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Elimination of Disera Application Needs as an Online Booking Application for Android-Based Motorcycle Services in Mataram City Using Survey and Prototyping Techniques

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Abstract: *One of the businesses in the service sector that is needed by the community who use motorbikes is a repair shop. The existence of workshops scattered in areas in the city of Mataram often causes people to be confused about finding a workshop that suits their needs. Based on the existing problems, a solution was designed, namely Disera (Digital Service App). DISERA is a service-based digital business to connect automotive experts or repair workers with people who need motorcycle service services. In the DISERA application development process, a structured requirements identification technique is needed. Based on the presentation of the problem and the urgency of elicitation, this research will focus on how to identify the need for the DISERA application as an Android-based motorcycle online service ordering application in the city of Mataram. The elicitation techniques that will be used in this study are survey and prototyping techniques with the aim of obtaining actual user needs and providing prototype designs so that the application development process becomes more focused and produces a good appearance. This research was conducted using a mix of methods, namely qualitative and quantitative methods. Quantitative methods are used as a scheme in collecting data in the form of numbers from survey results to selecting data from observations. While the qualitative method is constructed as a correlative scheme in analyzing problems in the results of case studies and reviewing the basic theory of concept development. In the application design process, data collection is first carried out from primary data obtained through digital surveys, so that user data is obtained to determine the application development process. Prototyping techniques in the software requirements elicitation process can help the process of making application designs that suit user needs. The result is that through survey and prototyping techniques can create application designs that meet user needs.*

Keywords: *Elicitation, DISERA, Motorcycle Servicing, Survey, Prototyping.*

1. INTRODUCTION

The development of industrial technology from year to year is growing. Technological developments affect aspects of people's lives both in the social, cultural, economic, artistic, technological, informational, and communication fields [1]. One of the technological aspects that needs to be developed is that which is engaged in automotive services, namely motorcycle vehicles which have become the most transportation technology in Indonesia today[2]. Even more so on the island of Lombok. The number of motorcycle users on the island of Lombok is 881,129 units of motorcycle users [3]. One of the businesses in the field of services that are needed by the community of motorcycle users is a workshop. Workshop is one form of business engaged in services and the existence of workshops, especially community-owned workshops in Mataram City is very important and needed by two-wheeled vehicle owners. The existence of workshops scattered in areas in the city of Mataram often causes people to be confused about finding workshops that are suitable for their needs. In addition, many motorists who experience a motorcycle breaking down on the way are forced to push their motorcycles. This is because there is no platform to order motorbike *service* directly on the spot.

Many people do not have workshop contacts who can be contacted, so they often find it difficult to find the nearest workshop. Furthermore, people often forget to carry out routine checks on their motorcycles, causing large repair costs due to damage that occurs.

Based on the existing problems, a solution was designed, namely Disera (Digital Service App). DISERA is a service-based digital business to connect automotive experts or workshop workers with people who need motorcycle service services. The business location of DISERA is in Mataram, NTB. The vision of DISERA is to utilize the potential and solve problems, especially in doing motorcycle service so that it can improve the quality of life of the community, both consumers and service providers. The types of services from DISERA itself are light service, road service and fast booking service. The difference between DISERA and similar service platforms is that DISERA uses a cooperation system with workshops throughout the city of Mataram, NTB, and can order several times with one order so that it can order motorcycle *service* easily and quickly.

Therefore, in the process of developing the DISERA application, a structured requirement identification technique is needed. Application development must be done carefully, because the failure of application development is mostly caused by the identification of needs that are not appropriate and not in accordance with existing needs. The software engineering process cannot be separated from the needs of potential users. Of course, user needs must be known by every software developer. If you still insist on building software without knowing the needs of the user first, then be prepared that the software will not be used. Unused software will cause great harm to developers [4]. According to Kusuma *et al* (2021) in their research entitled "User Viewpoints in Extracting Software Needs Using User Persona" how important it is to explore user needs, because by analyzing user needs can reduce problems and losses that arise when a *software* is released [5]. Therefore, techniques are needed to identify optimal application needs and in accordance with the application development environment. One technique for identifying needs is elicitation. To be able to find out user needs, elicitation plays a very important role. According to Ian Sommerville, with elicitation, the software development process can find its needs through communication with customers, users, and various parties who have an interest in system development. In elicitation itself, there are several stages that need to be done so that elicitation becomes complete and produces *valid* requirements [6].

Based on the presentation of problems and the urgency of elicitation, this study will focus on how to identify the needs of the DISERA application as an Android-based motorcycle online service ordering application in the city of Mataram. The elicitation techniques that will be used in this study are survey and *prototyping* techniques with the aim of getting the actual user needs and providing *prototype designs* so that the application development process becomes more focused and produces a good display.

2. LITERATURE REVIEW

2.1. Related Research

Research conducted by Puspitaningrum, et al entitled "Software Requirements Elicitation Techniques: Literature Review". This research was conducted because of the problem of organizations that do not understand the type of software developed, so it is difficult to identify the right needs. The research method used is a literature review of related research. Based on the results of the study it can be concluded that interviewing, prototyping and JAD are most

often used in software projects. In addition, for small to medium-scale software projects more interviews and JAD are used. Meanwhile, large-scale software projects involve more stakeholders with elicitation techniques such as focus group discussions, interviews, and parallel discussions to find joint solutions to problems [7].

Research conducted by Romadhoni and Kusuma entitled "Elicitation of Needs to Increase User Satisfaction in the E-Learning System of the University of Muhammadiyah Malang". This research is motivated by the existence of various kinds of users with different characteristics that make it difficult for organizations to know user needs. Therefore, this study was conducted to determine the elicitation of the need for the system to be developed. This study shows the results that using appropriate elicitation techniques successfully examine and know more deeply related to more implementative solutions for information system development [8].

Research conducted by Camila entitled "Literature Review: Engineering Requirements Engineering and Analysis". This research was motivated by software development that failed due to the absence of elicitation techniques. In this study, a systematic approach was used by reviewing the literature on engineering and *requirements engineering* analysis. Based on the results of the research that has been done, it is concluded that requirements engineering techniques and analysis are important phases in software design, because using *requirements engineering* techniques and analysis can reduce the risk of software development failure [9].

Research conducted by Kanedi and Siswanto raised the car AC service scheme in Bengkulu andromeda with the title "Application of Car AC Service Services in Andomeda Bengkulu". This Car AC Service Application at ANDROMEDA uses the system development method and the blackbox method, namely by testing the data input form contained in the Car AC Service Application at ANDROMEDA. The output of this study is an AC service provider application [10].

Research conducted by Sugianto & Herliana discusses the application of Artificial Intelligence into an application prototype to make it easier for the public to get information related to vehicle specifications owned, especially in terms of system conditions and service scheduling, as far as the limit of configuration from related applications. The output of this study is an application providing vehicle specification information owned by the *user* [11].

2.2. Overview of Elicitation Techniques

The *software requirements process needs to pay attention to the point of view* of requirements from users or customers and various other stakeholders related to the software to be developed. According to Ian Sommerville, *user requirements* have an important role for the sustainability of the use of software, because user needs become specifications of what must be implemented, the description of how a software should work and also limitations in the system development process so that it is not too broad [8]. Furthermore, according to Ian Sommerville , requirements consist of user needs, system requirements and software design specifications. Furthermore, one of the initial stages in the *requirements process* is elicitation. Elicitation is defined as the collection of requirements and becomes the initial activity in the requirements *engineering process*. The elicitation process is carried out before needs can be analyzed, modeled, or defined [6]. The elicitation process can produce both functional and non-functional needs. Current elicitation techniques include: questionnaires, surveys, interviews, brainstorming, document analysis, *role playing, use cases*, protoyping, *Joint Application Design* (JAD), *requirement* workshops, and *storyboards* [3] [4]. Some of the excavation techniques above have the following explanation:

a. Interview: The interview method is used to explore opinions and facts related to the workflow and process carried out related to an activity. This method uses a question and answer method between researchers and respondents. The weakness of this method requires a deep understanding and the same knowledge between the *interviewer* and the resource person.
b. Survey: is one of the elicitation

techniques used by spreading certain questions with answers that have been provided and asking respondents to answer these questions. This technique is a very popular and easy-to-use technique in mining data.

c. *Requirement workshop*: is another elicitation technique that has a way of bringing together *developers and* stakeholders *in one meeting room and defining what are the functional and non-functional needs of the information system* .
d. *Brainstorming*: Elicitation techniques that create creative thinking activities for users to convey their ideas and opinions after being given the subject matter. After the ideas are collected, the ideas will be ranked on a priority scale according to the needs of the information system.
e. *Storyboard*: The storyboard elicitation technique prioritizes illustration and visualization of needs depicted with the aim of understanding each other. This visualization is done to explain the details of the information system flow to be more detailed.
f. *Use cases*: is an elicitation technique that is prepared based on the results of interactions between *actors* and the system to be built and is usually represented in a *Use Case Diagram*. This technique is used to structure the scenario of the functioning of a system so as to prevent misdefinition of information system needs.
g. *Role playing*: It is an elicitation technique that provides opportunities for parties related to the development of information systems to imagine as users and how the perspective of being a user. Thus, related parties can provide suggestions and inputs for the development of information systems [4].

3. RESEARCH METHODS

3.1. Tools and Materials

The tools used in this study consist of the Google Form platform as a tool for conducting surveys. Figma as a tool for designing *interface design* and application *prototypes*. Furthermore, this research material consists of the results of a survey conducted on 39 motorcycle users in the city of Mataram.

3.2. Types of Research

This research was conducted with a mix of methods, namely qualitative and quantitative methods. Quantitative methods are used as a scheme in collecting data in the form of numbers on survey results to selecting data from observations. While the qualitative method is constructed as a correlative scheme in analyzing problems in the results of case studies and reviewing the basic theory of concept development. The data in this work is constructed descriptively from the source of analysis to the process of elaborating data into valid information. Furthermore, to support the validity of the data, the author utilizes the rundom purposive sampling scheme to take samples in the community.

3.3. Stages of Research

The implementation of this research begins with a literature study, conducting a survey, then recapitulating the data that has been obtained. Furthermore, the author created a *flowchart* to give readers an idea regarding the DISERA application. The next process is application design and prototype design. After *the prototype* is complete, then testing is carried out. If the results are not appropriate, application design improvements will be made. However, if the test results show a high value, then further documentation will be carried out as a guideline for developing applications.

4. Results and Discussion

In this study, an application system called DISERA was designed which is present as a digital application innovation to order motorcycle *services* that connect workshops with motorcycle *service* users in Mataram City. DISERA runs on *mobile devices* and implements *Location Based Service* or facility service at the user's location.

In the application design process, data collection is first carried out from primary data obtained through digital surveys, so that user data is obtained to determine the application development process. Survey techniques as elicitation techniques are used to find out problems and user interest in the solutions to be provided. Thus, the process of identifying software needs will be better. The survey in this study was attended by 39 respondents, with details of 37 students in Mataram City and 2 others from civil servants and entrepreneurs. Where, the parameters of measuring respondents' responses consist of 5 parameters, namely:

Table 1. Parameters of Measurement of Respondent Responses

Code	Information
1	Very rare/lacking
2	Rarely/Less
3	Enough
4	Often/Good
5	Very often/Excellent

Based on the data on the first survey question, it is shown in Figure 2 that about 46.2% service two-wheeled vehicles quite often. The following is a visualization of respondents' motorcycle service activity data.

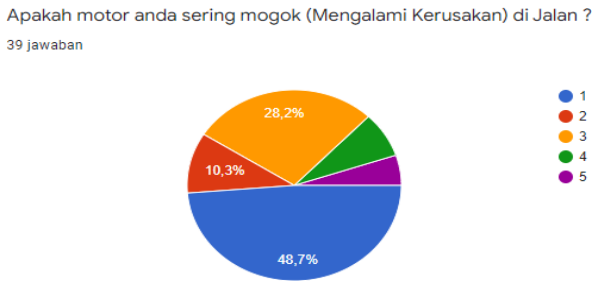

Figure 2. Motor Service Activity Level

Furthermore, based on the data from the second survey question in Figure 3 shows that 48.7% of respondents rarely experience problems when the motorcycle breaks down or dies on the road. However, there are still 28.2% in the category of quite frequent, 7.7% often, and 5.1% very often experience motorcycle breaks down on the road. Thus, the presence of the DISERA application is important to overcome user problems in the form of motorbikes breaking down on the road.

Furthermore, in the results of the third question shown in Figure 3, it was found that 41% of respondents would push the motor when it broke down, of course this is a problem that must be found a solution, one of which is the DISERA application.

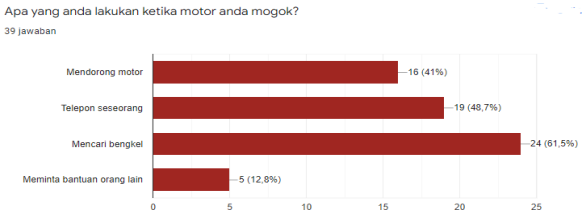

Figure 3. Respondent's Actions When the Motor Breaks Down

Then, in Figure 4 there are at least 35.9% with sufficient category, 10.3% with frequent category, and 15.4% category very often difficulty in finding a workshop to do motorcycle *service*. This means that the presence of DISERA has a high urgency in order to overcome user problems. The following are the results of a survey of the level of difficulty of finding a workshop.

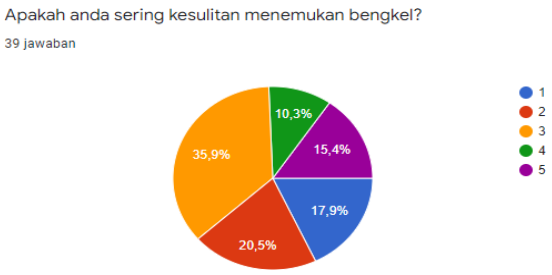

Figure 4. The difficulty level of finding a workshop

The next question is shown in Figure 6 regarding the availability of the user's motorcycle service subscription. Based on the results, 53.8% of users do not have a subscription, causing them to find difficulties in finding a repair shop to

speed up the ordering process and *motorcycle service* process. Thus, with the presence of the DISERA application will be able to overcome the problems experienced by users and will more quickly find a workshop that suits their needs.

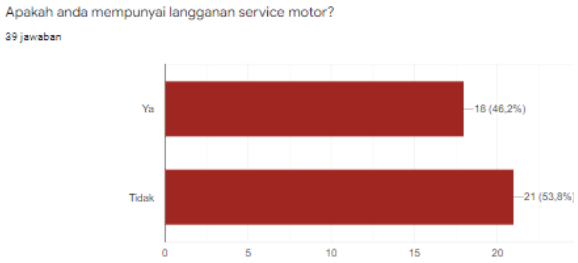

Figure 5. Motorcycle Service Subscription Ownership

The next question is a survey related to motorcycle damage that is often experienced by respondents. This question aims to provide service facilities that will later be available in the application. The results showed that 15.4% often experienced motorcycle breakdowns, 76.9% broke tires, 23.1% motorcycles died completely, 2.6% flat tires, 2.6% ran out of gas on the trip, and 2.6% often experienced damage to the motorcycle engine. The survey results are shown in Figure 7. With the survey technique in software elicitation, it causes ease in designing and developing applications to be effective and right on target.

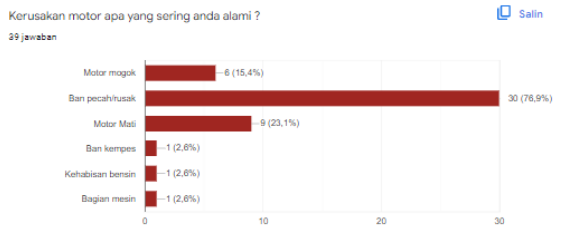

Figure 6. Motorcycle Damage that is Often Experienced

Based on the survey results and responses given by respondents show that the DISERA application is very important to be utilized by motorcycle users and workshops to speed up the ordering process and motorcycle *service* process. Thus, user difficulties when experiencing a broken motorcycle on the way can be overcome and users will be able to more easily perform *service* at the location quickly and efficiently.

Survey techniques in the process of elicitating the needs of the DISERA application assist researchers in determining the goals and limitations of the application, as well as the appropriate and necessary features in the application. DISERA can be an innovative Android-based digital service application that can be accessed via *mobile* devices to connect automotive experts or workshop workers with users who need motorcycle service services.

By elicitating needs using survey techniques, innovative features can be formulated and provide convenience for users. The uniqueness of DISERA is that users will be directed to workshop services or experts in the automotive field at the nearest location. This application also implements the Location Based Service method, where users can order motorbike service at the location, so there is no need to go to the workshop and simply use the application. The advantages of this service are that service users can be helped when they need vehicle service during the trip, facilitate communication, and provide a forum for automotive experts in finding service services.

After conducting a v chart can be determined as a form of representation of the scheme of using the DISERA application and as a guideline for carrying out *prototyping techniques*. The flow chart of the process of using the DISERA application is shown in Figure 7.

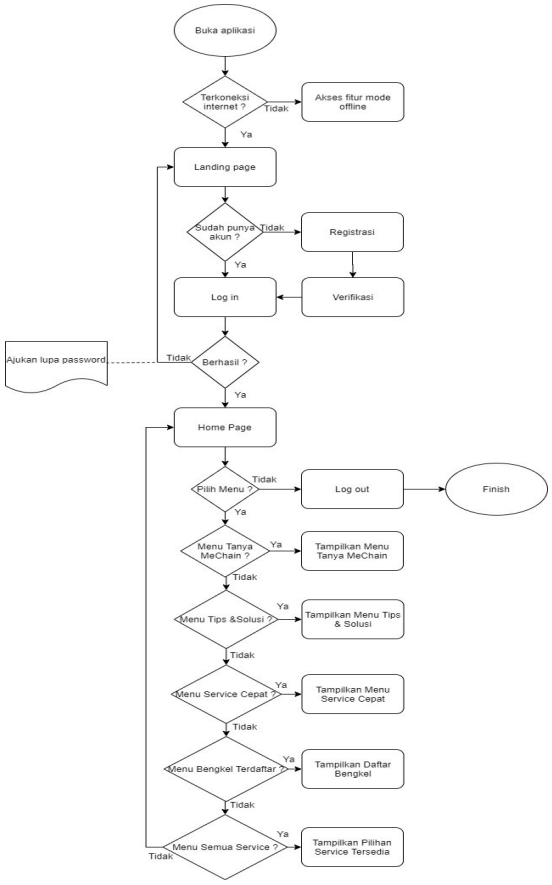

Figure 7. Disera Application Usage Flow Diagram

After conducting surveys and making flow charts, then the design and prototype of the application can be designed . The *prototyping* stage will be much easier to do if the problems and user needs are known through survey techniques. In planning and developing this application, there will be several prototype designs of main features that have several functions of their own. Some of these features are as follows.

1. Home Page

In the Home feature, users can see tips and motorcycle maintenance solutions, workshops registered in the application, and the Quick Service feature based on survey results in the previous stage.

Figure 8. Home Feature Display

2. Motorbike Service Booking

In this feature, users can order *services* through two service models, namely through *online* mode, where the user's device will be connected to the internet and users can order the required motorbike service. In this *online mode* there will be two service menus *provided, namely* fast service to provide convenience to users when they need *motorbike* service quickly or even when in an emergency. Furthermore, the service menu in *general so that users can choose freely the services needed, and the scope of* this service is also wider than the *fast service* menu which only provides *fast* waiters and in emergency conditions. Here's what the online *mode motorcycle service booking feature began*.

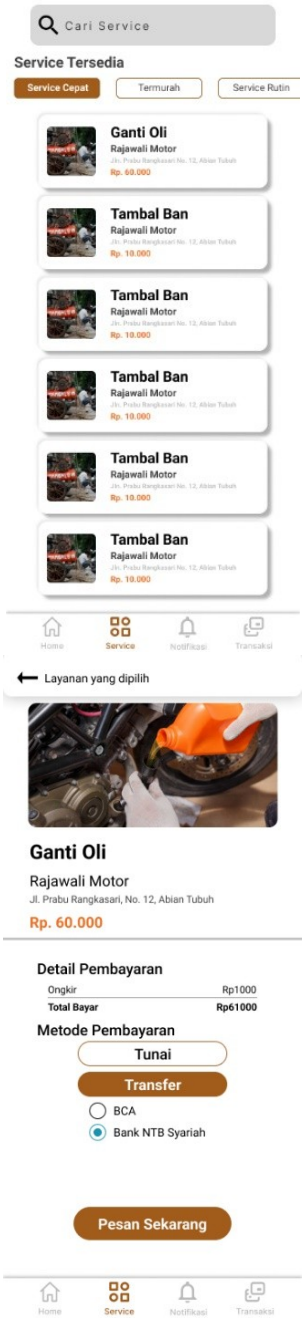

Figure 9. Motorcycle Service Booking Display

3. Service Through Location Based Service Method

This feature is a motorcycle service directly on site, so users do not need to go to the workshop or called Location Based Service. The implementation of Location Based Service in the application can be used by users when ordering motorcycle services, in the service location details section users can open location indicators (maps) which will then be displayed workshop partners from DISER. Users can also specify a location so that the workshop can immediately go to the user's location. Then, the admin will provide the user's location to the nearest workshop who will provide motorcycle service according to the location. Here's what the Location Based Service feature flows.

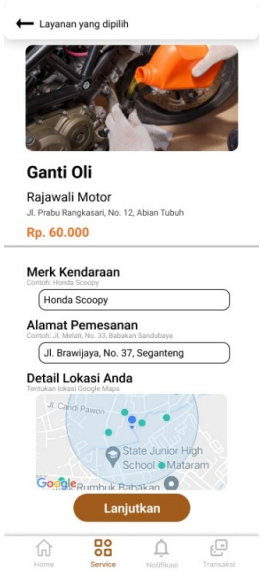

Figure 10. Location Based Service Features

4. Offline Mode Feature

Furthermore, for the offline mode feature, the application will provide service reservations through the list of application admin mobile numbers. Users can contact the admin through the number listed in the application. Then, the user can order service to the admin, where the admin will contact the nearest workshop partner to immediately provide motorcycle service to the user.

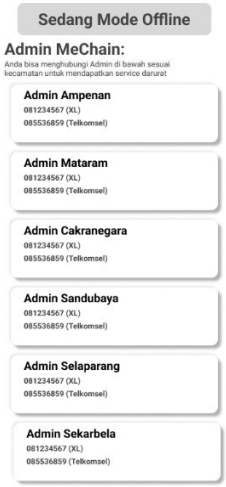

Figure 11. Fiture Offline Mode

After designing the interface design and application prototype, the next step is to

test the application prototype using the help of *a tool* called Maze which is carried out *unmoderated* or users experiment on prototypes independently without being directed by researchers. It aims to assess the quality of *prototyping techniques* in designing application interface designs. Here are the results of the tests carried out.

ID	CLIPS INSIGHTS	OUTCOME	DURATION	MISCLICKS	MISCLICK'S PAGES
77427450	-	Indirect	14.28s	0	0
77434356	-	Indirect	211.97s	53	19
76141666	-	Indirect	159.26s	11	8
77657680	-	Indirect	51.02s	16	5
77685419	-	Indirect	199.92s	53	13
77685740	-	Indirect	29.72s	15	5
77222924	-	Indirect	30.09s	11	5
77224781	-	Indirect	75.28s	53	4

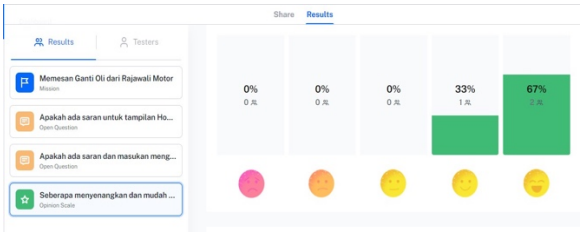

Figure 12. Application Prototype Test Results

Prototyping techniques in the software requirements elicitation process can help the process of making application designs that suit user needs. This can be seen based on the results of the study that 67% of respondents expressed satisfaction with the appearance of the DISERA application.

5. CONCLUSION

To carry out the elicitation process for the needs of the DISERA application, appropriate techniques are needed in identifying software problems and needs. One technique that is easy to use and can identify needs according to user needs is the Survey Technique. The technique of conducting surveys is to provide questions that are able to explore user needs information so that applications will be developed according to user needs. Of course this will prevent the loss of application development. Furthermore, after conducting a survey, it is necessary to carry out prototyping techniques to describe software needs solutions so that it will facilitate the process of making the DISERA application and prototyping techniques *are* carried out by making *blueprints* which are representations of the actual application with the aim of getting user responses whether the application is appropriate or not with needs. The result is that through surveying and *prototyping* techniques can create application designs that meet user needs.

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