Designing Customer Care Application in Service Provider Company

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Abstract

A service provider company is a company engaged in service provider services that has a core business of VSAT network leasing services (a very small terminal). VSAT is a WAN (Wide Area Network) communication system that uses satellite. As the company grows, it raises various problems caused by the Operational HUB department which prioritizes problems in the customer's network or in supporting devices on the company's internal side. Then another link appears where the Handover list of previous shift information is still manual. The last problem is recording data that is still manual. In contrast to this analysis and design, it is not only agreed on standard operating procedures that are also supported between the data warehouse and the standard operational procedures of each customer or the system used. To overcome the problems that occur in the Operational HUB department of service provider companies, an analysis and designing of customer care applications is carried out. The resulth of analysis and designing consist of Data Warehouse, Handover, and Permission.

Keywords: Data Warehouse, VSAT, Customer Care Application, Service Provider Company.

1. Introduction

The development of information technology continues to develop rapidly. Information technology plays a major role in economic growth so that it impacts directly or indirectly on companies. One impact caused by information technology is competition between companies. Many companies use information technology to support their business processes so they can achieve their vision and mission. Without information, the company's business operations cannot be carried out [1]. With the information system, the information held by the company can be processed to produce something that can be used by the company. However, in its application there are still companies that have not designed information systems to the fullest or in accordance with their business needs. Information systems are computer components that are interrelated to collect, process, store and provide as output the information needed to complete business tasks [2].

Our case study is a company engaged in service provider services that has a core business of network rental services VSAT (very small aperture terminal). VSAT is a small antenna shaped like a small ball that uses a stellar for its communication path. VSAT is a WAN (Wide Area Network) communication system. VSAT antenna is a useful tool to receive and send signals to and from satellites. Using the VSAT network which is the core network for some customers, service provider companies have customer care services in the Operational HUB department for reporting network problems that occur to customers on location 24 hours.

To support customer care services Service provider companies have a website based

information system that contains customer data that is used to check network locations.The growing company raises a variety of problems faced by the Operational HUB department, especially in handling problems on the customer network and on supporting devices on the company's internal side. The problem that occurs is that customer data is broken down based on each operational team making handling problems to customers quite time consuming. Then another problem arises where the previous shift information handover list is still manual, so it does not match or complete the information provided. The last problem is the recording of data manually is also still done mainly on recording the company's internal and external entry permits.

Unlike this analysis and design, it not only focuses on operational standard procedures, but also the integration between data warehouse and operational standard procedures for each customer or system used. To overcome the problems that occur in the service provider company's Operational HUB department, an analysis and planning of customer care applications are carried out at the service provider company.

2. Literature Review
2.1. Unified Modeling Language (UML)

The Unified Modeling Language (UML) is a standard set of model constructs and notations defined by the Object Management Group [3]. Using UML allows analysts and users to understand and read the contents of diagrams. As for some examples of diagrams are Activity Diagrams, Use Case Diagrams, Domain Model Class Diagrams, Sequence Diagrams, and Package Diagrams [3].

2.2. Customer Care

Customer care is a way or job to look after customers and ensure their satisfaction with the business and goods or services of a company [4]. Customer care means maintaining and maintaining and adding new customers. Customer care is not just about providing a service, it requires a little extra service and in accordance with the expectations of customers who expect the best service. This means making employees who work at the company make the right choices, steps, attitudes in dealing with customers.

The customer care service system design for the company's external and internal processes is based on the problems, such the handover process, and The process of applying [5].The handover process between shifts that still uses manual records produces communication errors that often occur in following up on disruptions that occur on the previous day's shift that have not been resolved. To overcome this problem, a submission system design solution has been created that can be used as information that occurred in the previous shift to minimize the lack of communication and disruption that still needs to be followed up on.

The process of applying for entry permits for internal and external employees of the company is quite time consuming because the data filling process and also the approval process (approval) to the authorities are still manual. To overcome this problem, a licensing system design solution was created to facilitate internal employees in filling out permit forms without having to go into place.

2.3. Data Warehouse

Data warehouse is a relational database that is designed for query and analysis purposes. Data warehouse contains historical data that comes from transaction data sources, but also from various other data sources. Data warehouse separates analysis workload from transactions and allows companies to combine data from several sources [6].

2.4. Previous Research

Previous research that had been conducted analysis and design of a data warehouse in a sane source hospital only focused on the data warehouse, while the difference from this study was not only the data warehouse but also included the user interface, the ease of searching and processing data, and procedures for handling problems with customers or internal company [7]. Other research has also been conducted by Agung Adi Saputra, Dede Ridwan and Harry Sugianto, entitled the design of a web-based standard operating procedure document circulation system on the customer care business process and policy department (CCBPP) at PT Telkomsel. It also cannot cover the problems at Service provider company because the research only focuses on the operating procedure standards used in the company [8].

3. Research Methodology

This research uses a case study approach that focuses in designing three applications such as : Data Warehouse, Handover and Permission for Customer Care Application at this company. The scope of this research is only the users that used the application in the company and Technical Department.
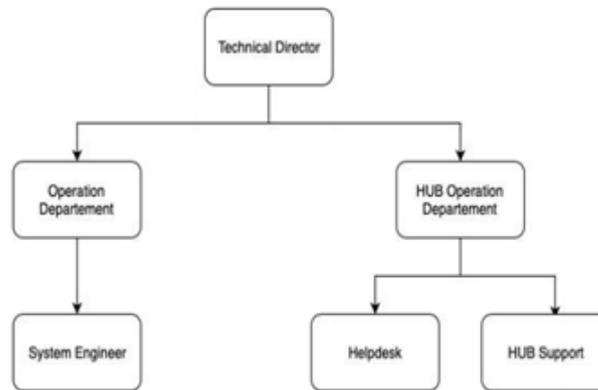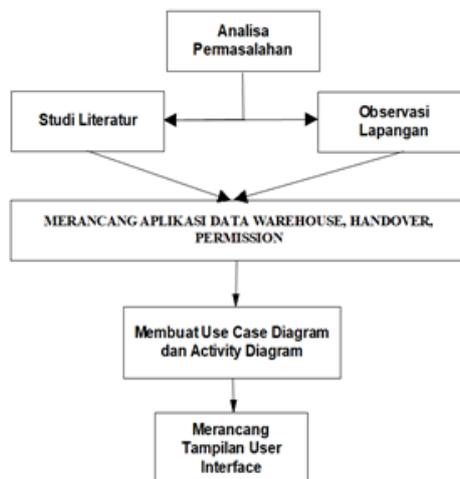

Figure 1. Organizational Structure of Technical Department

The figure shown below is the research framework that explains the stages in this

study.

Figure 2. Research Framework

There is two methods used to analyse the problem in this company. First is Literature Study by collecting and searching data from study books, journals and other trusted sources related to this research. Second is Observation by observing the situation and business activities at the Service Provider Company in Jakarta as an object to get accurate information. From this, we can identify the company problems and needs. Based on the results of the observation, this is the list of problems that occur at this company:

1. Service to customers and making decisions about problems or problems faced by this company often hampered and time-consuming because the data storage is still fragmented and all documents and data are still using applications such as Ms.Word and Ms.Excel. Employees also have difficulty in processing data for reporting needs and services to customers.
2. Handover process between shifts that still uses manual records results in frequent miss in following up on disruptions that occur on shifts and the previous day that have not been resolved.
3. The process of applying for entry permits for internal and external employees of the company is quite time consuming because the data filling process and also the approval process to the authorities are still manual.

The study used UML Method such as Use Case Diagram, Activity Diagram to design the application in this company. Each diagram define future system design such as Data Warehouse, Handover and Permission.The specification of hardware and software that we used in creating user interface for each systems such as : hardware and software. Hardware : Minimum specification requirements using Intel i3 Processor, RAM 4 GB and Harddisk 50 GB. While, Software : Server Operating System using Windows Server 2012, Database Server using MySQL, Client Operating System minimum requirement using Windows 7.shown below is the research framework that explains the stages in this study

4. Results & Discussion

After collecting the data, the process is then described future system design using UML Modeling and showing the User Interface of each system. The system consist of Data Warehouse, Handover, and Permission.

4.1. Data Warehouse

The proposed system for solving the first problem is by designing a data warehouse in a customer care application which has been there before. The data created will be integrated later with features applied to customer care so users can easily perform data processing that is the basis in decision-making. Below are shown the Activity Diagram, Use Case Diagram and User Interface for Data Warehouse:

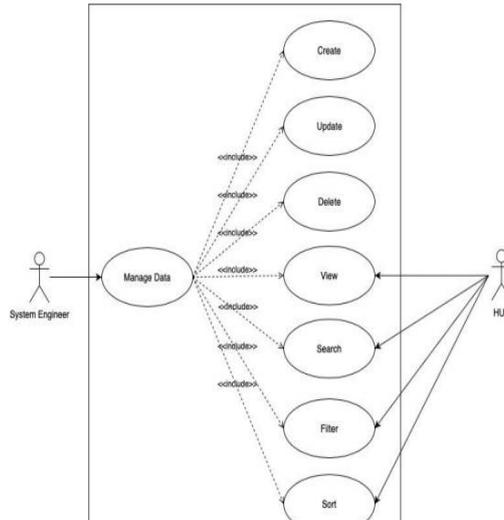**Figure 3. Activity Diagram of Data Warehouse**

Figure 4. Use Case Diagram of Data Warehouse

Figure 5. User Interface of Data Warehouse

On this page there is data processing features that are designed such as Sort, Filter and Search. The sort feature is used to sort the data to be displayed based on the selected category. Filters are used to display data based only on selected categories. While search is used to display the data sought in accordance with the keywords entered by user. To add new data, update existing data and delete data existing can only be done by the System Engineer, while the Helpdesk and HUB Support can only see data and use features data processing only.

4.2. Handover

The proposed system for solving the second problem is by designing the Handover feature on customer care applications that have been there before. Handover procedure in this design is HUB Support shift Before making a new handover, the system will display a list of the previous problem, then HUB Support includes the remaining problem running, adding HUB info, removing problems that are already active and delete the existing HUB info. When finished entering the details Handover HUB Support stores data that has been previously inputted. Next, the system will display Handover and HUB support details asked to enter the next HUB Support shift. The system will display Handover details to HUB Support next shift. HUB The next shift support will be provided approval for the detailed Handover and the system will display Handover details that have been approved. Below are shown the Activity Diagram, Use Case Diagram and User Interface for Handover:
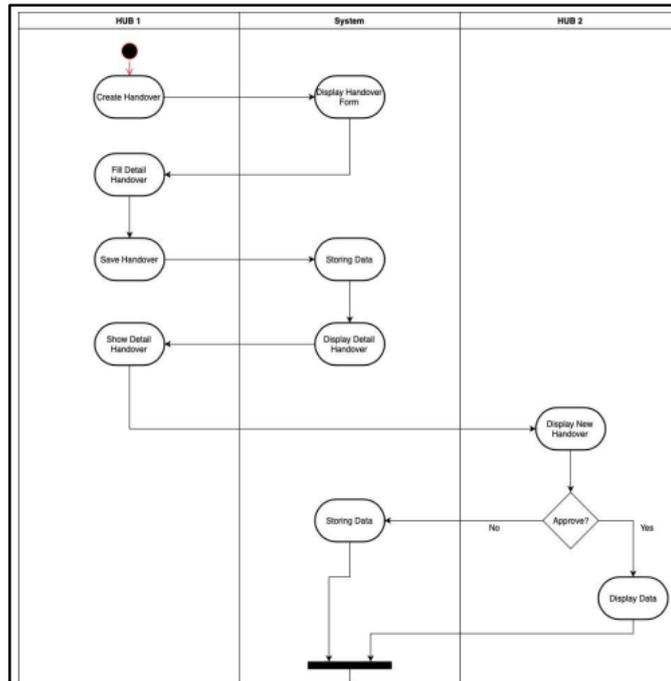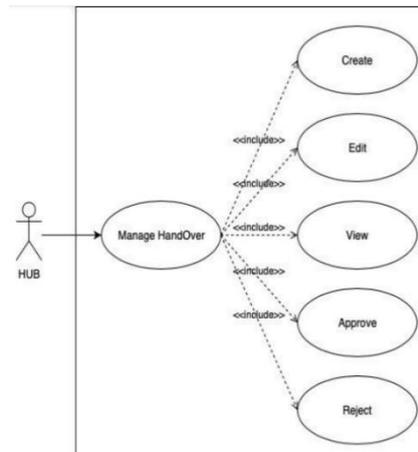
Figure 6. Activity Diagram of Handover

Figure 7. Use Case Diagram of Handover

Figure 8. User Interface of Handover

On this page the user can make a new handover by clicking the Create button. The Manage Handover menu is a dropdown menu that displays four options for managing

handovers that have been made. The four options are Edit, View, Approve and Reject. On the Edit and View Handover page users can make changes to the handover and see the details of the handover that has been made previously. The Approve and Reject Handover pages can only be accessed by the HUB user role. On this page the HUB Support can approve or reject handover according to the selected button. If the handover is approved, the status will change from new to approved. If the handover is rejected, the status will change from new to rejected.

4.3. Permission

The proposed system for solving the latter problem is by designing the Permission feature in the customer care application which has been there before. Permission procedure, that is, the visitor fills in the details of the personal data, if visitor data already exists so visitors only need to fill in details visits and areas to be entered. Next the data submitted and the system will save and send notifications permission to enter the Helpdesk. The Helpdesk will check the data received and provide approval. After the Helpdesk gives approval, the system will send test data to the HUB Support on duty. HUB Support will receive notification of requests for entry permits and the system will displays the details of the data. If the data is complete then HUB Support will give approval to the request. Then the Helpdesk will receive notification of approval complete and the Helpdesk will enter the access card number used to enter the requested area. Helpdesk giving access cards to visitors and visitors allowed to enter the area according to the previous request. Below are shown the Activity Diagram, Use Case Diagram and User Interface for Permission:
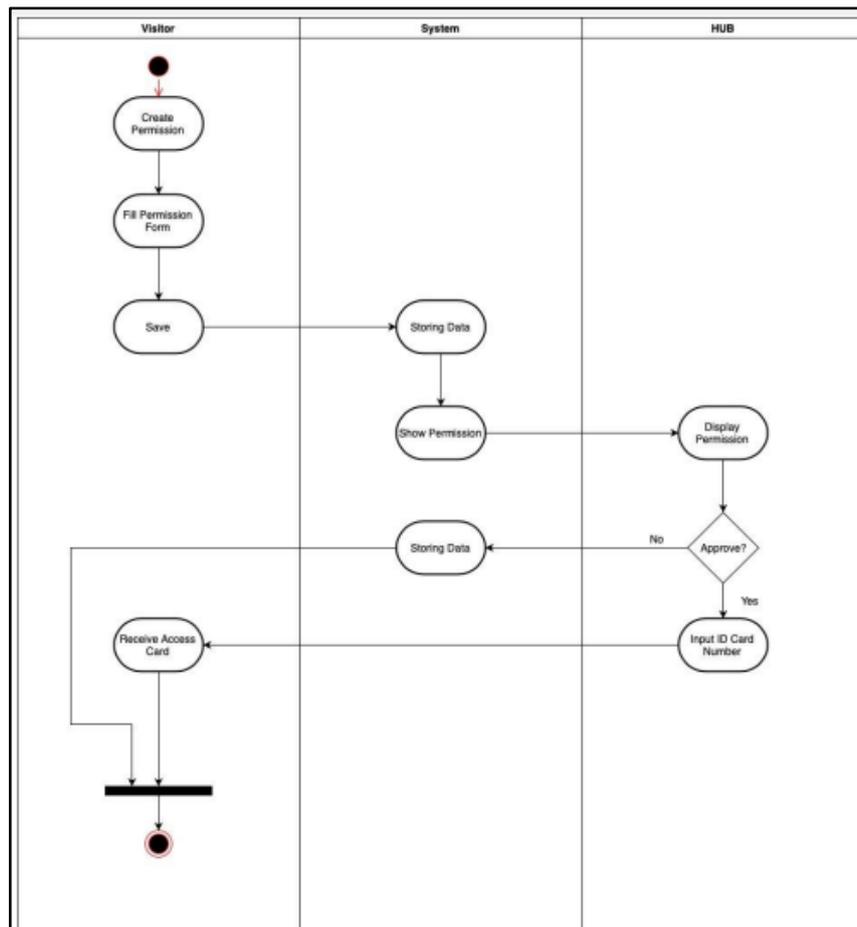

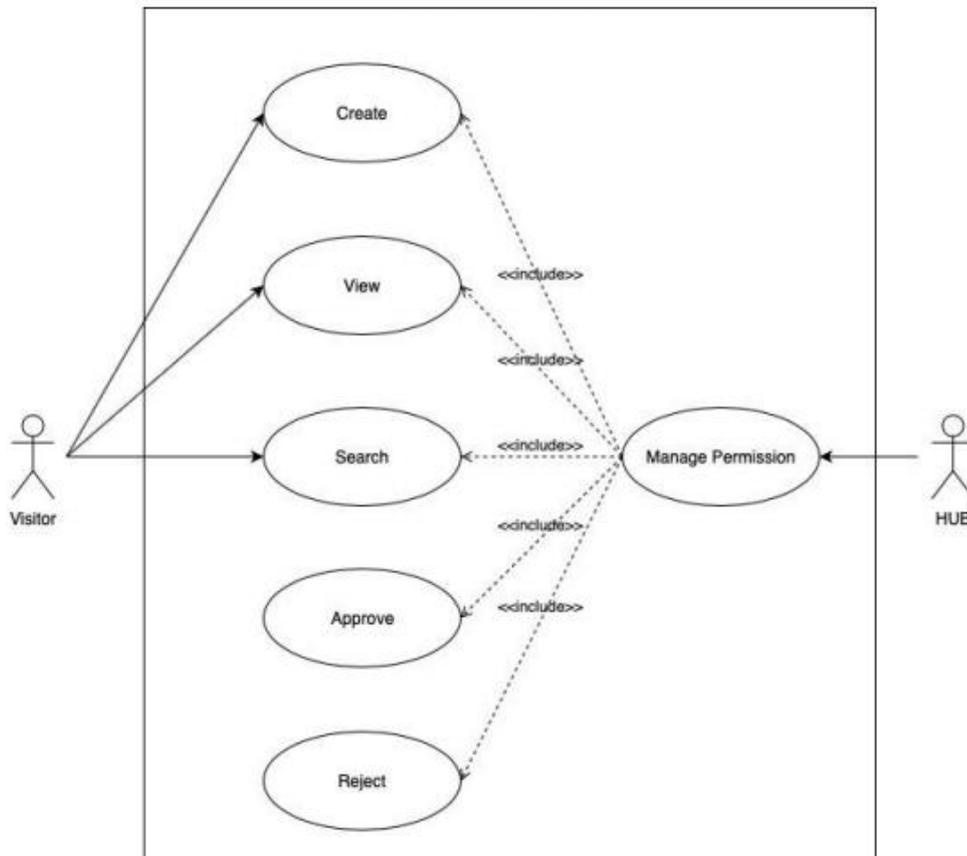
Figure 9. Activity Diagram of Permission

Figure 10. Use Case Diagram of Permission

Figure 11. User Interfaceof Permission

On this page the visitor can create the details visits and areas they want enter by fill their personal data. Helpdesk can check the data of the visitor and provide approval. HUB Support can requests for entry permission and view the details of the data.

5. Conclusion

Based on the results of research that has been done, the conclusions can be drawn as listed below:

1. Customer data storage is still using manual data so that employees have difficulty in finding customer data to process data and make decisions. To overcome that

problems, a data warehouse system design solution has been made that has features such as data storage, data editing, data deletion, data sorting, data filtering, and data searching to make it easier for users to find customer data and make decisions quickly and accurately if problems occurs.

2. The inter-shift handover process that still uses manual records results in frequent misscommunication in following up on disruptions that occur on previous day shifts that have not been resolved. To overcome that problem, a handover system design solution was made that can be used as information that occurred in the previous shift to minimize the occurrence of lack of communication and interference that still needs to be followed up.

3. The process of applying for entry permits for internal and external employees of the company is quite time consuming because the data filling process and also the approval process (approval) to the authorities are still manual. To overcome that problem, a permission system design solution was made to facilitate internal employees in filling out permission forms without having to go into place.

References

[1]   Bajdor, P., & Grabara, I., "The Role of Information System Flows in Fulfilling Customers Individual Orders", Journal of Studies in Social Sciences, 7(2),(**2014**).

[2]   Satzinger J.W., Jackson R.B. & Burd S.D., "System Analysis and Design in a Changing World Seventh Edition", Cengage Learning, ISBN 978-1-305-11720-4, (**2012**).

[3]   Shu, X., Wang, M., & Wang, X.,"Extending UML for Model Checking", In International Workshop on Structured Object-Oriented Formal Language and Method, Springer, Cham, (**2017**) November, pp. 88-107.

[4]   Gorry, G. A., & Westbrook, R. A.,"Once more, with feeling: Empathy and technology in customer care", Business Horizons, 54(2), (**2011**), pp. 125-134.

[5]   Raeisi, A., Rarani, M. A., & Soltani, F.,"Challenges of patient handover process in healthcare services: A systematic review", Journal of Education and Health Promotion, 8, (**2019**).

[6]   Bani, F. C. D., & Girsang, A. S.,"Implementation of database massively parallel processing system to build scalability on process data warehouse", Procedia Computer Science, 135, 68-79, (**2018**).

[7]   Rianto, R., & Hadis, C.,"Perancangan Data warehouse Pada Rumah Sakit (Studi Kasus: BLUD RSU Kota Banjar)", Jurnal Siliwangi Seri Sains dan Teknologi, 3(2), (**2017**).

[8]   Agung., "Perancangan Sistem Sirkulasi Dokumen Standard Operating Procedure berbasis Web Pada CCBPP di Pt Telkomsel", BOL-S1-2017-0240, (**2017**).
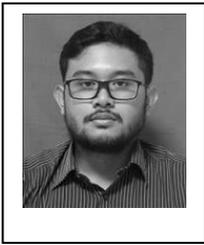
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