COVID-19 applications around the world, especially in Indonesia which inform the recent information about the spread of corona virus disease. The information is very crucial and must be had guarantee that the information always reliable. The mental response also appears in user when they follow the information, panic can be happened inevitably. The source of information must be monitored by government, the update cycle of information should be appropriate to figure the condition of people who sufferer, recover or die from COVID-19.

Some research has done the software process assessment using ISO/IEC 15504 [1] [2] and other research by Paulk comparing the ISO/IEC 15504 with capability maturity model of software [3]. The audit problem [4] in pandemic alert system which is sometimes not consider as a big problem is the tracking of information change. The information is crucial and have to update as soon as the data source is changed, but the problem should be considered is how to validate the information and who is man in charge who has accountability to the data or information change [5]. ISO/IEC 15504 has been proven to improving software improvement in Brazil [6], and also the Software Process Improvement in applying IT Service Management systematically for gaining best practice [7].

Public Health England (PHE) advices people who travel to another country should pay attention to condition of COVID-19 at the destination country, it is hard if they have not COVID-19 Alert System to know the condition of COVID-19. Research of Zhang et.al [8] make interviews with passengers arriving at London Heathrow Airport on scheduled flights from China and Singapore in January and February 2020. UK lunched COVID-19 Alert System in the form of app for England and Wales in March and September, 2020 [9]. The same as UK, West Java, Province of Indonesia lunched COVID-19 Alert System named PIKOBAR in March 2020 and developed new version in December 2020 [10]

2. Research Methodology

The method of this research to make audit model for COVID-19 Alert System is by approaching qualitatively using audit method from COBIT 2019 such as method approach using Design Factor, mapping of Enterprise goal to IT Goal, and Stakeholder analysis. The addition of ISO/IEC 15504 applied on Design Factor in COBIT 2019. The research from Stallinger [11] shows the successful of integrating ISO/IEC 15504 with organisation enhancement, and the research from Miranda [12] shows the method of audit Infrastructure using COBIT.

2.2. COBIT 2019

COBIT 2019 is published by ISACA in 2019, which developed from COBIT 5. COBIT 2019 help enterprise to achieve strategy by applying IT Control [13]. The new things of COBIT 2019 from former COBIT are the factor design, more control objectives and mapping from International Standards like ISO/IEC 27001:2013 about IS Security and ISO/IEC 38500:2015 about IT Governance into control objectives. From factor design in COBIT 2019, Enterprise Architect or DevOps can see the problem should be solve to improving capability of the system. This is also the tools to make audit assessment, beside using IT Control for performance metrics.

2.2. ISO/IEC 15504

This a standards usually used to improving software process and capability. The step of improving is derived from maturity model from process lifecycle standard. Like COBIT 5, the former COBIT made by ISACA, ISO/IEC 15504 proposes a concept of deliverables which is also as evidence of maturity level [14]. In COBIT 5, we know as Process Assessment Model (PAM), the model of evident of every process stage which be used in assessment maturity level process [15]. However, in ISO/IEC 15504 we know it as reference model, which contained two dimensions, i.e., process dimension and capability dimension. The process dimension defines processes divided into the five process categories of: (1)customer-supplier, (2) engineering, (3) supporting, (4) management and (5) organization.

1.1. COVID-19 Alert System

There are many COVID-19 Alert System in the kind of app which can be download freely or in the kind of open sourced. The most features provided by COVID-19 Alert System generally are Your Status (likelihood of getting COVID-19) and COVID-19 Update. Some app of COVID-19 Alert System are COVID Alert Canada, COVID Alert South Africa, COVID Alert NY, Combat COVID, CRUSH COVID. Indonesia has COVID -19 App such as PIKOBAR for West Java which has ability to track red zone, spread cheque data, COVID-19 Patient who is in under treatment, recovered or died, also information for COVID-19 Call Center in each district. Beside the information assurance issue, the COVID-19 Alert System should make cautious to every single change in developing new version of app or system. Sometime the legacy system of alert system is more powerful than the new version. The new version is merely focus on reliable data and forget the nature of client orientation. This the part of ISO 15504 in maintaining the client orientation. The new version as PIKOBAR Ver. 2.2.3 has been lunched in December 2020 [16] and has new features such as West Java Data, National Data, Distribution Checks, Cyber Hoax, Contact Tracking Features. The new version maintains the legacy features like COVID-19 self-check, teleconsultation, and health reports.

2.3. Experiment Method to Design Proposed Model

Two components in designing method, there are audit process as nature and factor design based on COBIT 2019. To audit the COVID Alert system, we design some audit process from Control Objective of COBIT 2019 which also the Control Objective from COBIT 5. The proposed process is based on the problem about how to make information assurance and to validate the information change. And from COBIT 2019 there is eleven Factors Design of IT Governance.

3. Result and Discussion

Based on experiment method there are some activities designed according to COBIT 2019. The activities is based on the audit experience and the common rule in IT Audit for assessment

3.1. Process and activities of Management Practice

The result of activities of Management is based on interview data as shown in Table 1

Table 1. Proposed activities of audit process

No	Audit Process Control	Activities
1	BAI06.03 Track and Report change status	1. Categorize change requests in the tracking process (e.g. Rejected, approved but not yet initiated, approved and in process, and closed) 2. Implement change status report with performance metrics to enable management review and monitoring of both the detailed status of changes and the overall state (e.g. aged analysis of change requests). Ensure that status report form an audit trail so changes can be subsequently be tracked from inception to eventual disposition 3. Monitor a tracking and reporting system for all change request

		4.	Maintaining a tracking and reporting system for all change request

The activities consider the change management, the accuracy, mental of panic and tracking of authorization in data change. Some research has more focus on accuracy and reliable data. This research shows the proposed activities to be concern to make sure the information assurance can be established as one of Auditor responsibility.

3.2. Strategy According to Factor Design
From feasibility study we can proposed some strategy for each factor Design of COBIT 2019 and shown in Table 2

Some point in Table 5 is added from ISO 15504 like client orientation in point 2-4. The information should be assured, authorized and use high reliability IT Infrastructure.

3.3. Mapping Alignment Goals and Control Objectives
The Table 3 is made by basic assumptions as Enterprise Architect who design the IT Control for governing the information and data obviously. This mapping is expressed using the following primary (P) and secondary (S) relationships: The value "P" indicates there is an important relationship, i.e., the COBIT 5 process is a primary support for the achievement of an IT-related goal. The value "S" indicates there is still a strong, but less important, relationship,

4. Conclusion
1. The proposed Audit model for COVID-19 Alert System has been made in the forms of Audit Activities; Factor Design and Strategy; mapping alignment of *Alignment Goals dan Control Objectives*
2. The COBIT 2019 and ISO/IEC 15504 make more clearly to improve the software capability especially for alert system or pandemic application

Table 2. Factor Design for software company to govern alert system

No	Factor Design	Strategy
1.	Enterprise Strategy	• Client Stability: company has focus to provide Stabil service and client orientation
2.	Enterprise Goal	• Information Quality • Client orientation culture

3.	Risk Profile	• Management of Information quality • Skill of staff • Compliant to internal policy, Indonesia IT regulation • Digital Transformation • Product Innovation • Information Life Cycle • IT Skill • Incident Infrastructure Management • Unauthorize Act • Hardware Failure • Third party incident • Data and Information Management
4.	IT-Related Issue	• Service delivery issues by IT suppliers • Significant I&T-related incidents, such as data loss, security breaches, project failures, and application errors, related to IT • Insufficient IT resources, staff with insufficient skills, or exhausted / dissatisfied staff • Complex IT operating models and / or unclear decision mechanisms for IT-related decisions • Stunted or failed implementation of new initiatives or innovations caused by currents IT architecture and systems • Routine problems with data quality and data integration across multiple sources
5.	Threat Landscape	• Normal Threat
6.	Compliance Requirements	• Normal compliance Requirements
7.	Role of IT	• Strategic: IT is essential for running and innovating an organization's business processes and services.
8.	Sourcing model for IT	• Hybrid of cloud and insource. Because of accountability reason, outsource still not used
9.	IT Implementation Methods	• DevOps Methods
10.	Technology Adoption Strategy	• Companies generally adopt new technology as early as possible and try to gain first mover advantage.
11.	Enterprise Size	• Medium Size

Table 3. Mapping Alignment Goal and Objective for COVID-19 Alert System

Contr ol	Detailed of Control Objective	Alignment Goal				
		Enablin g and	Quality of IT	IT Compl	Comp etent	Kno wled

Objective		supporting business process by integrating application and technology	management information	iance with Internal Policy	and motivated staff with mutual understanding of technology and business	ge expertise and initiatives for business innovation
EDM 01	Ensure governance framework settling and maintenance	S	---	S	---	---
EDM 02	Ensure benefit delivery	S	---	---	---	S
EDM 04	Ensure resource optimization	S	---	---	S	---
EDM 05	Ensure Stakeholder engagement	---	---	P	S	---
APO 01	Manage IT Management Framework	S	S	P	---	---
APO 03	Manage enterprise architecture	P	---	---	---	---
APO 07	Manage Human Resources	---	---	---	P	P
APO 11	Manage Quality	---	P	---	---	---
APO 12	Manage Risk	---	---	---	---	---
APO 14	Manage Data	---	P	---	---	---
BAI0 2	Manage Requirement Definition	P	S	---	---	S
BAI0 4	Manage Availability and Capacity	---	P	---	---	S
BAI0 6	Manage Change	S	S	S	---	S
BAI0 7	Manage Change Acceptance and Transition	P	S	S	---	S
BAI1 08	Manage Knowledge	---	S	---	S	P
DSS 02	Manage Service Request and Incident	---	S	S	S	S
DSS 04	Manage Continuity	S	P	S	S	S
DSS 05	Manage Security Service	S	S	S	---	---
MEA 01	Monitor, Evaluate and Assess Performance and Conformance	---	S	P	S	S
MEA 04	Manage Assurance	---	S	P	---	---

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