*Jurnal Abdimas Cendekiawan Indonesia*
*Vol. 2 No. 3 September (2025)*
*https://doi.org/10.56134/jaci.v2i3.146*

*ISSN: 3046-6520 (print)*
*ISSN: 3046-6490 (online)*

# Digital Assistance for Land Deed Officials (PPAT) for Effective Electronic Mortgage Reporting

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**Abstract**

Digital transformation in land administration requires Land Deed Officials (PPAT) to be prepared to utilize technology optimally, particularly in the use of the Electronic Mortgage Rights (HT-el) system. However, reporting practices in the field still experience various obstacles, such as delays in receiving document correction information, high levels of input errors, and the lack of real-time monitoring of reporting status. This impacts the slow service process and low work efficiency. This community service activity was carried out to increase the capacity of partners in utilizing the PPAT Partner System as a more effective and responsive HT-el reporting tool. The implementation of the activity included preparation, socialization, technical training, field implementation assistance, and a comprehensive evaluation. The results of the activity showed a significant increase in partner capabilities, as reflected in the reduction in reporting time from 18 hours to 7 hours (61% efficiency), a decrease in the input error rate from 32% to 9% (72% error reduction), and an increase in partner satisfaction from 3.2 to 4.7 on a Likert scale. This activity has a real impact in the form of increasing the digital competence of PPAT, accelerating the service flow, and improving the quality of administration in the HT-el reporting process.

*Keywords:* PPAT Partner System; Electronic Mortgage Rights; Digital Reporting; Land Administration; System Efficiency.

Accepted: 6 February 2025 Revised: 15 July 2025 Accepted: 30 August 2025

## Introduction

The digital era is marked by massive transformations in various aspects of life, where technology plays a crucial role in creating convenience, speed, and efficiency in public and private services (Aksenta et al., 2023; Harto et al., 2023; Irfan & Anirwan, 2023). Almost all human activities are now integrated with digital systems, from the economic sector, education, health, to government services (Katarina, 2021; Yulanda et al., 2025). The development towards the digital era is not only part of modernization, but also an urgent need to address the challenges of globalization, demands for transparency, and the public's need for fast and accurate public services (Dahnial, 2024; Kusnanto et al., 2024; Shobirin et al., 2025). Therefore, every sector, including land administration, is required to adapt technology to be able to provide professional and responsive services to current developments.

In the land sector, service modernization is a strategic step realized through the implementation of an electronic administration system. Land digitization is designed to improve data accuracy, accelerate service processes, and minimize the risk of errors and document forgery (Adinegoro, 2023; Erfa, 2020; Prasetya & Mahfud, 2023). The presence of digital land documents, which have the same legal force as physical documents, further strengthens the efficiency of land services (Kementerian ATR/BPN, 2021). The momentum of digital transformation in this sector is emphasized by the issuance of Minister of ATR/BPN Regulation No. 1 of 2021 concerning Electronic Certificates, as the initial step towards the full implementation of digital-based land administration (Kementerian ATR/BPN, 2020).

In line with this, the Electronic Mortgage Rights (HT-el) system is one of the important innovations developed by the Ministry of ATR/BPN to replace manual reporting procedures. Through this service, Land Deed Officials (PPAT) can submit reports electronically with a strong regulatory basis, ranging from Ministerial Regulation of ATR/BPN No. 5 of 2017 to Ministerial Regulation of ATR/BPN No. 5 of 2020, which regulates integrated HT-el services (Haris et al., 2023; Maulana et al., 2024). However, observations and interviews with partners indicate that the implementation of

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HT-el still faces several obstacles at the operational level. PPATs often experience delays in receiving information on document corrections due to the lack of automatic notifications; reporting status cannot be monitored in real time; correction communication still relies on WhatsApp groups that are prone to miscommunication; and high input errors due to minimal system validation. These conditions hamper service effectiveness and have the potential to slow down the administrative process for the public.

Given these challenges, mentoring and training are needed to help Land Deed Officials (PPAT) improve their digital competency, understand system workflows, and utilize electronic service features more optimally (Ilhami & MAP, 2024; Yunita, 2021). Therefore, this community service program aims to provide training and implement the PPAT Partner System as a tool to accelerate the reporting process, reduce administrative errors, and increase the transparency of HT-el reporting. This activity is expected to increase partners' capacity to meet the demands of digitalizing land services and support the acceleration of the transformation of public services to become more modern, efficient, and responsive.

## Method

This community service activity began with system development using a Research and Development (R&D) approach to produce a product in the form of a Land Deed Partner System that can improve the effectiveness of Electronic Mortgage Deed (HT-el) reporting. The Waterfall method was used as the basis for the system development model, because this approach is commonly applied in software engineering that requires a structured and sequential work process (Pressman & Maxim, 2020; Sommerville, 2016). Waterfall emphasizes that each stage must be completed before proceeding to the next stage, so that the development flow is linear and systematic (Saputra et al., 2023). Thus, the development process begins with needs analysis, then continues with system design, writing program code, and the software testing stage as the final step to ensure the system runs according to its objectives (Nugroho & Sari, 2023; Adinegoro, 2023). The method of implementing community service consists of four main stages, namely: (1) preparation, (2) socialization and training, (3) implementation assistance, and (4) activity evaluation.

The first stage, preparation, included coordination with Land Deed Officials (PPAT) partners, identifying needs, and an initial analysis of the obstacles encountered in the HT-el reporting process. Data collection was conducted through interviews, discussions, and direct observation of existing reporting practices. The analysis revealed that partners still faced obstacles such as the lack of automatic correction notifications, the inability to monitor document status in real time, a high rate of input errors, and a reliance on manual communication via WhatsApp groups, which often caused delays. These findings then formed the basis for developing training materials and mentoring strategies.

The second phase, socialization and training, was conducted to introduce the PPAT Partner System and its key features. During this phase, participants were provided with an understanding of the HT-el reporting process, dashboard usage, deed data entry, document status checks, and the use of the auto-correction feature. The training was conducted directly using partner laptops, allowing participants to practice each step in the system under the guidance of a facilitator. The third stage, implementation assistance, involves directly assisting partners in using the system for HT-el reporting activities. During the assistance, facilitators ensure that partners can operate the system independently, make timely document corrections, and understand the reporting process until the document is approved. This stage plays a crucial role in ensuring that the skills acquired during the training are truly applied in daily work activities.

The fourth stage, evaluation, was conducted to assess the effectiveness of the activity and measure the impact of system use on the performance of e-HT reporting. The evaluation was conducted through two approaches: performance evaluation and partner satisfaction evaluation. Performance evaluation was conducted by measuring reporting completion time before and after the activity, the level of input errors, and the number of reports successfully processed without the need for repeated revisions (compare with the public service transformation evaluation approach in (AlRousan & Intrigila, 2020; Rahman & Indrayana, 2022). Meanwhile, satisfaction evaluation was conducted using a Likert-scale questionnaire to determine the level of understanding, ease of use, system speed, and the benefits of the activity for partners (Utomo & Sari, 2023; Ware, 2021). With this approach, the community service activities were able to improve the digital competence of Land Deed Officials (PPAT) while simultaneously improving the effectiveness of e-HT reporting (Sommerville, 2016). The structured approach in training and mentoring enabled partners to

independently adopt the system and minimize technical obstacles that had previously been a major barrier to the reporting process.

**Results and Discussion**

This community service activity successfully increased the capacity of PPAT partners in utilizing the PPAT Partner System as a tool for reporting Electronic Mortgage Rights (HT-el). This system was implemented to address various obstacles previously experienced by partners, such as the lack of automatic correction notifications, lack of transparency regarding document status, and communication delays due to the use of WhatsApp groups. This condition aligns with various studies that confirm that without the support of an integrated and real-time information system, land administration processes tend to be slow, bureaucratic, and prone to service delays (Erfa, 2020; Yulanda et al., 2025). In the implementation stage, training participants can use the system independently, starting from the layered authentication process through username, password, and OTP as shown in Figure 1 and Figure 2. This layered authentication mechanism refers to the principle of multi-factor authentication in modern information system security, which emphasizes the importance of more than one verification factor to maintain data integrity and prevent illegal access to digital public service systems (AlRousan & Intrigila, 2020; Rahman & Indrayana, 2022).

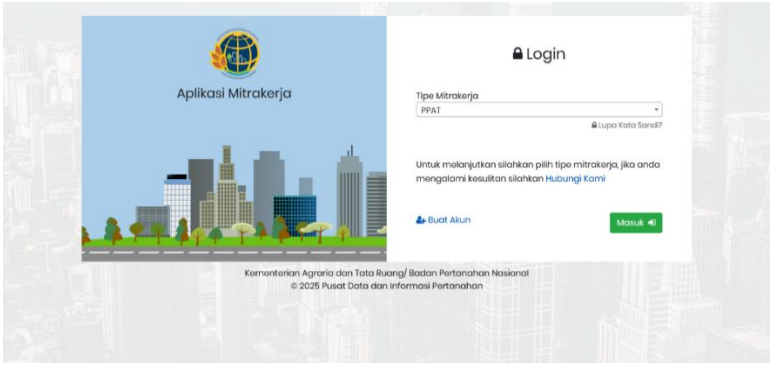


Figure 1. Partner type login page


Figure 2. Main login page

After successfully logging in, users are directed to a dashboard page (Figure 3), which displays a graph of reporting activity. Presenting data in a visual format helps users understand the overall reporting status without having to review individual documents. The role of visualization in improving decision-making in information systems is also emphasized by literature on digital business transformation and the use of information technology (Ware, 2021; Harto et al., 2023).

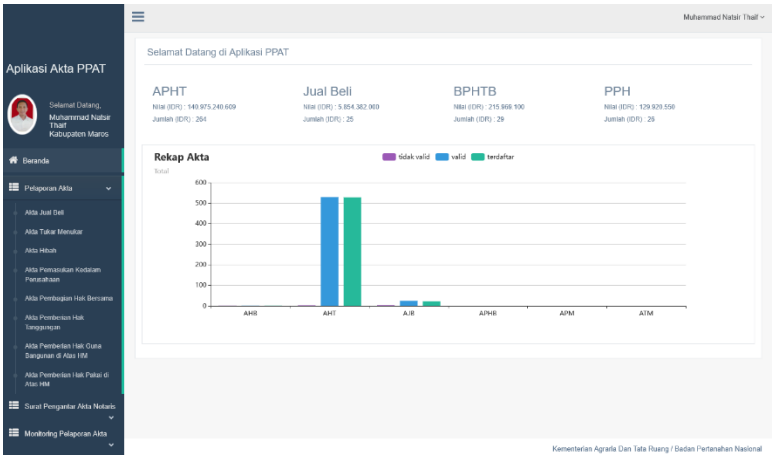


Figure 3. Dashboard page

The dashboard displays the number of deeds submitted, accepted, and rejected, as well as other reports such as Land and Building Tax (BPHTB) and Income Tax (PPh). The use of different colors for each document status makes it easier for Land Deed Officials (PPAT) to identify priority follow-up actions. This supports the principle that good visual representation can accelerate the monitoring and decision-making process in the context of digital public services (Pressman & Maxim, 2020).

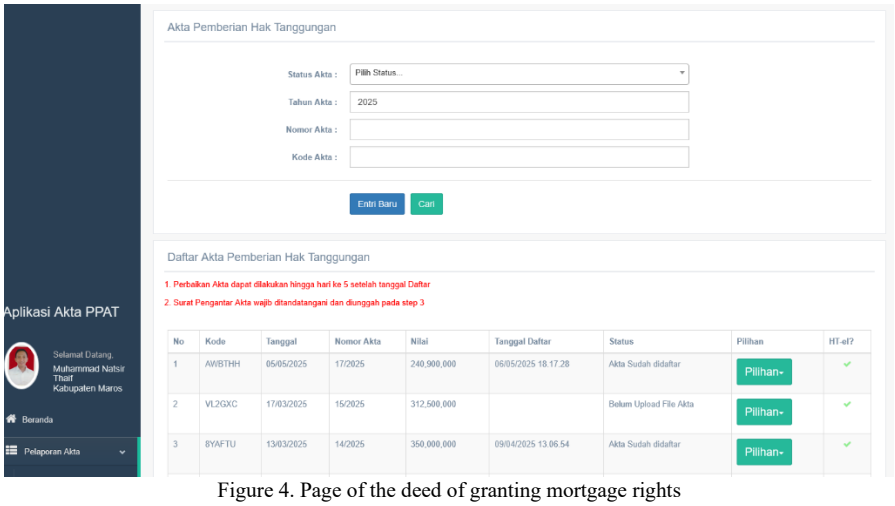


Figure 4. Page of the deed of granting mortgage rights

Figure 4 shows the deed data entry feature, document search, and a status menu that displays the progress of the HT-el reporting. The New Entry menu is used to enter new deed data, while the Search menu allows users to track submitted deeds, whether they are still awaiting verification, have had an HT-el certificate issued, or have been rejected. After submission, users can monitor the verification process, which lasts for seven days. If a document is rejected, the system automatically displays a red warning message "Please Make Corrections" on the list of deeds requiring correction. This finding is consistent with studies on the use of digital technology for efficient land registration and mitigating administrative errors (Katarina, 2021; Yulanda et al., 2025).

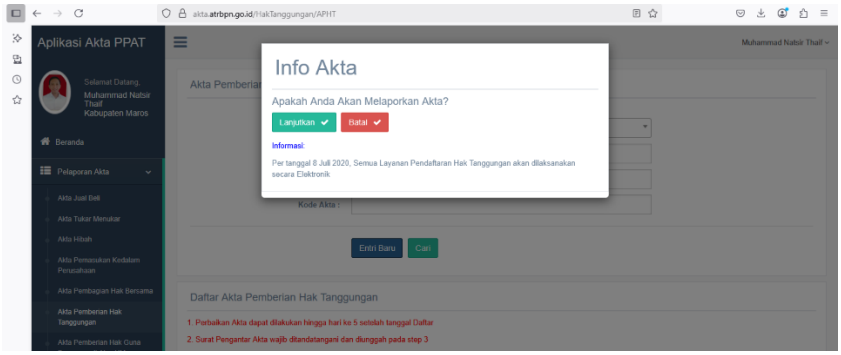


Figure 5. Deed info page

The deed information page in Figure 5 provides complete details regarding document status, verification process history, and automatic correction notifications. This page provides full transparency to users, allowing for prompt follow-up corrections without delay. This mechanism reflects the concept of rapid feedback in information systems, where clear and structured feedback can improve user accuracy and efficiency in processing data (Erfa, 2020; Yulanda et al., 2025). Therefore, to ensure the system operates as required, testing was conducted using the black-box method, or functional testing. Table 1 shows that all key features login, OTP, deed data entry, deed search, correction notifications, and dashboard access functioned as intended. These results indicate that the system has met all functional requirements established during the design phase.

Table 1. Black box test results

| Tested Features | User Activity | Expected results | Testing Status |
|---|---|---|---|
| User login | Enter username & password | The system accepts and verifies accounts | Succeed |
| OTP Authentication | User enters OTP code | The system provides valid access | Succeed |
| HT-el data entry | Filling in New Entries | The form appears and data can be saved. | Succeed |
| Deed search | Search by deed number | The system displays the appropriate deed data | Succeed |
| Correction notification | Invalid document | The system sends an auto-correction message. | Succeed |
| Reporting status | View status page | Real-time information is displayed | Succeed |
| Dashboard | Access the main page | Graphs and statistics appear according to the data | Succeed |

In addition to functional testing, a quantitative analysis was conducted to determine the impact of the activities on partner performance. Table 2 shows significant improvements after system implementation. Reporting time decreased from 18 hours to just 7 hours (61% efficiency). The decrease in the input error rate from 32% to 9% indicates a 72% reduction in errors, consistent with the principles of a data validation-based system that emphasizes the importance of automated checks and feedback to minimize user error (Saputra et al., 2023). Partner satisfaction increased from 3.2 to 4.7, indicating that the system is perceived as easier to understand, faster to use, and more transparent than the previous mechanism. This aligns with studies on improving the quality of public services through the use of digital technology, measured in terms of user perception and satisfaction (AlRousan & Intrigila, 2020; Rahman & Indrayana, 2022).

Table 2. Comparison of Performance Before and After Activities

| Performance Indicators | Before the System | After System | Change | Percentage Increase/Decrease |
|---|---|---|---|---|
| Reporting time (hours) | 18 hours | 7 hours | -11 hours | 61% efficiency |
| Input error rate | 32% | 9% | −23% | 72% error reduction |
| User satisfaction (Likert 1–5) | 3.2 | 4.7 | +1.5 | 46% increase |
| Speed of corrective follow-up | Manual, slow | Automatic, real-time | — | Response increased significantly |
| Transparency of document status | Not real-time | Real-time | — | Transparency increased to full (100%) |

This reduction in input error rates occurred because the system was equipped with data validation and automatic correction messages, allowing users to correct errors quickly and accurately. Increased partner satisfaction indicates that the PPAT Partner System is considered capable of meeting user needs in terms of ease of use, processing speed, and clarity of service information. This aligns with findings regarding the digital transformation of land administration and public services, which emphasize that well-designed digitalization can improve effectiveness, accountability, and service quality (Katarina, 2021; Yulanda et al., 2025). Overall, this community service activity has had a tangible impact

in the form of improved PPAT digital capabilities, accelerated reporting processes, reduced administrative errors, and increased service transparency. Thus, the PPAT Partner System can be viewed as a strategic solution that not only resolves technical challenges but also supports the acceleration of sustainable land service modernization.

## Conclusion

Community service activities focused on the development and implementation of the Land Deed Partner System for Electronic Mortgage Deed (HT-el) reporting have had a significant impact on improving the quality of land services. The developed system successfully addressed various operational issues previously faced by Land Deed Partners (PPAT), particularly those related to the lack of automatic correction notifications, the lack of real-time document status monitoring, and the high rate of input errors due to minimal system validation. Through socialization, technical training, and intensive mentoring, partners gained increased capacity in utilizing digital technology as part of their work processes.

The implementation results showed a 61% increase in reporting time efficiency, a 72% decrease in input error rates, and an increase in user satisfaction from 3.2 to 4.7. These findings confirm that the implemented system not only functions technically but also increases user confidence and convenience in carrying out the e-HT reporting process. Furthermore, this activity encourages increased digital literacy of Land Deed Officials (PPAT) and strengthens the transparency of public services by providing accurate and real-time document status information. Thus, this community service activity contributes significantly to accelerating the digital transformation of land administration, while also providing a technology implementation model that can be replicated in other PPAT offices or related agencies. Going forward, system development can be directed at integrating artificial intelligence for automatic error detection, expanding online training modules, and improving data security to support more modern, responsive, and sustainable land services.

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