Online Guarantee System With Soma Methods

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Keywords:	**ABSTRACT**
Online Guarantee; KUR; SOA; SOAP; SOMA.	Web service-based applications are applications that use Restful to exchange data over the network and interact directly with other applications. One of the advantages of web service-based applications is that many applications can access services on different platforms. This is very beneficial in the business sector if a company or organization builds applications on a large scale, and application development is carried out in stages. With the characteristics of web service-based applications, namely a neutral platform, it is very easy to integrate systems when the development process is carried out in stages. Therefore, this research will design a web service-based application based on business processes, especially Kredit Usaha Rakyat (KUR) between PT ABC Credit Guarantee Company and PT Bank XYZ. The methods used are Thomas Erl's SOA methods and SOMA. The results obtained are a method that will be a guide for producing web service-based KUR Online Guarantee applications with PT Bank XYZ.

Introduction

Along with the development of information technology, data processing to produce information is very important for companies to compete with other companies (Febriana, 2014). Because information technology really helps business processes be managed properly (Darmawan & Wijaya, 2022). The application of information systems is very useful for managing, monitoring, and integrating all business processes. The existence of information systems can increase time efficiency and increase productivity in companies (Siregar & Nasution, 2020).

In order to produce the web services that are needed, a service identification process must be carried out to translate business requirements into web service-based applications (Lumbangaol, 2020). Services are the result of transforming business capability modeling, which, in turn, results in service modeling being realized through technology modeling (Irawan, 2016). Many methods can be used to develop applications, especially those based on web services, such as Thomas Erl's SOA method and Service Oriented Modeling and Architecture (SOMA), to adapt to this situation (Firman, Wowor, & Najoan, 2016).

This research will discuss the web service-based application method to be implemented in PT Bank XYZ's Kredit Usaha Rakyat (KUR) online guarantee. By formulating the problem, there are many miscalculations in the credit guarantee application process caused by input errors that are not in accordance with the provisions and errors in the claim decision process, which result in losses to both companies (Loconto & Hatanaka, 2018). Thus, this research aims to design the SOA method Thomas Erl and SOMA, then apply it to kur online guarantee based on business processes that are running and regulated (Sedeng, Pangemanan, & Andaki, 2022).

Theoretical Foundation

Many methods can be used to build service-based systems, namely methods SOA Thomas Erl, Service Oriented Modeling and Architecture (SOMA), Papazoglou, Service Oriented Architecture framework (SOAF), and Service-oriented Unified Process (SOUP). The development of this application will use 2 (two) of several existing methods, which will then be modified to produce a method that will guide the development of web service-based applications. The methods to be modified are Thomas Erl's SOA and SOMA.

Thomas Erl's SOA Method

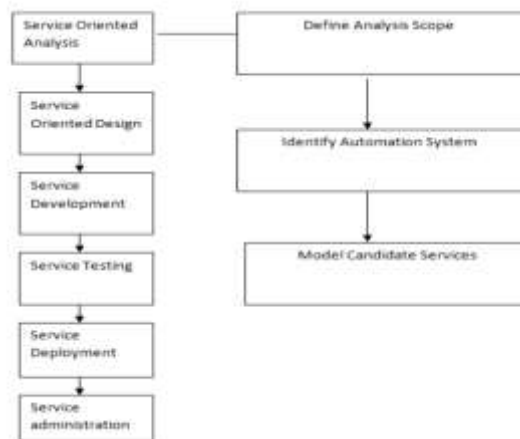SOA High-level analysis (Erl) is shown in the figure below :

Figure 1. Thomas Erl's SOA Mehod

Metode Service Oriented Modeling and Architecture (SOMA)

The SOMA method is one of the software development lifecycles for finding solutions with service-based concepts. SOMA at fractal model consists of 7 stages to identify services, namely:

Figure 2. SOMA Fractal Model

Modified SOA Thomas Erl dan SOMA Method

Based on the two methods above, the modified SOA Thomas Erl and SOMA methods are produced. This method consists of 5 (five) main phases, namely, business model, service-oriented analysis, service-oriented design, implementation and deployment.
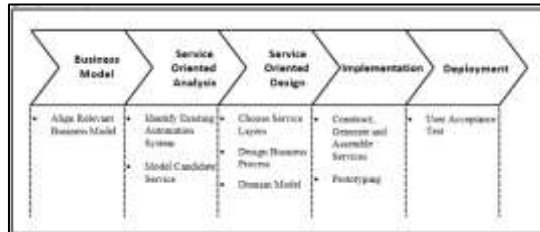

Figure 3. Modified SOA Thomas Erl dan SOMA
Previous research

Research Methods

Based on Figure 3, this modified method consists of 5 (five) main phases, namely, business model, service-oriented analysis, service-oriented design, implementation and deployment. These phases can be described as follows: Berdasarkan gambar 3 metode The result of this modification consists of 5 (five) main phases, namely, business model, service-oriented analysis, service-oriented design, implementation and deployment.:

Business model

activities in this phase are:

a. The company's high-level business process needs to be analyzed

b. Align relevant Business processes focus on the corporate main activity. The main business activities obtained will then be analyzed to determine the candidate service

Service-oriented analysis

activities in this phase are:

a. Identifying an existing automation system is identifying if there is already an automated system so that the logic can be used or updated to be an encapsulated service.

b. which will produce the final service candidate, which at this stage still consists of sub-processes in, are:

Decompose business process

a. Create service candidate

b. Candidate service akhir

c. Identify service operation.

Service-oriented design

Activities in this phase are designing the final candidate service resulting from the analysis phase so as to produce a design that will be the basis for the next stage of implementation. This phase consists of several activities, are :

a. Choosing service layer.
b. Design business process.
c. Domain model.

Deployment

Activity in this phase is:

a. User acceptance test (UAT).
b. Evaluation to determine user satisfaction with the system using a particular approach to measure user satisfaction.

Results and Discussion

Business Model

The Government of Indonesia has a high spirit to encourage cooperatives and MSMEs as part of the pillars of the national economy. Therefore, the Government of Indonesia established PT ABC Guarantee Company to provide guarantees for MSMEs and cooperatives. In addition, PT ABC also provides guarantees for SOEs, Warehouse Receipt System Guarantees, and other Guarantees (Marlinah, 2019).

Based on UU no.1 Tahun 2016 about Penjaminan and POJK Nomor 1/POJK.05/2017, Credit Guarantee business activities provided by PT ABC are the activity of providing guarantees for the fulfillment of the Credit Recipient's financial obligations (Guaranteed) to the Guarantee Recipient. The Credit Guarantee Process involves at least 3 (three) parties, namely the credit-giving business entity called the Guarantee Receiver, the credit debtor called the Guaranteed, and the Credit Guarantee Company called the Guarantor (Budiarto et al., 2018).

The basic principle of a credit guarantee is the takeover of the risk of the guaranteed's failure to fulfill its financial obligations to the recipient of the guarantee. Still, it does not eliminate guaranteed financial obligations to the Recipient of the Guarantee until the Recipient of the Guarantee states the Guaranteed Credit is paid off.

Credit Guarantee is required by the Guarantee Receiver when the loan application from Guaranteed is declared feasible by the Guarantee Receiver but has not met the banking credit administration requirements, especially in terms of unbankable fulfillment of collateral. With the guarantee services provided, Jamkrindo is expected to strengthen the national economy, especially for strengthening the economy in MSME and cooperative sectors.

Figure 4. Figure 1 Guarantee parties

The company's value creation is optimizing its reputation and trusted image as a member of SOE's Holding in Insurance and Guarantee to establish a brand preference in the eyes of customers.

Service Oriented Analysis Phase

The process in this phase is to determine service candidates, which are then revised so as to produce the final service candidate. The final stage is determining the service operation that will be built later.

1. Identify Guarantee of People's Business Credit(KUR) automation system
2. The activity for KUR's Guarantee mostly that have not used an automated system

Model Candidate Service

The Main Business process is divided into subprocesses:

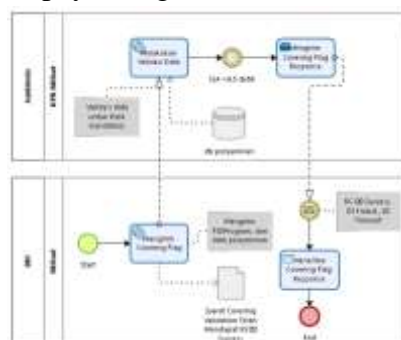a. Credit Guarantee Submission

This process is where the Company receives an application for credit guarantee from PT Bank XYZ for the guarantee process as one of the conditions for credit approval.
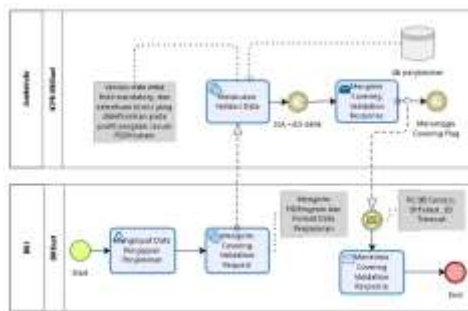
Figure 5. Credit Guarantee Submission Process

b. Guarantee Fee

This process is where the guarantor gives the guarantee recipient a guarantee certificate after PT Bank ABC pays the guarantee fee.

Figure 6. Credit Guarantee Fee Process

c. Claim Submission

The next process is to guarantee that the recipient submits the claim because the guarantee can't fulfill credit obligations or provide bad credit.
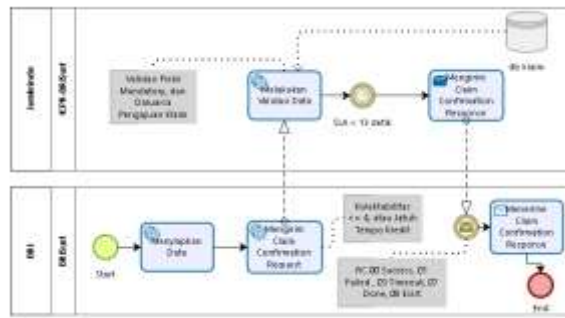
Figure 7. Guarantee Claim Submission

d. Subrogation

Subrogation is a replacement of the position of the creditor by the guarantor in the agreement as a result of claim payment made by the guarantor to the guarantee recipient.
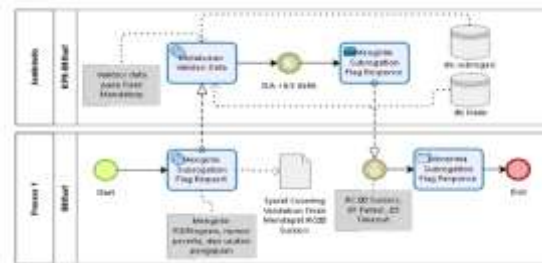

Figure 8. Subrogation

Create service candidate

Service candidates based guarantee business process is shown in the table below

Table 1
service candidate

Service Candidate	Service Operation	Description
Guarantee Submission	Add Guarantee Submission	Add new data to
	Calculate Guarantee Fee	Calculate the guarantee fee based on credit information.
	View Guarantee Submission	View submission info
	Inquiry Guarantee Submission	Get guarantee submission status info.

	Update Guarantee Submission	Update guaranteed info
Guarantee Fee	Add Guarantee Fee Payment Submission	add fee payment record
	Generate Guarantee Certificate	Generate Guarantee Certificate
	View Guarantee Fee Payment status.	View fee payment status
Claim Submission	Add Claim Submission	Add new data
	Inquiry Claim Submission	Get claim status
	Update Claim Submission	Update claim submission data
	View Claim Submission	View all submission
Subrogation	Add Subrogation Submission	Add new data
	Inquiry Subrogation submission	Get subrogation status
	Update Subrogation submission	Update subrogation information
	Calculate Subrogation	Calculate the total subrogation compared to the claim payment.
	View Subrogation	View all submission

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End Service Candidate

Refining service candidates to meet the nature of the service, namely reusable, so as to produce service candidates' end. This is a list of final service candidates based on revisions from service candidates. Shown table below.

Table 2
End service candidate

No	Service	Service Operation	Description
1	Guarantee Submission	Add	Add new data
		View	View Data
		Update	Update data information
		Inquiry	Get Submission status
		Generate	Generate data for guarantee terms and conditions
2	Guarantee Fee	Calculate	Calculate incoming data
3	Claim Submission		
4	Subrogation		

Identify service operation

The next step is revising to service operation from the end service candidate.

Table 3
service operation

No	Service	Service Operation
1	Guarantee Submission	add submission()
		viewSubmission()
		updateSubmission()
		inquirySubmission()
		generate()
2		Calculate()

	Guarantee Fee		
3	Claim Submission		
4	Subrogation		

Choosing service Layer

Based on the service candidate generated, the service layer, which consists of the Orchestration Service Layer, Business Service Layer, and Application Service Layer, is selected.

Figure 9 service layer

Identify Service Composition

Identify the service composition of the resulting final service and then place it in the service layers. The following is the service layer based on the identification of service composition.
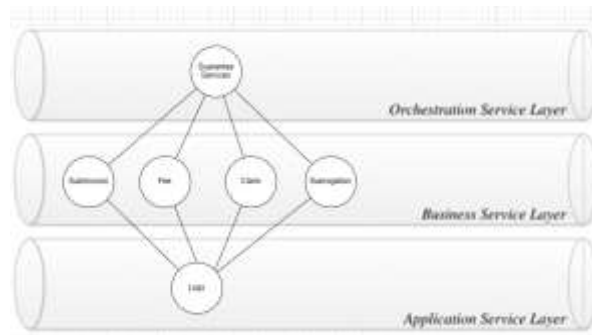
Figure 10. Service Layer

Flowchart Diagram

The flowchart diagram will show how the process will be conducted and how the actor

a. guarantee (Covering Validation, Covering Flag)

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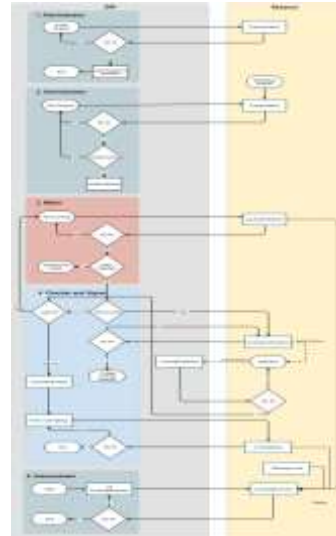
Figure 11 Guarantee submission and guarantee fee payment flow

b. Claim Submission
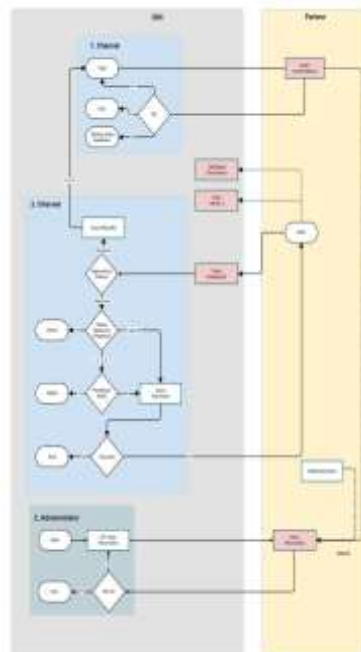
Figure 12. claim submission flow

c. Subrogation Submission
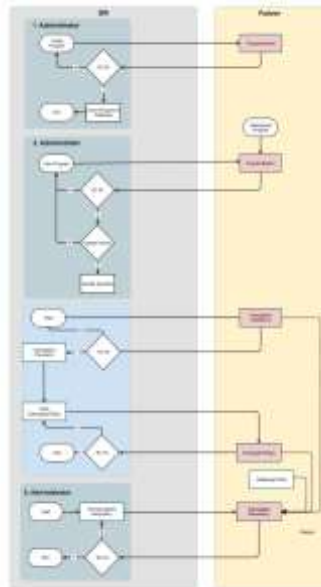
Figure 13. subrogation submission

d. Domain Model

The domain model is a conceptual model of a system that describes the relationship between entities in the system.

Figure 14. Domain Model

Implementation Fase

This stage is the establishment of a web service that will be used and how to access the web service by implementing an online guarantee based on service references.

Table 4
Service Name and URL

Web Service Name	Service URL
guarantee service	172.27.1.76:1717/BRISURF/ guarantee service/
guarantee repayment	172.27.1.76:1717/BRISURF/ guarantee repayment /
claim submission	172.27.1.76:1717/BRISURF/ claim submission/

subrogationSubmission	172.27.1.76:1717/BRISURF/
	subrogationSubmission /

All web services use Rest API methods with post method. Example service request and response on guaranteeSubmission.

Figure 15. Post-guarantee submission request

The response to the request above is shown below. It consists of fee value, destination saving account, and remarks.

Figure 16 guarantees submission Response

The response consists of a remark, savings account and nominal fee. Next, the guarantee recipient will send a request for the proof of fee guarantee payment as shown in the figure below.

```
"FIDProgram": 260,
"NomorRekeningPinjaman": "817101005697100",
"NomorRekeningSimpanan": null,
"FIDAgunan": 0,
"FIDCashVault": 0,
"FIDCashPickup": 0,
"UrutanPengajuan": 1,
"TellerID": "6237091",
"OriginalTellerPremiumDate": "22/07/2022 12:17:50",
"TellerPremiumDate": "22/07/2022 12:17:50",
"OriginalTellerFeeDate": "22/07/2022 12:17:50",
"TellerFeeDate": "22/07/2022 12:17:50",
"RequestId": "634433736934"
```

Responses for the request

```
"ResponseCode": "00",
"ResponseDescription": "success",
"ResponseException": "",
"TanggalMulaiCovering": "29/08/2022",
"TanggalAkhirCovering": "29/08/2026",
"NomorPeserta": "MKR 2023 27.0 01 002 00000001",
"URLDokumenKepesertaan":
"http://172.27.1.190:1818/BRISURF/CoveringPrint/MKR_2023_27.0_01_002_00000001",
"OriginalCoveringFlagSuccessDate": "07/02/2023 03:30:15"
```

Deployment Phase

To obtain the results of this test, the user fills out a test sheet according to the function being tested. On the sheet, there are special characters to define the test results, namely:

Table 5
service test

Service Name	Data	Test Result		
		P	S	F
guarantee submission	10	10		
guarantee repayment	10	10		
claim submission	3	3		
subrogationSubmission	6	6		

Conclusion

Based on the research conducted, several conclusions were obtained, among others. Modified methods from Thomas Erl and SOMA can be used to build a web service-based application. This matter was proven after being successfully implemented with the development of web service-based applications for the management of sugarcane plantations based on the identification results of all online business credit guarantee activities between PT ABC Credit Guarantee and PT Bank XYZ. The advantage of web service-based applications is that the system will be easy to develop and integrate with new systems.

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