

## Designing Security Testing systems integration using Service Oriented Architecture

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### ABSTRACT

PT. XYZ in its development requires speed and security because security is one of the key points in product development. As we know, without a safety software system product, customers will never feel confident using the software system product. In software system development, security always faces difficulties, because testing is still done manually so that the testing process also cannot be accelerated. This study discusses how SOA can help this problem and uses one of the appropriate methodologies to support orchestration development. This research will follow the two steps of Service Oriented Architecture Delivery Lifecycle (SOADL) which includes Service Orientation Analysis and Services Orientation Design. As a result, the development of orchestration itself will become a set of service processes (Controllers) which summarize the application service layer in accordance with business rules and business logic.

**Key words :** SOA, SOADL, Security Testing System, Integration

### 1. INTRODUCTION

Security is an important part of a system and application, but its presence is sometimes a barrier for developers because it tends to be too long and make a product too late to launch a product and be a disadvantage for developers. On the other hand, security engineers also face problems because so many systems exist and it takes a lot of time to be able to test the security of those systems or applications. Many systems or applications are silos so testing must be done one at a time. The condition is called Application Silo Stage, which is the stage where a company or organization will focus on developing individual computer applications that are used only to meet the needs of certain sections or departments [1]. PT XYZ as a growing startup company needs a new system architecture to be able to release a new product that is also feasible and safe for consumers to use. Service Oriented

Architecture (SOA) aims to align business processes with the use of IT, in that way can make both run effectively, making it possible to integrate between several Information Systems in an organization [2]. SOA can help organizations in developing logic and sharing data between software that is

developed on different platforms easily [3], SOA can transform a business process into business-on-demand, a business can be reconfigured by involving business partners, for example consumers, government, etc. SOA is also able to integrate separate systems [4]. In this case, PT XYZ does not have a system design that can be used to conduct security testing. And along with the many products and services that have to be released, the security engineer faces a problem and becomes a blocker for products / services so that makes the release late and causes losses for PT XYZ. In this study, we will explore How to integrate products and services on different platforms into a system that can be used by security engineers to conduct security testing with the SOA approach?

### 2. RELATED WORKS

According to [5], a method for semantic integration of information systems that aims to shift the main focus in integration efforts, which are usually placed on software development, towards business modeling with the aim of reducing the development of the required code and maintenance efforts. Stating that to realize data synchronization between a distributed information system and the design of an information portal to provide log-on services and browser services easily, the financial information system portal at a university is designed with a data synchronization scheme based on service-oriented architecture has been done by [6]. According to [7], state that enterprise information development is carried out continuously, first the way the software is developed and then the integration process becomes difficult when the application system will be expanded. Large companies tend to have heterogeneous systems, namely the formation of "islands of information", which makes interaction and interoperability very difficult [8].

### 3. RESEARCH METHOD

The research method used in this study using SOA delivery lifecycle (SOADL) methodology framework that can be described in figure 1 below. In this study, we focused to explore 2 stages in SOADL methodology framework, such as : (1).Services oriented analysis, and (2).Service oriented design

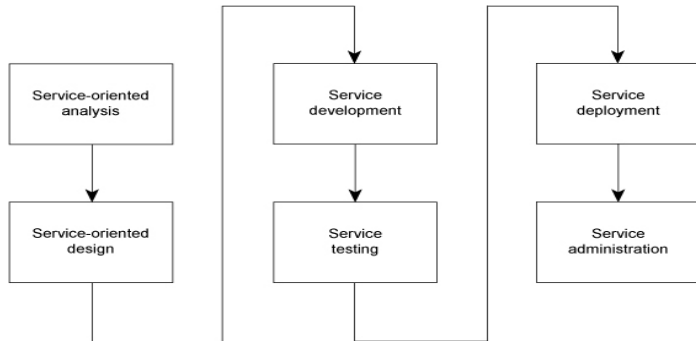


Figure 1: SOADL Methodology (Thomas Erl)

### 4. RESULTS AND DISCUSSION

First step of SOADL is finding what is the business processes and how the system can help for security testing. In this stage, it represents a process that builds for building SOA components. It related to leverages expertise and intellectual capital in the different layers of the architecture. The next stage, it facilitates the delivery of SOA business capabilities. There are top-down, consumer centric enterprise perspective, and bottom-up, functional perspective. The current condition for Security Testing are the Security Team working base on every ticket request that raised by product team through email, after that Security Team will manually perform the testing and it will take a long time depend on the product itself. There is some issue regarding this method like: Take long time, since everything is done manually, Security Team do the same thing over and over again (it can be automated by system), and Product launching will be delayed because of Security Testing. Based on that case, we proposed the system design based on SOA approached and we are found several services that need to be redesign, such as: Testing Request Services, Security Testing for Mobile Services, Security Testing for Product Services, and Security Testing for Functional Services. Every product that PT. XYZ has different services even micro services and because of this environment, SOA is a good approach. With SOA we can design a system that can check every services that PT. XYZ have. When designing SOA, we must consider 3 main point for design it, such as Business Architecture, Infrastructure Architecture, and Information and Data Architecture. Designing SOA without consider those 3 main point can result a bad system In this study, we focuses on security testing it is not clearly visible in the value chain but indirectly includes something that is primary and goes into services. Because if a service is not safe, it will have a negative impact

on everything. The existing business process will be decomposed to business process to represent granularity processing step. When all business process already breakdown, the business process will define as primitive business activity. Identifying operation candidates can be gathered from business primitive activity. One business process for one analysis.The result Workflow Logic in security testing system integration.

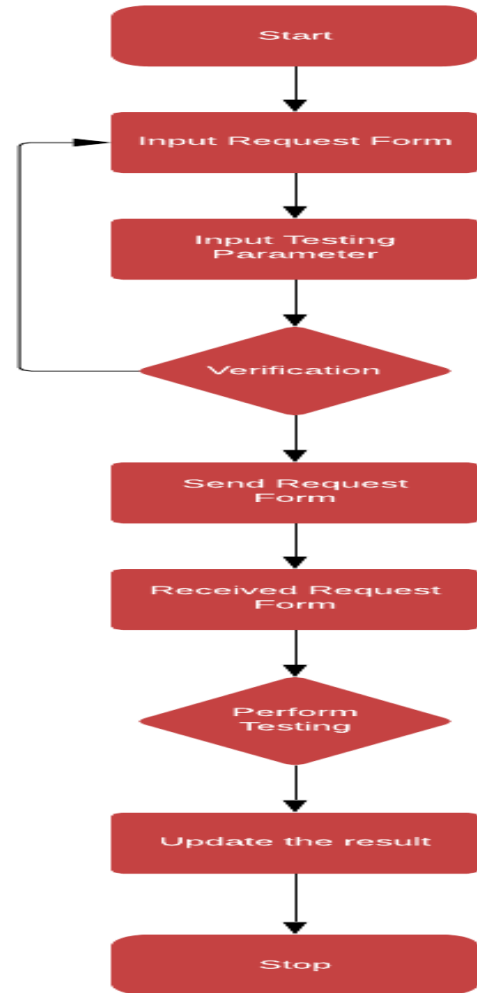
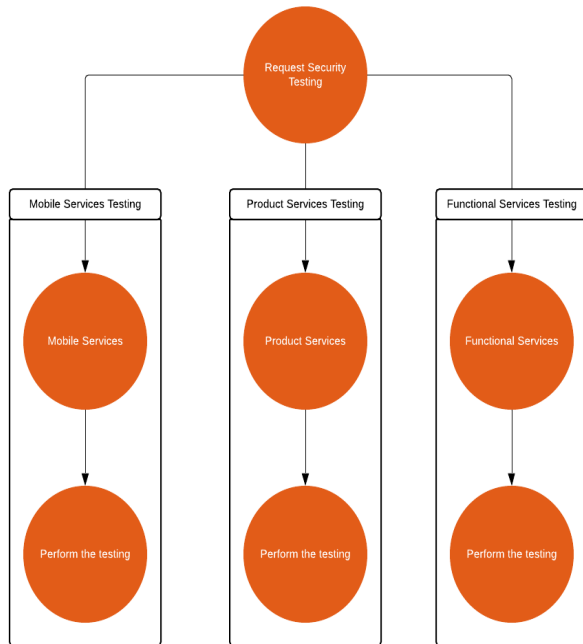


Figure 2: Workflow Logic in security testing system integration

The main idea to identify candidates for business service operations is to find out the manual processes that cannot automate and identify processes that can be used as services. However, the existing settlement process still depends on the sub-process. Manual process does not mean the process must end. This can also be referred to as a process that can only be operated by the user. Below are detailed candidate manuals and services that have been identified, including: (1)The Security Testing request process will transfer the means of recording problems from via telephone or e-mail, will use a system that can be updated tracking the status of the problems reported, (2). The process of testing will use an automated system so that each request can be done faster.

We can see that the Design Entity Centric included in business service layer which is in service interface. The entity centric can be describes as services that can be reused from the existing process services.



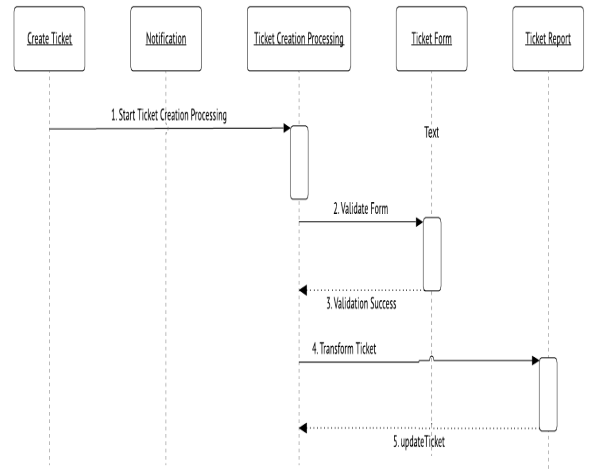
**Figure 3:** Design Services of security testing system integration

Design Application Service is part of service interface logic. In figure 4 below, Design application services of security testing system integration can be described and shown.

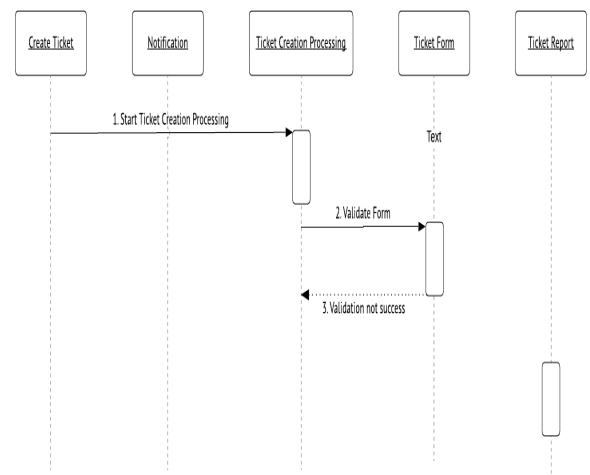


**Figure 4:** Design application services of security testing system integration

The purpose Design Task Centric is to define workflow logic is to find out which application service that will communicate with task centric. There are two condition of scenario, successful and invalid scenarios. The valid scenario describes if the process running successfully. The invalid scenario will be carried out if the request failed while tried to reach application service request.

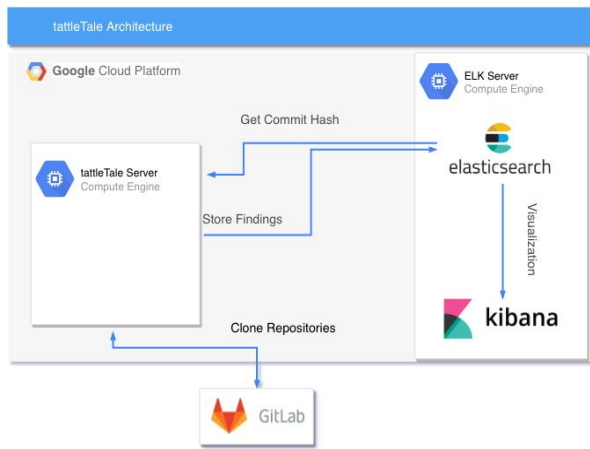


**Figure 4:** Validation request testing for success



**Figure 5:** Validation request testing for not succes

The next stage is we proposed design of security testing system integration that can be described in figure 6 below :



**Figure 6:** Design of security testing system integration

## 5. CONCLUSION

System design in this paper can be considered as new idea and SOA in Security is a good approach. We want to make the perspective more secure become more complicated is gone and every product can leverage this security. And since System is develop in open source, so the cost for this is almost zero, we only need cost for server.

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