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Application of Design Thinking Method to Increase Adoption of Electronic Land Certificates

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ABSTRACT: With the rapid advancement of information technology, the Government of the Republic of Indonesia issued Ministerial Regulation ATR/Ka BPN No. 1 of 2021 on Electronic Certificates and Government Regulation No. 18 of 2021 on Management Rights, Land Rights, Condominium Units, and Land Registration. Electronic land registration is essential to enhance productivity and efficiency in Indonesia's land registration system. This regulation shifts the previously paper-based land registration system to an electronics one. This study aims to identify the main issues in implementing the electronics land certificate program at the Ministry of ATR/BPN. Additionally, it seeks to find solutions for the Ministry of ATR/BPN in executing the electronics land certificate program. The phenomena in this study are explored using the design thinking method, which functions of five stages: empathize, define, ideate, prototype, and test. Data collection techniques include in- depth interviews, observations, and secondary data collection. The informants involved are 1 user of electronics land certificates, 6 prospective users, and 1 electronic land certificate officer. This type of research is qualitative, using the triangulation method to obtain valid data in the empathize stages .The study reveals the concerns of users and prospective users of electronics land certificates (certel) regarding data security, the complexity of the documentation process , and the lack of information and socialization . The main issue identified is the lack of clear and adequate information about electronics land certificates. Proposed solutions include a WhatsApp Chat Bots, Social Media Campaigns, and Digital Advertising, with the WhatsApp Chat Bot being the priority. The WhatsApp Chat Bot, named SERTEL chatbot, was developed to provide comprehensive information about electronics land certificates through WhatsApp. The trials showed positive reception from officers and prospective users, supporting the implementation of Chatbot SERTEL by the Ministry of ATR/BPN as an effective solutions.

KEYWORDS: design thinking, empathize, define, ideate, prototype, test, electronics land certificate.

I. INTRODUCTION

The Industrial Revolution 4.0 era has encouraged the government to utilize technology to improve public services and the quality of government administration. Industrial Revolution 4.0 is a phenomenon that collaborates cyber technology andautomation technology to create a more effective, efficient and integrated system (Rizkinaswara , 2020). In the Industrial Revolution 4.0, there are five technologies that are the main pillars in its development, namely the Internet of Things (IoT), Big Data, Artificial Intelligence , Cloud Computing , and Additive Manufacturing (Rizkinaswara , 202o). Therefore, these five technology pillars will be utilized toencourage digital transformation in government systems (Saksono , 2020).

Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency (ATR/BPN) Agus Harimurti Yudhoyono (AHY) said that digital transformation is very important and is the backbone of progress. With digital transformation, various things will be eliminated , including administrative stages which have been long and tiring. According to him, digital transformation is becoming a game changer, and he is committed to continuing to make the overall digital transformation successful in the Ministry of ATR/BPN. (Antaranews.com, 2024). The results of digital transformation in the Ministry of ATR/BPN are shown in table 1 below .

Table 1. Results Evaluation SPBE Ministry ATR/BPN

Domain	Average Institution Center	Ministry TR/BPN	
Policy Internal SPBE	3.35	4.20	Predicate very Good
System manage SPBE	3.01	3.60	
Management SPBE	2.25	3.45	
Service SPBE	3.84	4.26	
Index	3.31	3.95	

Source: Processed from Report Evaluation Implementation SPBE Year 2023

ATR/BPN Minister Agus Harimurti Yudhoyono (AHY) emphasized that electronic land certificates are a form of digital service transformation for the community. According to him, all public services will be fully integrated into the digital realm, including electronic certificates from the Ministry of ATR/BPN, thereby increasing efficiency and convenience for the public in accessing various services. The Ministry of ATR/BPN and its staff at district/city to provincial levels are committed to intensifying socialization regarding the use of electronic certificates on a massive scale in order to increase public understanding and adoption of this technology. (Antaranews.com, 2024).

The achievements that have been achieved by the Ministry of ATR/BPN in implementing the electronic land certificate program are as shown in table 1.2 below.

Table 2. List of Office Services and Electronic Land Certificates

Office Services	Amount	Land certificate	Amount
Amount Land Office	486	Amount Land Books	91,460,941
Number of Offices with Electronic Services	123	Number of Electronic Land Certificates	76,622
% of Offices with Electronic Services	25.31%	% Electronic Land Certificate	0.08 %

Source: processed from the Ministry of ATR/BPN in 2024

Based on the table above , the Ministry of ATR/BPN within 6 months has succeeded in providing electronic land certificate services in 123 land offices or 25.31 percent of the total number of land offices throughout Indonesia. However, this brilliant achievement is not directly proportional to the achievement of the number of newly issued electronic land certificates of 76,622 or only 0.08% of the number of land books that have been officially registered. The high gap between the achievement of the number of electronic service offices and the results of electronic land certificates shows the slow adoption of the use of electronic land certificates by the public.

Based on the phenomena and background above, it can be concluded that there are problems that cause the Indonesian people to be slow in switching from conventional to digital land certificates. The ATR/BPN Ministry must carry out a comprehensive evaluation and prepare innovations to accelerate the adoption of electronic land certificates. This research focuses on the application of design thinking to accelerate the adoption of electronic land certificates for individual users. According to Sucaya (2024), Head of Pusdatin , Ministry of ATR/BPN, the main obstacle to implementing the electronic land certificate program is human factors or individuals who are resistant to change and accustomed to conventional systems.

Based on formulation problem on , so study This aim as following:

1. Know Pain Which felt, Gains Which expected as well as Jobs to be done user land certificate electronic through process empathize .
2. Know Points Of View (POV) And How Might We (HMW) in process identification problem user certificate land electronic on stage define .
3. Know proposal idea creative And innovative in speed up adoption certificate land electronically via process ideate
4. Know prototype (prototye) For formulation solution to speed up certificate adoption land electronic.
5. Know bait come back (test) from prototype Which recommended For formulation solution accelerated adoption of certificates land electronic.

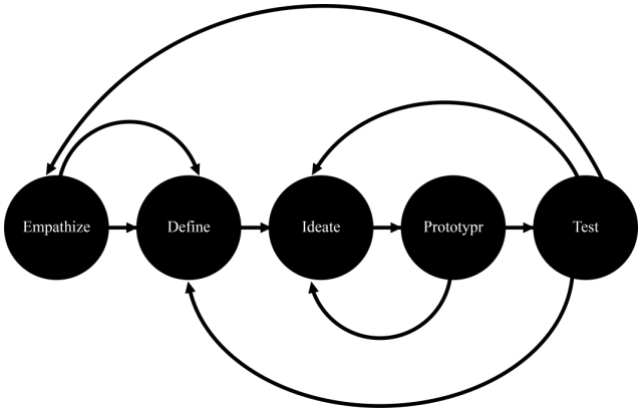
II. LITERATURE REVIEW AND FRAMEWORK

Design thinking is tool in solution problem Which centered on humans who emphasize empathy, collaboration, co-creation , and stakeholder interest For open creativity And innovation, Where in design thinking including in designing idea or solution Which big And worthy. Key from process This is empathize with user end product For reveal need which are not fulfilled by understanding beliefs, values, motivations, behavior, their pains, gains and challenges and to provide solution concepts innovative. Design thinking is an integrative approach Which means that in problem solving, process solution the matter is considered together with condition framework it works. Analysis problem And development solution considered in a way systematic And holistic in form process (Roterberg , 2018).

Application of Design Thinking Method to Increase Adoption of Electronic Land Certificates

Design thinking is A design methodology or process Which give A solution use approach human- centered For finish A problem with method innovate with think about desire or need, appropriateness technology, And appropriateness in a way economy or business (Kelley & Brown , 2018). There is five stages design thinking Which Lots used For finish problem based on model (Plattner , 2010) including : empathize , define , ideate , prototype and test .

Design thinking is approach For explore And solve problems through collaboration and creative methods. Importantly, design thinking it's not approach linear, but method For finish challenges iteratively , repeating phases of the design process thinking required until results Which satisfying achieved. Study This use design thinking For finish problem low achievement certificate land electronic in Ministry ATR/BPN. So that framework thoughts on study this is like figure 1 in below.



Picture 1 Framework Thinking
Source: Dam (2020), Lahdenpera et al. (2022)

Application design thinking on implementation program certificate land This electronic work is done through an iterative process to solve problems creatively complex. Solving this problem focuses on the centered side to users of electronic land certificates , thereby producing a solution formulation Which appropriate in accordance with user needs or user. In solution problem In this study, the researcher carried out five stages, namely empathize , define , ideate , prototype and test.

III. RESEARCH METHODS

TIn this chapter, the research outlines the characteristics, stages, population and sample, and data collection techniques, including the types of data and methods used for collection. The research data includes object data, previous research data, community reviews, target audience data, and pre-research data. The study uses a descriptive method to describe the implementation of the electronic land certificate program by the Ministry of ATR/BPN. Based on the research paradigm, the method used is constructionism to understand the community that participated in the program. The inductive approach is used to observe certain phenomena without testing existing theories, and this research is qualitative, focusing on groups to map problems using data from the internet and questionnaires.

The research strategy used is a case study, focusing on gathering information from various perspectives, including the Ministry of ATR/BPN and the community that participated in the electronic land certificate program. The unit of analysis is a group, with minimal researcher involvement to avoid data intervention. The study is conducted in a non-contrived setting in a natural environment and is cross-sectional, collecting data over one period to answer research questions regarding community involvement in the electronic land certificate program.

In this research, 8 respondents were used, consisting of one internal party and seven external parties from the Ministry of ATR/BPN. The selection was based on the fact that the internal respondent has a deep understanding of the electronic land certificate program. The information provided by the internal respondent can offer valuable insights into the challenges faced, the ministry's internal needs, and the available resources. The internal respondent in this study is an electronic land certificate service officer, totaling 1 person. Meanwhile, the external respondents consist of 1 user from the community and 6 potential users of the electronic land certificate program. This can provide feedback on the implementation of the electronic land certificate program by the Ministry of ATR/BPN.

IV. RESULTS AND DISCUSSIONS

In this research, the researcher used all stages of the design thinking process to generate solutions for the problems being studied, namely (1) Empathize, (2) Define, (3) Ideate, (4) Prototype, and (5) Test.

1. *Emphatize*

Emphatize is stage First in solving wicked problems. Wicked problems in research This is slow adoption use certificate land electronic. With Thus, the main target phase This researcher need know experiences, emotions, and situations from user certificate

and candidate user certificate . Researchers also need it understand problem from corner look officer sertel, in matter This waiter certificate from the Land Office. The tools used in this Empathize stage is interviews, user persona, empathy map, user journey map, and jobs to be done.

The following personas were generated at this stage, as shown in Figures 2 to 4!

Nama : Surahman
Usia : 44 Tahun
Jenis Kelamin : Laki-laki
Pekerjaan : Petani
Domisi : Banyuwangi, Jawa Timur, Indonesia
Tingkat Pendidikan : SMA
Status Ekonomi : Menengah
Kepemilikan Tanah : Rumah dan tanah seluas 535 m²

Tentang:
Seorang petani berdedikasi yang telah tinggal di Banyuwangi sepanjang hidupnya. Dia bekerja keras untuk mengelola tanah pertanian miliknya dan aktif terlibat dalam pengembangan komunitasnya. Surahman sangat menghargai inisiatif pemerintah dalam redistribusi tanah dan merasa terbantu dengan program sertifikat tanah elektronik yang memperkuat kepemilikan legal atas tanahnya.

Pengetahuan:
Memiliki pemahaman yang cukup baik tentang sertel, termasuk proses pengajuan, penggunaan aplikasi untuk mengakses sertifikat, serta keamanan dan validitas dari sertifikat tersebut. Pengetahuan mereka diperoleh melalui pengalaman langsung dengan program pemerintah dan bantuan dari pihak terkait.

Keresahan:
Proses pemberkasan yang rumit, awal kekhawatiran tentang keamanan dan validitas sertifikat tanah elektronik, serta keterbatasan akses internet di daerah pedesaan mereka.

Figure 2. Sertel User Persona (N1)

Nama : Hadi Santoso
Usia : 40 Tahun
Jenis Kelamin : Laki-laki
Pekerjaan : Manajer Keuangan di perusahaan swasta nasional
Domisili : Depok, Jawa Barat
Tingkat Pendidikan : S1
Status Ekonomi : Mapan
Kepemilikan Tanah : Rumah dan tanah seluas 125 m²

Tentang:
Hadi Santoso adalah seorang pria mapan 40 tahun, bekerja di swasta nasional sebagai manajer. Tinggal di Depok bersama keluarganya, memiliki rumah dan tanah seluas 125 meter persegi. Dengan penghasilan yang stabil, Hadi selalu mencari cara untuk mengamankan investasinya dan mengoptimalkan waktu yang dimilikinya. Dia tertarik dengan inovasi teknologi, meskipun masih ragu tentang keamanan dan prosedur peralihan ke sertel.

Pengetahuan:
Memiliki pengetahuan yang cukup baik tentang sertifikat tanah elektronik, termasuk manfaat dan prosedurnya. Namun, dia masih membutuhkan lebih banyak informasi yang jelas dan dukungan teknis untuk merasa sepenuhnya yakin dalam menggunakan sertifikat tanah elektronik.

Keresahan:
Tidak tahu proses pendaftaran sertel, ragu dengan keamanan data, takut ada pungutan biaya, proses yang ribet, malas mengurus ulang.

Figure 3. User Persona Prospective Sertel Users (N2)

Nama : Andi Pratama
Usia : 36 tahun
Jenis Kelamin : Laki-laki
Pekerjaan : Petugas Pertanahan di Kantor Pertanahan Depok
Tingkat Pendidikan : S1
Domisi : Depok, Jawa Barat
Status Ekonomi : Mapan

Tentang:
Seorang petugas pertanahan berusia 36 tahun yang bekerja di Kantor Pertanahan di Depok. Pendidikan Sarjana Hukum dan pengalaman 10 tahun di bidang pertanahan, Andi telah menghabiskan lima tahun terakhirnya menangani sertel.. Dia memiliki dedikasi tinggi dalam memberikan pelayanan terbaik kepada masyarakat, meskipun sering menghadapi tantangan dengan sistem teknologi yang kompleks dan beban kerja yang tinggi.

Pengetahuan:
Memiliki pengetahuan yang komprehensif tentang sertel, mulai dari pengertian dasar, proses peralihan, keamanan, teknologi, manfaat bagi pengguna, hingga aspek dukungan dan pelayanan. Pengetahuan ini memungkinkan Andi untuk memberikan layanan yang efektif dan efisien kepada masyarakat serta memastikan keamanan dan keabsahan data pertanahan yang dikelola.

Keresahan:
Keresahan Andi Pratama tentang sertifikat tanah elektronik mencakup berbagai aspek, mulai dari kompleksitas sistem, keamanan data, legalitas, pelayanan dan dukungan, hingga sosialisasi dan edukasi.

Figure 4. Sertel Officer User Persona (N3)

The empathy maps are as shown in Figures 5 to 7 below:

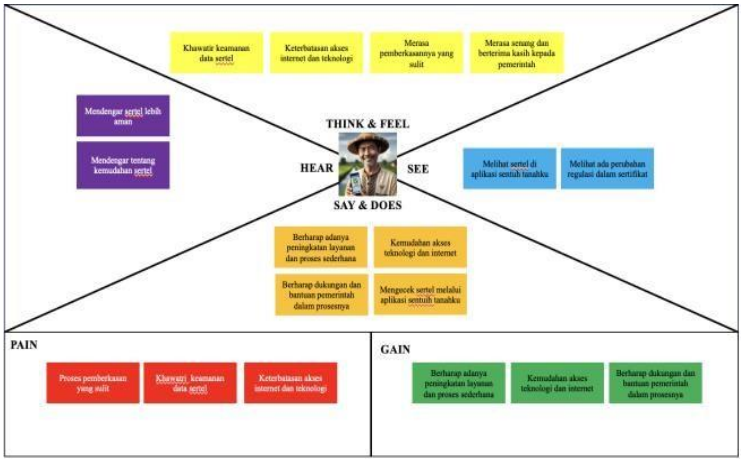


Figure 5. Sertel User Emphaty Map (N1)

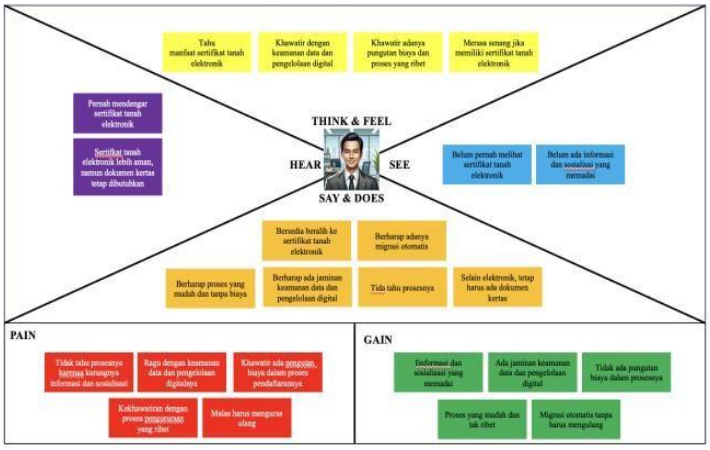


Figure 6. Emphaty Map of Prospective Certel Users (N2)

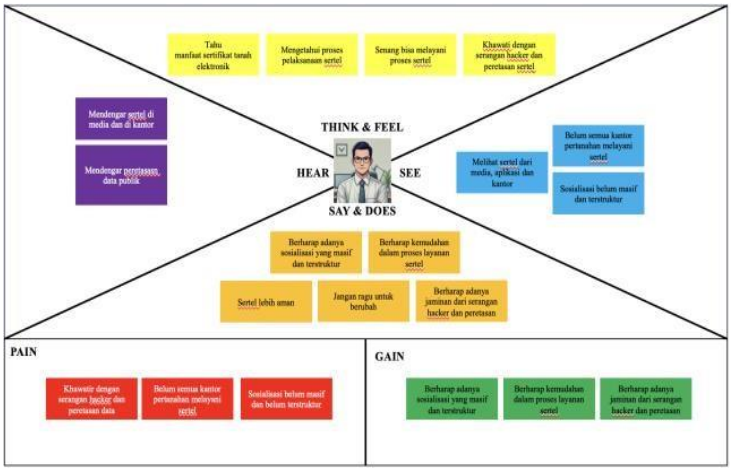


Figure 7. Sertel Officer Emphaty Map (N3)

2. *Define*

Stage define in study This is For ensure researcher own clear understanding about problems faced and focus on needs actual users. With defined problem statement with OK, researcher can continue to stage ideate with more direction focused and effective. At stage This, data and information obtained during stage empathize analyzed and synthesized For identify the core problem will be identified. Point of view on research This presented in table 3 below This.

Table 3. Points Of View

Insights	Needs	Points Of View (Pov)	How Might We
Hadi has a land certificate book, wants to switch to electronic certificates, but lacks clear and comprehensiv e information and socialization about electronic land certificates.	Hadi needs clear and comprehensiv e information and outreach about electronic land certificates.	Hadi, who still has a land certificate book, wants to switch to electronic land certificates, needs clear and comprehensiv e information and socialization about electronic land certificates	How to help Hadi to get clear and comprehensiv e information and socialization about electronic land certificates?

Source : Processed Writer (2024)

In stages this, is generated point of view (POV) as following: Hadi has book certificate land and want switch to certificate electronic. However, he not enough get clear information and socialization about certificate land electronic. Hadi needs it clear and comprehensive information about certificate land electronic. As a users who want switch to certificate land electronics, Hadi requires complete and accessible information reliable about this process. So that obtained HMW formulation as following: How method help Hadi to get clear and comprehensive information and socialization about certificate land electronic ?

3. *Ideate*

At stage this , writer gathering ideas for the solution will be made in accordance problems that have been is known based on results from the problem statement. The 6-3-5 method is used For generate ideas or solution to the problems faced by Hadi. And produced as many as 18 ideas or solution to the problems faced by Hadi. Some selected ideas participant served as in table 4. From some of these ideas Then selected priority ideas based on high impact & low effort matrix.

Table 4 Ideation Sessions

HMW QUESTIONS	**IDEAS (BRAINSTOR MING)**	**PRIORITY LEVEL (2X2 MATRIX)**	**CLUS TERAND EVALUATE**	**CALL TO ACTION**
How to help Hadi to get clear and comprehensi ve information about electronic land certificates, guaranteed data security and an easy and cheap service process	Social media campaign Chat Bot Sertel blog Educational games Video contest Information: application Call center Online complaints Roadshows & exhibitions Involve the Village Digital Advertising Collaboration with other agencies Media advertising Influencer collaboration Landing pages Workshops certificate Involve RT/RW Familiarizatio n with props	Following is idea Which is in the *High quadrant Value & Low Effort* : Social media campaign WA Chat Bot Sertel blog Landing pages	Social media campaign WA Chat Bot	WA Chat Bot

Source: Author's Work (2024)

4. Prototype

After ideate stage can is known that solution For overcome problems with the problem statement can be done there is a WA Chat Bot for give clear and comprehensive information about certificate land electronic.

WA Chat Bot is an automated program designed For interact with user via the WhatsApp platform. This bot use intelligence artificial and programming For respond message received text , provides information , or do action certain in accordance with request user. Chat WA Bot Electronic Land Certificate as in table 4.10 above is an automated program designed For help user via the WhatsApp platform within get information and services related certificate land electronic . This bot works as digital assistant that can answer various question and provide guide about certificate land electronics , start from information general , registration process, up to chec**king registration status. WA Chat Bot is provided Chatbot name SERTEL, as in Figure 8-9 below This.**

Figure 8. SERTEL chatbot

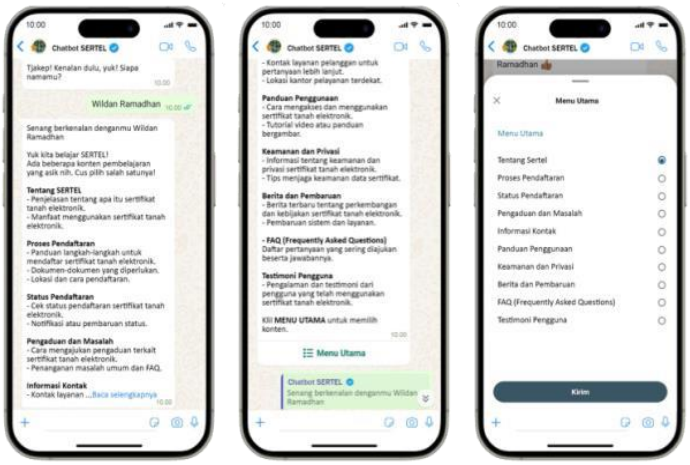


Figure 9. SERTEL Chatbot Menu

5. *Test*

Test in study This is the stage where the prototype has been developed tested with user real For get bait valuable return. The results of the SERTEL Chatbot prototype test are presented in Table 5. At the level of program approval carried out interview to officer sertel (Informant N3). The result is agree that the SERTEL Chatbot can increase clear information and comprehensive about certificate land electronic. According to him, this program is very feasible For implemented.

Response rate done interview to 5 candidates user certificate land electronic. The result is their 5 out of 5 give response positive to SERTEL chatbot. And Interest Level use SERTEL chatbot asked to the same source. The result is 5 out of 5 participants give interest will interest use SERTEL chatbot. By general at stage end This the results are valid and the Ministry of ATR/BPN can do action plan For development SERTEL chatbot, because of this program rated by users be a solution to problem and appropriate need they.

Table 5. Test Results

Methods	Measurements	Success Criteria	Results	Valid/ Invalid	Call To Action
Interview with the Ministry of ATR/BPN	Level of approval for SERTEL Chatbot	Agree that the SERTEL chatbot can increase clear and comprehe nsive informati on about sertel	Agree that the SERTEL Chatbot is feasible to implement	Valid	Make action plan development SERTEL chatbot
Interview Prospecti ve Certel Users	Response rate to SERTEL Chatbot	5 from 5 give positive response to the SERTEL Chatbot	5 from 5 participant give a positive response	Valid	Make action plan development SERTEL chatbot
Interview Prospective Certel Users	Level of interest in SERTEL Chatbot	5 from 5 interested in using the SERTEL Chatbot	5 from 5 participants provide responses of interest	Valid	Make action plan developme nt SERTEL chatbot

Source : Processed Writer (2024)

V. CONCLUSIONS

Based on the research findings, conclusions were drawn from eight respondents, observations, and documentation. The research employed the design thinking stages: (1) Empathize, (2) Define, (3) Ideate, (4) Prototype, and (5) Test.

1. In the empathize stage, insights were gathered from users, potential users, and SERTEL officers through various approaches. Key concerns included data security, complicated processes, and lack of information.
2. In the define stage, the main issues identified were the need for comprehensive information and socialization, data security concerns, and cost worries.
3. The ideate stage generated and prioritized solutions, with WA Chat Bot, Social Media Campaign, and Digital Advertising being top choices.
4. The prototype stage involved developing a WA Chat Bot to provide comprehensive information efficiently.
5. In the test stage, the Chatbot received positive feedback from users and was deemed feasible and beneficial, suggesting it as a viable solution for the Ministry of ATR/BPN.

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