

FEATURE ANALYSIS OF PUBLIC COMPLAINT HANDLING APPLICATION USING FODA

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ABSTRACT

This study is to know the result of the comparison of functions in the main business process of Public Complaint Handling (PLM) based on Judicial Commission of Indonesia decree No. 4 2013 and Judicial Commission decree No. 2 2015 and to know Public Complaint Handling features using Feature-Oriented Domain Analysis (FODA). The data that used and processed from Public Complaint Handling business process observation, interpretation, documents, reports, and interview with users and experts. The data is processed by compared both functions in the main business process of Public Complaint Handling and perform feature analysis using FODA. The results of this study that the Judicial Commission simplify and refine the functions in the main business process of Public Complaint Handling based on Judicial Commission decree no. 2 2015. From the features analysis results there are 125 features with 86 mandatory features, 7 optional features, 17 features OR and 15 alternative features. This study as one of highly recommendation for Judicial Commission that FODA's approach will be more effective and efficiency in enhancing and developing applications from reusable features to be developed and new features to be built when there are regulatory changes and business process changes for the application of Public Complaint Handling.

Keywords: *Business Process, Feature Analysis, FODA*

1. INTRODUCTION

Indonesia is not the only the state that have Judicial Commission institution including the method and the procedure on how to solve the Public Complaint Handling. There are more than 60 countries in the world that have Judicial Commission institution in their country with each differences in judicial functions, tasks, and authorities [1]. Judicial Commission of Indonesia (Judicial Commission) decree no. 2 2015 Re: Public Complaint Handling PLM) as the legal standing on the operation and implementation of Public Complaint Handling. Within the decree contain main tasks and procedure on how to solve the Public Complaint Handling. The main tasks and procedure in part of business process that a chain of activities create value to transform the input into valuable output [2].

The handling for reported judges have to quick and confidential due longer handling will hard to keep the confidentiality of the complaint cases [3]. The increasing number of complaints and faster solution on processing the complaint report handling time, Judicial Commission require to upgrade and establish the Public Complaint

Handling application that will focus on accuracy, speed and suitable with Judicial Commission decree. The author will use Feature Oriented Domain Analysis (FODA) to determine the feature application for the purpose. Based on [4], FODA is domain analysis method in order to compile the thinking process used in building software systems in domain or related classes. Domain analysis supports software reuse by capturing domain expertise, including to support communication, training, tool development, software design and specification.

The main objective of this study was (1) to know how to get the result of the comparative of functions in the main business process of Public Complaint Handling between Judicial Commission decree no. 4 2013 and Judicial Commission decree no. 2 2015, (2) know how to get the Public Complaint Handling application feature using FODA in accordance with Judicial Commission decree no. 2 2015. It aimed to address the following problem (1) how to get the result of comparative the main function of Public Complaint Handling business process between Judicial Commission decree no. 4 2013 and Judicial Commission decree no. 2 2015 (2) how to get the feature

recommendation in accordance with Judicial Commission decree no.2 2015 using FODA.

2. PROBLEM DESCRIPTION

Based on the interview and discussion result with Public Complaint Handling application's users in Judicial Commission, the existing application can't fully utilized to support their daily work and they found the application did not fully adapted on the business process of Judicial Commission decree no.2 2015. Due to the findings, the author think that the Judicial Commission required to re-establishment of Public Complaint Handling that will focusing on timely accuracy, speed and suitable features with Judicial Commission decree no. 2 2015 Re: Public Complaint Handling.

The benefits of this research are to get the result of comparison between main business process of Judicial Commission decree no.4 2013 and Judicial Commission decree no.2 2015 and the proposed features of Public Complaint Handling application that fully adapted of Judicial Commission decree no. 2015 as recommendation for the re-establishment of Judicial Commission Public Complaint Handling application.

3. LITERATURE REVIEW

3.1 Business Process

Based on ref [2], business process is the result of interrelated activities with changes in the inputs into fuller output. According to ref [5], there are five essentials of business process (1) Business process consists of a set of tasks (work). One task cannot be categorized as a business process; (2) Business process is structured or semi-structured. This means there is a set of logic or rules that managed the activities. (3) The activities are not carried out on an ad hoc basis. Tasks can appear in serial or parallel. (4) There should be two or more individuals or applications involved as performers in performing different tasks for a process; (5) A set of tasks should have a purpose, so that it can be assessed for subsequent optimization by seeing the success of achieving the goal or not.

Business process is a set of activities that take one or more inputs and create a useful output for the customer [6].

3.2 Business Process Model

Based on ref [7], business process model focused to describe on how the connection and interaction activities with other organization element including to support business operational. Business process modeling is an activity or activity to generate business process model of business processes. Business process modeling can be used as a tool in system planning, system analysis to describe "as is" system, and system design to describe system "to be". Business process modeling is a representation of business processes using formal charts. A business process model consists of a series of activity models and constraints between models of activity [6].

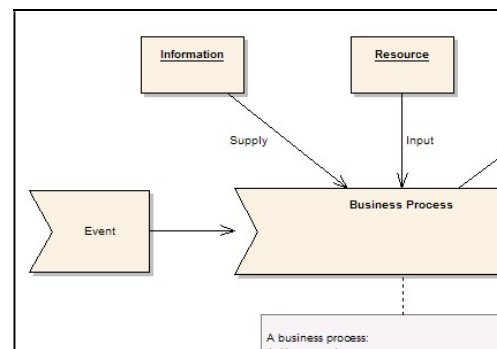


Figure 1: Business Process Modeling

Source: www.sparxsystems.com.au

The model is a simplification of reality that has input and output. Process modeling is a way to understand and analyze from a process in the form of process model. The process model creates a thorough understanding of a process or system. The process modeling is very important for the company because in that way, the company can integrate, analyze, and improve the performance of the management of its business processes [8].

Based on ref [8], the usefulness of the process model is classified into four categories, namely: (1) model description for learning; (2) description and analytical model for decision support on process development and design; (3) an analytical model for decision support during the execution and control process; and (4) supporting model for information technology.

3.3 Analysis of Application Features

In the application, an information system was created features that may vary according to the needs of the system to be built. The variations of these features need to be well managed. The variability management is a cross-cutting problem that applies to almost all software projects at

various levels. According to ref [9], feature model becomes the main model to describe variability and similarity including customization of changes for the user in the software artifact management. The feature model becomes the key technology adopted for the development of software product line [10].

Based on ref [11], Requirements Engineering (RE) or system requirements is a process to meet needs by identifying the users involved and fulfilling their needs including documenting it into a form that can be analyzed, negotiated and implemented. A valid feature configuration will produce a particular variant with unique behavior. Feature analysis aims to find the features of Public Complaint Handling application features by using feature analysis through feature diagram overview and dictionary domain terminology. The feature diagram will illustrate through a tree-shaped hierarchy diagram that connects features with sub-features.

The symbols used in feature diagrams that connect between features and sub-features are:

1. Mandatory, indicating that sub-features should be implemented in the domain. Mandatory is represented by a symbol of a line with a rounded head shaded.
2. Optional, indicating that sub-features should not be implemented in the domain. Optional is represented by a symbol of a line with an un-shaded round head.
3. OR, indicates that one of the sub-features should be selected to be implemented in the domain. OR is represented by a symbol of a shaded bow line.
4. Alternative, indicating that one of the sub-features can be selected one to implement in the domain. Alternative is represented by a symbol of a non-shaded bow line.



Figure 2: Symbols in Features Diagram

3.4 Feature-Oriented Domain Analysis (FODA)

The Feature-Oriented Domain Analysis (FODA) method introduces the concept of feature model for domain engineering in order to represent standard features in the system family in the domain including the relationship between the features. The purpose of feature-oriented domain analysis is to support functional reuse and application architecture. According to ref [9], Features in FODA are defined as the visible characteristics of a system.

Based on ref [4], FODA is a method of domain analysis in order to compile the thinking

process used in building software systems in domain or related classes. Domain analysis supports software reuse by capturing domain expertise, including to support communication, training, tool development, software design and specification. The domain analysis offers the ability to identify and support the development of software resource reuse. The goal of FODA is to create a domain model that represents the system family to be refined into the system as desired. According to ref [12], another way of determining the features of the software is through analyzing and exploring features in the existing software.

The FODA method concentrates on easy-to-read features. The main focus of this method is to identify typical or prominent software features within a domain. These features aspects that are visible to users or domain characteristics. These features define both the general aspects of the domain as well as the differences between the related systems in the domain. The features are also used to define the domain in terms of mandatory characteristics, options (optional), or alternate characteristics of the associated system. The FODA method depend on a set of generic parallel processes to determine the control aspects of the architecture and the allocation of function specifications that defines the domain model for process control modules.

3.4.1 Concept of Domain Analysis

Based on ref [13], the important output of the domain analysis stage is a feature model that usually represented in the form of feature diagrams (graphical form) or it can be in contextual form. This feature modeling is commonly used in domains during domain analysis to capture the similarity and variability of the system. The availability of domain analysis technology is a factor to improve the software development process and promote software reuse by providing a common understanding and means of domain communications.

Ref [4], there are some important term that related to domain analysis method:

- 1) Application: A system that provides a set of common services to solve some types of user problems.
- 2) Context: situation or environment in which the existence of a particular system.
- 3) Domains (also called apps domains): A set of current and upcoming apps that share common capabilities and data sets.

- 4) Domain Analysis: The process of identification, collection, arrangement and representation of relevant information within a domain based on the study of current systems and the history of its development, knowledge captured by domain experts, underlying theory, and emerging technologies in the domain.
- 5) Domain Engineering: a range of processes including domain analysis and subsequent construction of components, methods, and tools for system / sub-system development issues through the application of domain analysis products.
- 6) Domain modeling: Definition of functions, objects, data and relationships within a domain.
- 7) Feature: An aspect seen by a distinctive or prominent user, the quality or characteristics of a software system or system.
- 8) Software Architecture: a top-level structure of data and functions, from control and interfaces, to support application implementation in a domain.
- 9) Software reuse: The process of implementing a new software system uses information from the current software.
- 10) Reusable components: components of the software (including requirements, design, code, test data, etc.) are designed and implemented for specific reusable purposes.
- 11) User: Can be someone or an application that operates the system to perform a task. The term user here is not necessarily the same as the consumer system, can be as different concepts although it can be combined in many cases.

3.4.2 Feature Modeling Method

The feature modeling method will analyzes the product line and generates a domain model contains features that are consistent and varied within the domain and also determines the vocabulary used in the domain, determines the concepts, ideas, and phenomena in the system. This model (often associated with generators and libraries of reusable components or frameworks) is used to create new software systems or modification the existing systems [14].

The feature model is visually represented in a tree-like structure in which the node represents the feature and relationship between features. Based on ref [15], in the feature model, the connection between feature and feature grouping is the

variability of the software product line. According to ref [16], the big challenge domain during the modeling is tracing the various events of the variant and understanding its interdependence.

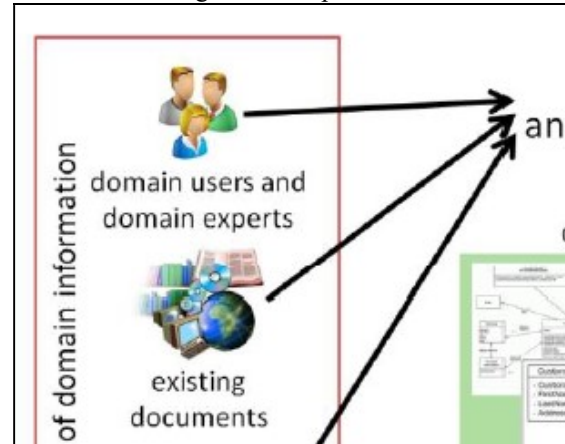


Figure 3: Illustration of Domain Analysis Process
Source: Ref [14]

3.4.3 Context Analysis

The aims at this stage to gain information and identify the entities that make up the application on the associated domain. According to ref [14], the best source of information in the process of domain analysis is the presentation layer of the software system because it has been formulated and close to the user and close to the domain target.

The Information sources for this research are: (1) Domain Users and Domain Experts, there are users and experts of the public service domain of Public Complaint Handling applications; (2) Existing Documents, there is a documentation relevant to the public service domain of Public Complaint Handling applications; (3) Existing System, in this case is Public Complaint Handling application software.

3.4.4 Domain Modeling

The aims of this stage to identify the relation and dependence of existing entities in the related domain. The result in this stage is the collecting data and information obtained from the source of information subsequently performed processing.

The product at this stage describes the issues that are handled by the software in the domain, namely: software features in the domain, the standard vocabulary of domain experts, documentation of entities contained in the software, and the generic software requirements through

control flow, data flow and other specification techniques.

3.4.5 Architecture Modeling

The representation result provides a set of architectural models from the domain model to the architecture including providing guidance on the construction of libraries of reusable components.

The requirement of domain analysis method to achieve two specific objectives as the key to successful application of the mature domain: (1) the method leads to the development of domain analysis products that support the implementation of new applications. This goal will be achieved when a domain analysis product is used for a new implementation, and (2) this method is incorporated into the general software development process. This goal will be achieved when the method of domain analysis is accepted as part of software development. According to [4], the domain scope should be analyzed (known as FODA context analysis) to identify not only the system in the domain but also the external systems that interact with the domain. From the developed feature model, customers can choose from configurable requirements to determine the final system. Through this process, feature-oriented domain analysis (FODA) ensures that businesses can meet customers' needs and demands efficiently through technology reuse [17].

4. RELATED WORKS

There are a numbers of researches that are focuses on FODA. In 1990, ref [4] found a method for discovering and representing similarities between related software systems. Domain analysis supports software reuse by capturing domain expertise, domain analysis can also support communication, training, tool development, and software design and specifications. Ref [13] in 2003, an algorithm for generating a sample description set of domain feature models and implementing this algorithm in creating a Generic Feature Modeling Environment to automate FODA.

According to ref [14], the purpose of analysis of software product lines by comparing the features and functions of different and similar systems. Inputs for domain analysis (i.e. information about domains) always come from users, or are not specified from where they came from. The data was collected not only from human resources, but also automatically from source code and existing text documents. The source code does

not have to contain domain requirements and domain processes.

Ref [9], the chain extension tools uses an extended feature model as the primary model for describing variability and similarity, and provides user customizable adjustments from software artefacts to manage. Ref [18] in 2014, Feature Oriented Domain Analysis (FODA) is used in analysis activities, and design patterns are implemented when creating class diagrams in design activities. The design result is an artifact as a guide for writing code for application framework in development activities. These artifacts also provide information for software developers to identify common spots and hotspots to develop a multi-tenant asset management system that suits their needs. According to ref [16], the feature diagram is widely used for variant model of software product (software product line/SPL). FODA is built by storing all available information. By analyzing the characteristics of the domain variant, all variants follow the general categorization type and all have certain behaviors.

Based on ref [15], the feature in general is the enhancement of product functionality and provides an important abstraction of the complex functionality under consideration. The feature model is represented visually in a tree-like structure where nodes represent features and relationships between features. In the feature model, the connection between feature and feature grouping is the variability of the software product line. Integration of the various variations of the feature model expansion is required in the engineering of technical product line systems.

5. METHOD

The method to meet the objectives of this study, the researcher will use the research stages as follows:

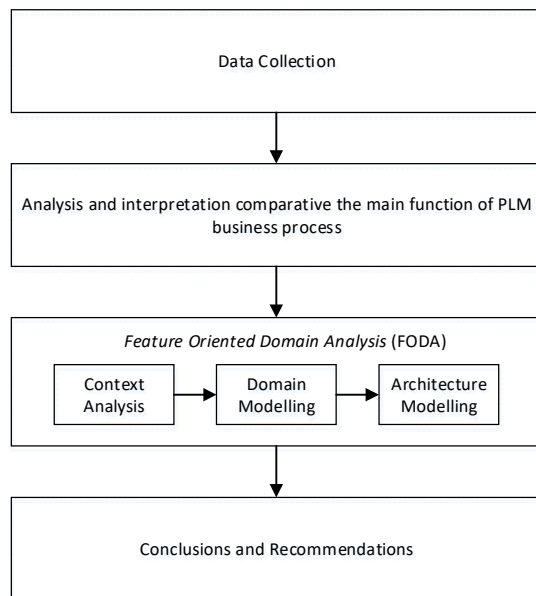


Figure 3: Stages of Research

6.4 Data Collection

The data and information was collected for this research from interview and discussion with the expert of Public Complaint Handling, the expert of Public Complaint Handling workflow and operational procedure, Public Complaint Handling users, reports, website and other relevant Public Complaint Handling documentation.

6.5 Analysis and Interpretation Comparative the Main Function of Public Complaint Handling Business Process

The author conducted comparison analysis and interpretation result between the data and information of the function in the main business process of Public Complaint Handling in accordance to Judicial Commission decree no. 4 2013 and Judicial Commission decree no. 2 2015.

6.6 Feature Oriented Domain Analysis (FODA)

In this stages, author was follow the FODA method in ref [4] with three stages: (1) context analysis, (2) domain modelling, and (3) architecture modelling. The feature analysis using the author observation and interpretation from Public Complaint Handling application based on Judicial Commission decree no. 4 2013 and Public Complaint Handling application based on Judicial Commission decree no. 2 2015. Further analysis and assessment from the in-depth discussion and interview with the expert of Judicial Commission

Public Complaint Handling and Public Complaint Handling users. The domain modelling result described into feature diagram that developed using Microsoft Visio 2013.

6. RESULT AND DISCUSSION

6.1 The Comparative of functions in the main business processes of Public Complaint Handling

Table 1 [1] shows comparison the functions in the main business process of Public Complaint Handling based on Judicial Commission decree No. 4 2013 and Judicial Commission decree.

As shown at table 1 [1], over all the functions in the main business process of Public Complaint Handling almost similar but the differences in Judicial Commission decree no. 4 2013 as in the deepen study the report and in it's the sub-chapter, the annotation. The monitoring and investigation are no longer in the main business process based on Judicial Commission decree no. 2 2015 that replaced by further handling and in its sub-chapter; report analysis and examination (complaints against judge, witness and or expert). In Judicial Commission decree no. 4 2013 that found the report processing function at chapter plenary trial, examination and trial, monitoring, and deepen the case and trace the track record which at Judicial Commission no. 2 2015 that already simplify and refine become only the functions for examination and trial. There the same business process for create a team between Judicial Commission decree no. 4 2013 and Judicial Commission decree no. 2 2015.

In the main business process based on Judicial Commission decree no. 4 2013, at panel trial for discussion with sub-chapter functions report processing, examination and trial, deepen the case and trace the track record has changed in Judicial Commission decree no. 2 2015 become functions panel trial with eliminate the sub-chapter of deepen the case and trace the track record and also eliminated panel trial for examination process.

6.2 Feature Oriented Domain Analysis (FODA)

The Public Complaint Handling application developed to support the tasks and functions of Judicial Commission in order to serve public who complaints against judge that probably has break the ethics code and judges behavior. In domain analysis stage, the data produced by the feature of the Public Complaint Handling application based on Judicial Commission decree

No	Code	Feature	PLM Application	PLM Application	Category based on similarity and variability
			JC Decree no. 4 2013	JC Decree no. 2 2015	
1	1	First Handling	√	√	Mandatory
2	2	Receiving.	√	√	Mandatory
...
50	50	d. Back to monitoring stage (no. 10).	—	√	Optional

Feature analysis process will remark for the feature that available in the both applications as mandatory. For the feature that only available in one of the applications will remark as optional, OR, or alternative with optional as default due the feature as first identification based on similarity and variability from features that available in the Public Complaint Handling application based on Judicial Commission decree no. 4 2013 and the Public Complaint Handling application based on Judicial Commission decree no. 2 2015. According to FODA method, both features that are as mandatory and optional will require to have further several times analysis and assessment by expert until the

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features are suitable with the goals which is in line with Judicial Commission decree no. 2 2015. In table 2, there are total 73 features with 29 mandatory features and 44 optional features.

The processing based on FODA method in ref [4] that will have three steps; (1) context analysis, (2) domain modeling, and (3) architecture modelling.

(1). Context Analysis

The context analysis to determine scope (or limit) of domain that will analyze with the objective to gather information and identify the scope, boundaries, and relation in the entity formed the application in the related domain.

The characteristics in web applications generated through the results from the observation of the context analysis of these two applications into Preliminary Handling, Further Handling and Trial main features. In Preliminary Handling is divided into several entities namely: Acceptance, Verification, Monitoring and Inspection. In the Further Handling is divided into several entities, namely: Analysis Report, Minutes, and Inspection Report. In the Trials are divided into several entities namely: Panel Session, Plenary Session, Honorary Council of Judges (MKH).

The final result of context analysis will produce context model that describe in structure diagram and context diagram (or data-flow diagram). The diagram will describe for the domain in the scope that will analyze.

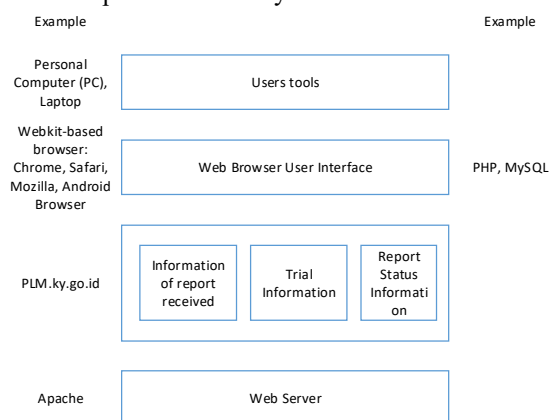


Figure 6: Public Complaint Handling Structure Diagram

From figure 6, top level is users tools that common using such as PC and laptop. The common use for the web browser user interface are Mozilla Firefox, Chrome, etc. The standard programming language use for the application is PHP and MySQL for the database. On the next level was related with the information within the application, such as: information on report receive, verification information, monitoring, trial and other information

that can be accessed through official Judicial Commission website: PLM.komisijudisial.go.id. In the bottom level is the web server that will use apache.

For context diagram will started with exploring the Public Complaint Handling to identify the chosen input and output that will form Public Complaint Handling domain. The domain represent the application data flow will analyze.

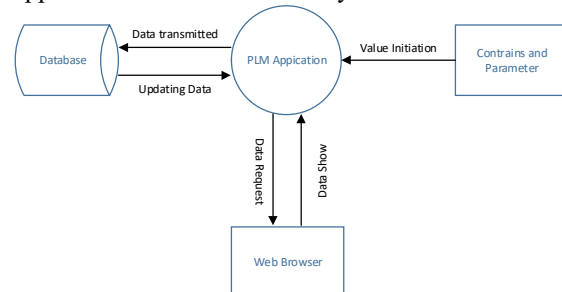


Figure 7: Public Complaint Handling Context Diagram

In figure 7, describe general relation of Public Complaint Handling application with database in direct line connection in two ways that the data transaction happen, sending data to database and updating data from database to Public Complaint Handling application. The one way connection for value initiation in related to constraints and parameter that use in the Public Complaint Handling application. In Public Complaint Handling application web browser data transaction in two ways directly when the data request to the web browser and show the data to the Public Complaint Handling application.

(2). Domain Modeling

The aims of domain modeling to identify the relation and dependence of existing entities on the associated domain by tracking various events of the variant and understanding their interdependencies. Domain modeling will illustrates the problem in the domain handled by the application.

Domain modeling in this research analyze similarity and variability for each entity in Public Complaint Handling application based on Judicial Commission decree no. 4 2013 and Judicial Commission decree no 2 2015. Two steps of modelling as follows: (a). Feature analysis and (b). Entity-Relationship modelling (E-R).

(a). Feature Analysis

The feature analysis objective to find the Public Complaint Handling application feature needs using feature analysis through feature diagram and domain terminology dictionary.

Feature diagram is hierarchy diagram as tree shape that connected between features with sub-feature.

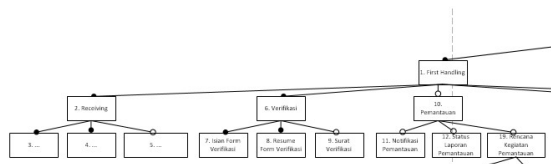


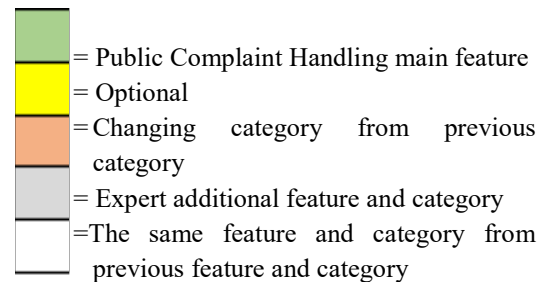
Figure 8: Sample of Feature Diagram based on Table 2

Expert analysis and assessment result assisted to trace the name of the feature and the feature diagram changes with numbering for the feature with certain color and alphabetical for the new feature or additional analysis and assessment result from the expert.

Table 3. List of Features based on First Expert Analysis and Assessment

No	Code	Feature Assessment by Expert (1)	Category Assessment by Expert (1)
1	1	First Handling	Mandatory
...
5	5	Received Report Notification	Optional
...
10	10	Monitoring	Alternative
11	A1	Registration	Alternative
...
59	49	Archives	OR
60	51	Further Handling	Mandatory
61	52	Report Analysis	Mandatory
...
99	B28	Follow up to Plenary Trial	Mandatory
100	63	Trial	Mandatory
101	64	Panel Trial	Mandatory
...
118	C8	Notification Letter to Complaints Against Judge	Mandatory

Color legends:



Color	Features Number
Yellow	4
Orange	30
Grey	57
White	27
Total:	118

Figure 9: Result of First Expert Analysis and Assessment

In figure 9, based on color given at table 3. Number of yellow color or optional features categories are 4, brown color or the number of changes feature categories are 30 features, grey color or new features and new categories are 57 features, and number of features that doesn't changed from the expert analysis and assessment are 27 features.

The result in the first expert analysis and assessment, there are 45 features in addition. The number of mandatory category increase from 29 feature become 59 features; features with optional categories has decrease 39 features, from 44 feature become 5 feature of optional categories; number features of OR categories has increase to 18 features from 0 of OR feature categories; and the alternative feature categories has increase become 13 optional categories from 0 of alternative feature categories.

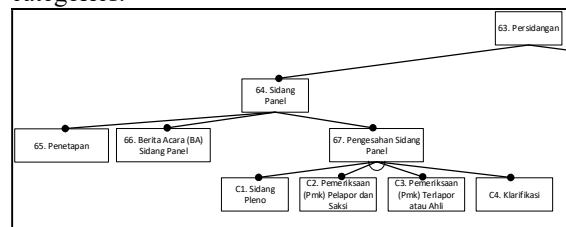


Figure 10: part of Feature Diagram at Trial Main Feature based on Table 3

Based on the first expert analysis and assessment result, at the main features of Preliminary Handling with 59 features consist of 35 features mandatory, 5 optional features, 16 OR

features and 3 alternative features with 19 additional features; at the main features of Further Handling with 40 features consist of 34 mandatory features, 6 alternative features, and without optional and OR features with 29 additional features; and at the main features of Trial with 19 features consist of 13 mandatory features, 2 OR features, 4 alternative features and without optional features with 9 additional features.

No	Co de	Feature Assessment by Expert (2 & 3)	Category Assessment by Expert (2 & 3)
...
124	C1 3	Archives notification	Optional
125	C1 4	Archives report status	Mandatory

Table 4. List of Features based on Second and Third Expert Analysis and Assessment

No	Co de	Feature Assessment by Expert (2 & 3)	Category Assessment by Expert (2 & 3)
1	1	First Handling	Mandatory
...
11	A1	Registration	Alternative
12	A2	Archives	Alternative
...
48	36	Notes description PP	Optional
55	A1 9	Monitoring report description	Mandatory
56	45	Notes description LHP PP	Mandatory
57	46	Disposition LHP PP	Mandatory
58	48	Verification continue to further handling (51)	OR
59	49	Archives	OR
...
101	B3 1	Archives notification	Optional
102	B3 2	Archives report status	Mandatory
103	63	Trial	Mandatory
107	67	Panel trial approval	Mandatory
108	C1	Plenary trial	Alternative
109	C2	Examination (Pmk) reporting and witnesses	Alternative
110	C3	Examination (Pmk) reported and expert	Alternative
111	C4	Clarification	Alternative
115	C5	Plenary trial approval	Mandatory
116	72	Plenary trial decision (PSP)	Mandatory
117	73	Honorary panel of judges (MKH)	Mandatory

Color

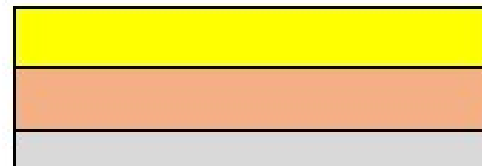


Figure 11: Result of Second and Third Expert Analysis and Assessment

In figure 11, the result of second and third expert analysis and assessment there are produce 125 features that increase 7 features from first expert analysis and assessment. The second and third expert analysis and assessment consist of 86 mandatory features, 4 addition mandatory features from first expert analysis and assessment of 82 mandatory features; there are 7 optional features that increase 2 optional features from 5 optional features; there are decrease 1 OR feature become 17 OR features from previous 18 OR features, and 15 alternative features that increase 2 alternative features from 13 alternative features.

Based on the second and third expert analysis and assessment, at the main features of Preliminary Handling there are 59 features consist of 35 mandatory features, 5 optional features, 16 OR features and 3 alternative features with 19 additional features; at the main features of Further Handling there are 43 features that consist of 36 mandatory features, 1 optional feature, 6 alternative features and without OR feature with 32 additional features; and at main features of Trial there are 23 features that consist of 15 mandatory features, 1 optional feature, 1 OR feature, 6 alternative features with 13 additional features.

Based on the final or fourth time of expert analysis and assessment, there are changes in standard vocabulary with correction on several features names. Expert has final agree and approve for the author features translation through features table and diagram that has suitable with his analysis

and assessment based on Judicial Commission decree no.2 2015.

Table 5. Changes of Features Name

Code	Feature (previous)	Feature (changes)	Category
B10	Reporting Instrumen	Examination Instrument	Mandatory
B14	Instrumen Saksi	Examination Instrument	Mandatory
B19	Instrumen Terlapor	Examination Instrument	Mandatory
B23	Instrumen Ahli	Examination Instrument	Mandatory

The final expert analysis and assessment after several times conducted the analysis and assessment with total 125 features consist of 86 mandatory features, 7 optional features, 17 OR features and 15 alternative features.

We can further see the changes of the result from first of observation and interpretation from two Public Complaint Handling's application through comparative the similarity and variability including feature categories and comparing with the result of the expert analysis and assessment as the final result.

Refer to color legend in figure 9, we can see the changes features matrix as follow in table 6 [2]. Based on table 6 [2], there are: the author compile list of feature application through comparative the similarity and variability including feature categories identified for total of 73 features with 44 optional features and 29 same features and categories from previous features and categories; the first expert analysis and assessment for total 118 features with 4 optional features, 30 changing features categories, 57 additional features, and 27 same features and categories from previous features and categories; the second and third expert analysis and assessment for total 125 features with 4 optional features, 30 changing features categories, 64 additional features, and 27 same features and categories from previous features and categories; and the final expert analysis and assessment for total 125 features with 4 optional features, 30 changing features categories, 64 additional features, and 27 same features and categories from previous features and categories with correction and changes on the features names.

(b). Entity-Relationship Modeling (E-R)

The entity-relationship modelling create to get the relation between entities of Public Complaint Handling features that describe through entity-relationship diagram. This E-R expected will

be as guidance and reference for web application database domain model.

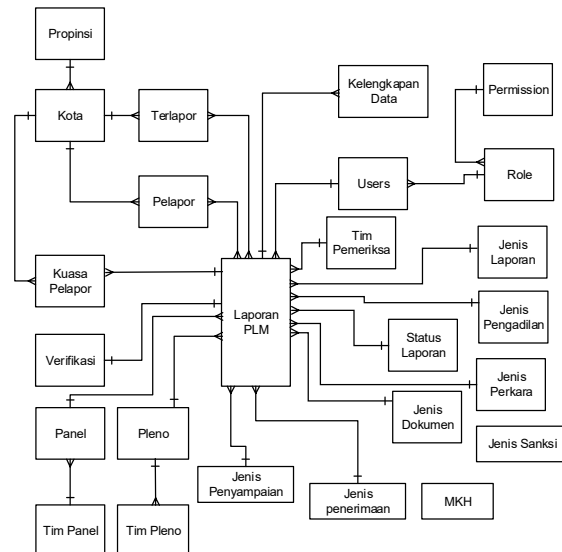


Figure 12: Public Complaint Handling E-R Diagram

In figure 12, most of E-R one-to-many with several E-R many-to-many. There are some of E-R doesn't have relationship with other entity such as sanction type (Jenis Sanksi) and MKH.

(3). Architecture Modeling

The architecture modelling will produce domain modelling of Public Complaint Handling application for Judicial Commission. This architecture will be as reference for Public Complaint Handling web application development in the future that will focusing only adding customized features to the needs of the domain with detailed design and component construction.

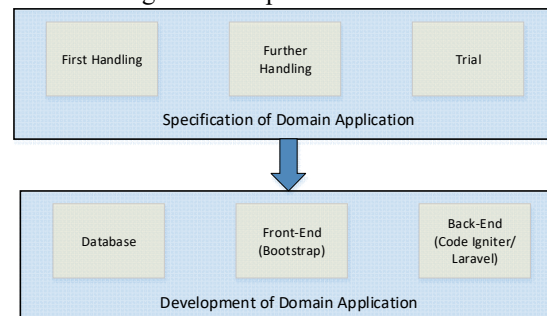


Figure 12: Public Complaint Handling Architecture Modeling

Based on figure 12, the proposed architecture modeling of Public Complaint Handling application with focused addition features suitable with FODA method approach through domain application specification and domain application development.

7. CONCLUSION

Based on the result of the study; (1) the Judicial Commission simplifies and refines the functions of Public Complaint Handling's main business processes, (2) FODA can be used to perform feature analysis of Public Complaint Handling application in order to identify and assess Public Complaint Handling application features, and (3) The final result of Public Complaint Handling application feature using FODA based on expert analysis and assessment with total 125 features that consist of 86 mandatory features, 7 optional features, 17 OR features, and 15 alternative features.

The result from context analysis, domain modeling and architecture modeling of FODA method that can obtained reusable domain product. Reuse may occur in the appropriate layers for a particular application and the impact of technical changes and requirements on the model can be localized.

In addition to determine the implementation decision there still to be done the completion of the design including analyzing the system for the similarities and variability, feature model development, architecture development and components that can be reused. This will requires intensive review and discussion with domain experts and domain users.

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Table 1 [1]. Comparison the Functions in the Main Business Process of Public Complaint Handling

	Judicial Commission Decree no. 4 2013	Functions			
	Main Business Process of PLM	Report processing	Examination and Trial	Monitoring	Deepen the case and trace the track record
I	Create a Team	√	√	√	√
II	First Handling	√			
	Receiving reports	√			
	Reports verifications	√			
III	Deepen study the Report	√	√	√	√
	Anotation	√			
	Monitoring		√	√	
	Investigation	√	√		√
IV	Panel Trial of Discussion	√	√		√
V	Further Handling		√		
	Examination		√		
	Clarification		√		
VI	Panel Trial of Examination		√		
	Plenary Trial	√	√	√	√

	Judicial Commission Decree no. 2 2015	Functions			
	Main Business Process of PLM	Report processing	Examination and Trial	Monitoring	Deepen the case and trace the track record
I	Create a Team	√	√	√	√
II	First Handling	√			
	Receiving reports	√			
	Reports verifications	√			
III	Further Handling	√	√	√	√
	Report Analysis	√			
	Examination complaints against judge, witness and or expert		√		
IV	Panel Trial	√	√		
V	Examination the reported judge		√		
	Examination the reported judge		√		
	Request for Clarification		√		
VI	Plenary Trial		√		

Table 6 [2]. List of the Public Complaint Handling Features Changes

	Features				
	Optional Category	Changing category from previous category	Expert additional feature and category	The same feature and category from previous feature and category	Total
Color					
The author compile list of feature application	44			29	73
<i>First Expert Analysis and Assessment</i>	4	30	57	27	118
<i>Second and Third Expert Analysis and Assessment</i>	4	30	64	27	125
<i>Final Expert Analysis and Assessment</i>	4	30	64	27	125