

Digital Transformation of Public Asset Management via Web-Based Lifecycle System for Diskominfo Kota Bandung

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Abstract

Public asset management at Diskominfo Kota Bandung faces challenges related to manual administrative procedures, including data inconsistencies and difficulties in asset tracking. This community service activity aimed to introduce a prototype of the "Kelola Baraya" web-based asset lifecycle management system as a digital transformation initiative to support transparency and accountability in regional property management. The activity was conducted through field observations, stakeholder interviews, system development, and prototype demonstration sessions involving representatives from Diskominfo Kota Bandung. The developed prototype integrates QR Code-based asset identification, centralized monitoring dashboards, geotagging features, and multi-role validation workflows. Evaluation through demonstration and feedback sessions indicated that the proposed features were considered relevant to organizational needs and have the potential to support more structured and efficient asset management processes. The activity successfully introduced the concept of digital asset management and laid the foundation for future system implementation within the institution.

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INTRODUCTION

Regional Property Management is a fundamental pillar in achieving accountability and transparency in good governance. Digitalization in asset management has proven to be a key factor in increasing public trust, ensuring data accuracy, and strengthening digital leadership within government agencies (Fahlepi et al., 2025; Harfianah & Faisal, 2023; Setiabudhi, 2019). However, at the Bandung City Communication and Informatics Office (Diskominfo), asset administration currently faces major challenges in synchronizing physical data with digital records due to conventional procedures. Reliance on manual processes increases the risk of data errors and double reporting, which can significantly hinder public resource efficiency (Husen & Hasan, 2024; Putra et al., 2022)

A clear issue is observed in the preparation of the 2026 asset requirement plan, which still relies on conventional electronic spreadsheets in Fig. 1. Without an integrated system, this process demands high precision and is highly susceptible to human error (Rosmiati, 2021). Experiences across various

regions indicate that without digital reform, government agencies will continue to face obstacles in reconciling asset values with paper records and actual field conditions (Komara, 2025; Nur et al., 2024). This underscores the urgent need for information system transformation capable of providing a centralized database to support more effective coordination between work units (Luffiana & Fatah, 2024).

The image shows a screenshot of a complex spreadsheet used for regional property requirement planning. It features multiple columns for various data points, including asset names, quantities, and status. The spreadsheet is divided into several sections, with some areas highlighted in blue. The overall layout is dense and appears to be a manual record-keeping system.

Fig. 1. Conventional format of regional property requirement plan

Previous research indicates that the effectiveness of regional fixed asset management heavily depends on strict planning and supervision aspects (Periansya et al., 2021). Although large-scale information systems such as SIMDA BMD have been implemented, their functionality often fails to accommodate dynamic, specific daily operational needs at the departmental level (Putra et al., 2022). Therefore, the adoption of web-based technology, supported by automatic identification technologies such as QR Codes, has become a strategic solution to accelerate accurate physical asset tracking (Mandala & Susanto, 2023; Pryatama & Rukhviyanti, 2025). This technological integration has been shown to minimize potential human error during field data collection (Sibarani & Rorimpandey, 2025).

As a comprehensive solution to these problems, the "Kelola Baraya" information system was developed to digitize the entire asset lifecycle at Diskominfo Kota Bandung. The use of structured and iterative development methods has proven effective in transforming conventional recording systems into more modern, stable, and systematic platforms (Alda et al., 2025; Arifin et al., 2025; Maulana et al., 2025). This system not only migrates manual data to a digital platform but also integrates location-monitoring features and automated reporting to support more measurable and sustainable asset maintenance (Ijfi et al., 2025).

The primary contribution of this community service activity is the provision of a digital coordination platform that facilitates an accurate, tiered verification mechanism involving six distinct administrative roles. By implementing this system, previously slow and paper-based bureaucracies are streamlined through digital validation workflows that ensure transparent audit trails. The ultimate objective is to implement a system that enhances transparency and efficiency in public asset inventory management, thereby fostering a more professional and responsive work culture within the Bandung City Government.

MATERIALS AND METHODS

Materials

The primary equipment used in the design and implementation of the "Kelola Baraya" system includes an ASUS VivoBook laptop as the central development unit. The software supporting this activity consists of Microsoft's Visual Studio Code text editor, Google Chrome, and the PostgreSQL database management system from the PostgreSQL Global Development Group. Additionally, the application development materials utilize the Node.js runtime environment from the OpenJS Foundation and the React.js interface library from Meta Platforms. The use of these industry-standard tools and materials aims to ensure that the asset inventory

management system at Diskominfo Kota Bandung operates stably and efficiently during its introduction, evaluation, and conceptual demonstration phases.

Methods

To ensure a clear and impactful community service delivery, this activity applies a structured Technology Adoption Methodology that shifts the analytical focus from software development processes to stakeholder engagement, prototype validation, and technology acceptance within the partner institution. The implementation flow begins with the Pre-activity Stage, the initial phase that establishes the activity baseline through field observations, direct institutional discussions, and requirements-gathering sessions with Diskominfo staff to identify administrative bottlenecks, limitations of spreadsheet-based asset management, and multi-role operational requirements. Following this stage, the activity proceeds to the Implementation Stage, which focuses on introducing the "Kelola Baraya" prototype through system demonstrations, workflow simulations, and presentations of the proposed digital asset management processes to relevant stakeholders. Finally, the Evaluation Stage assesses stakeholder acceptance, feature suitability, and prototype validation through demonstration sessions and discussion activities. The evaluation focuses on determining the alignment between the proposed system functionalities and the operational requirements identified during the preliminary assessment stage, as well as identifying challenges and recommendations for future implementation.

RESULTS AND DISCUSSION

Pre-activity and Baseline Organizational Assessment

The pre-activity phase allowed the implementation team to systematically audit and establish the baseline conditions of regional property management within Diskominfo Kota Bandung. Focus group discussions and direct field interviews highlighted that the manual compilation of asset records caused significant coordination friction and synchronization issues between different work units. Administrative staff members spent excessive working hours trying to match conventional spreadsheet rows with physical goods scattered across various offices, making the process highly vulnerable to data errors. As illustrated in Fig. 2, the interactive discussions with stakeholders during this preliminary phase confirmed that human typographical errors and untraceable modifications were the core causes of double asset reporting and missing inventory items.

Technology Implementation and Multi-Role Adoption

During the implementation phase, the "Kelola Baraya" prototype was introduced to stakeholders through system demonstrations, workflow simulations,

and presentation sessions to transition staff members from paper-based habits to a structured digital ecosystem. To support seamless organizational adoption, the system's interactive tracking features were mapped directly to the actual staff hierarchies through intensive training workshops.



Fig. 2. Discussion on system requirements analysis with stakeholders

The Asset Monitoring Dashboard interface, shown in Fig. 3, was introduced to provide managers with an immediate, transparent overview of statistics and automated charts, replacing slow manual data analysis. Daily operational tasks were further streamlined through the Asset Data Inventory Module presented in Fig. 4, which prevents ownership track loss by displaying explicit staff codes, asset categories, and active validation statuses.

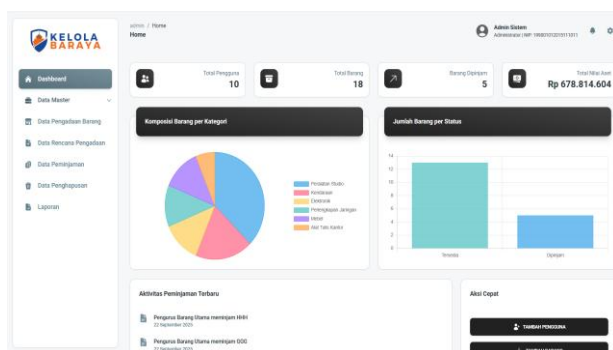


Fig. 3. Asset monitoring dashboard interface

The interface shows a table of assets with columns: No, Nama Barang, Kode, Kategori, Merk/Type, and Nomor Registrasi. It includes filters for 'Cari Barang', 'Status', 'Merk/Kategori', and 'Merk/Type'.

No	Nama Barang	Kode	Kategori	Merk/Type	Nomor Registrasi	Status	Aksi
1	MAH	KLK-008	Elektronik	Toyota / Rush 2025	Private (Tidak Berasal dari Pemerintah)	Belum Validasi	
2	MAH	KND-0000	Kendaraan	Toyota / Rush 2025	Kendaraan Dinas (1788710012005011021)	Validasi	
3	MAH	KND-0000	Kendaraan	Toyota / Rush 2025	Kendaraan Dinas (1788710012005011021)	Validasi	
4	MAH	000000	Telepon	Telepon / ANCD	Normal (Tidak Berasal dari Pemerintah)	Belum Validasi	
5	Komputer	KLK-008	Elektronik	Laptop / XYZ	Normal (Tidak Berasal dari Pemerintah)	Belum Validasi	

Fig. 4. Asset data inventory module

The rollout process also focused on embedding automated identification technology into the staff's daily workflow. Stakeholders were introduced to generate and affix unique, tamper-resistant QR Code labels onto physical hardware as depicted in Fig. 5. To prevent unauthorized asset transfers, staff members utilized the Geotagging mapping interface seen in Fig. 6 to bind exact geographical coordinate points to specific workrooms. External public transparency was achieved via the Public Information Page in Fig. 7, allowing instant mobile scanning by citizens or auditors without requiring complex system login authorization.

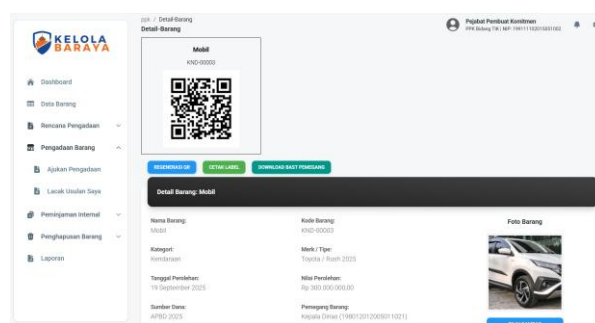


Fig. 5. Detailed asset information interface

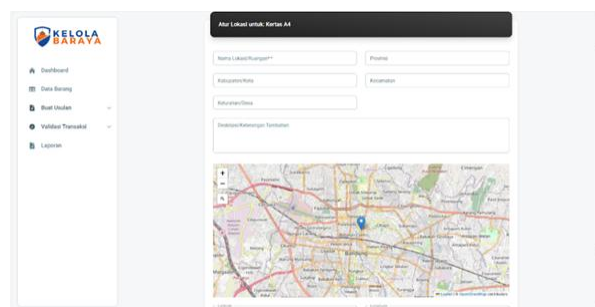


Fig. 6. Interactive asset location selection interface

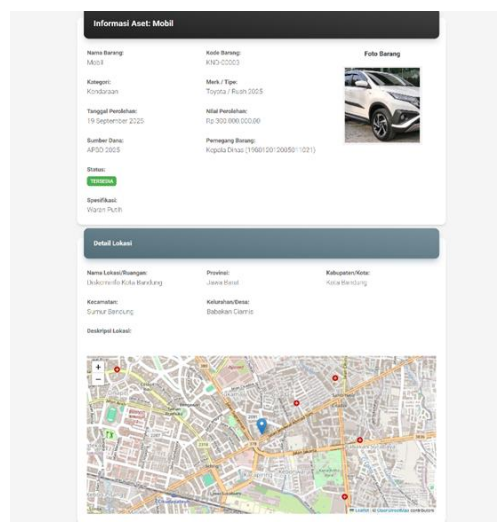


Fig. 7. Public goods data

Furthermore, the bureaucratic validation process was digitized by establishing distinct credentials for six separate administrative roles to eliminate slow paper routing. Fig. 8 demonstrates the technical evaluation screen managed by the Asset Administrator to verify proposal accuracy from the ground level. Vetted entries automatically route to the Head of Department for final digital review and validation, complete with authenticated PDF report generation capabilities as illustrated in Fig. 9. The automated report filters shown in Fig. 10 further simplified internal auditing processes by allowing quick file exports into PDF, Word, and Excel formats.

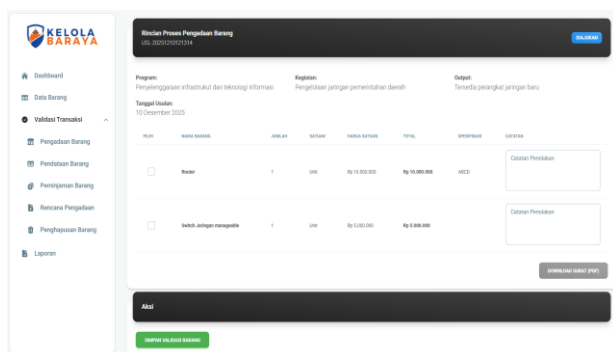


Fig. 8. Initial transaction validation process

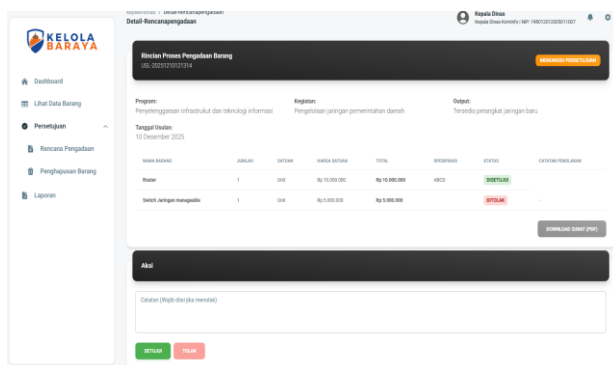


Fig. 9. Final transaction approval and validation process

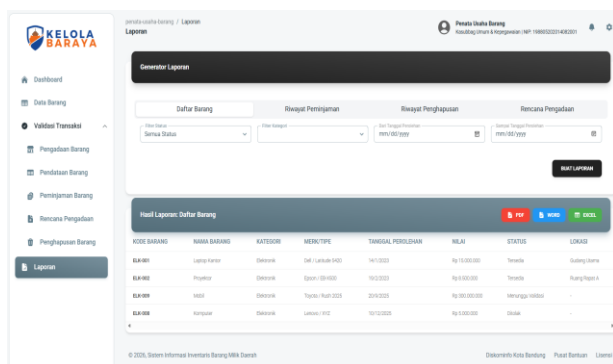


Fig. 10. Automated report generation interface with dynamic filtering

Evaluation and Initial Stakeholder Acceptance

The evaluation phase focused on assessing the suitability of the proposed "Kelola Baraya" prototype in addressing the asset management challenges identified during the preliminary assessment stage. Since the system remains in the prototype development phase and has not yet been deployed in daily operations, the evaluation emphasized stakeholder validation, feature suitability, and initial acceptance rather than measuring operational performance.

A structured operational matrix that highlights the relationships among the identified organizational problems, the proposed technological interventions, and the expected improvements achievable through future implementation is presented in Table 1.

Table 1. Changes resulting from service activities

Initial Condition	Intervention	Condition Change
Inefficient public asset management due to manual procedures	Development and dissemination of the web-based "Kelola Baraya" lifecycle platform.	Full digital transition, eliminating manual errors and double reporting.
Slow physical tracking, data vulnerability, and unrecorded asset transfers.	Integration of automated recognition tools and geographic mapping features.	Instant verification via unique QR Codes and precise tracking using Geotagging.
Paper-based workflows with vulnerable and unverified institutional audit trails.	Implementation of structured multi-role authorization layers and public access.	Streamlined 6-role workflows, secure digital archives, and transparent public verification.

Several factors contributed to the successful implementation of this community service activity. First, the strong enthusiasm, openness, and cooperation demonstrated by the management and IT staff of Diskominfo Kota Bandung facilitated the information-gathering process, requirement analysis, and prototype demonstration activities. Second, the platform's intuitive user interface and clear workflow structure enabled stakeholders to easily understand the proposed digital asset management process during the demonstration sessions.

The evaluation was conducted through prototype presentations, system demonstrations, and discussion sessions involving representatives of Diskominfo Kota Bandung. Feedback obtained during these activities indicated that the proposed features, including asset inventory management, QR Code-based identification, geotagging functionality, procurement planning, asset borrowing, asset disposal, automated reporting, and multi-role validation workflows, were considered relevant to the institution's operational requirements. Stakeholders also acknowledged the potential benefits of adopting a centralized digital platform to support more organized, transparent, and accountable asset management processes in the future.

Table 2. Stakeholder validation results

Feature	Validation
Asset Inventory Management	Approved
QR Code Assets Identification	Approved
Geotagging Assets Tracking	Approved
Proposed Procurement Plan	Approved
Proposed Procurement of Assets	Approved
Proposed Borrowing of Assets	Approved
Proposed Disposal of Assets	Approved
Multi-Role Validation Workflow	Approved
Automated Reporting Module	Approved
Integration With Central Data	Not Achieved

Based on the stakeholder validation process conducted during the prototype demonstration and discussion sessions, nine out of ten (9/10) evaluated aspects were successfully validated and accepted by the participating representatives of Diskominfo Kota Bandung, resulting in a stakeholder validation achievement rate of 90% (Table 2). The validated features include asset inventory management, QR Code-based asset identification, geotagging asset tracking, procurement planning, asset procurement, asset borrowing, asset disposal, automated reporting, and multi-role validation workflows. The only aspect not yet achieved is the integration of the system with the institutional operational environment, as the prototype is currently undergoing approval submission. Nevertheless, the validation results demonstrate positive stakeholder acceptance and provide measurable evidence that the developed prototype aligns with Diskominfo Kota Bandung's operational requirements, while establishing a foundation for future implementation and institutional adoption.

The community service activity concluded with a formal handover and a demonstration of the prototype system, providing the partner institution with a functional proof of concept and a foundation

for future development and implementation initiatives, as shown in Fig. 11.



Fig. 11. Symbolic system handover ceremony

CONCLUSION

This community service activity successfully introduced and demonstrated the "Kelola Baraya" web-based asset lifecycle management prototype as a digital transformation initiative for public asset administration at Diskominfo Kota Bandung. Through the pre-activity, implementation, and evaluation stages, the activity facilitated the identification of organizational needs, dissemination of the proposed digital solution, and stakeholder validation of the developed prototype. The evaluation results provide measurable evidence of the activity's success, where nine out of ten (9/10) evaluated aspects were approved by stakeholders, resulting in a stakeholder validation achievement rate of 90%. The validated features include asset inventory management, QR Code-based asset identification, geotagging asset tracking, procurement planning, asset procurement, asset borrowing, asset disposal, automated reporting, and multi-role validation workflows, indicating that the proposed solution aligns with the operational requirements of Diskominfo Kota Bandung. However, the activity was limited by the system's prototype status and its incomplete integration with the institutional operational environment, as formal approval, testing, and deployment procedures were still pending. Therefore, future community service activities should focus on pilot implementation, system integration, user training, and further evaluation using operational performance indicators to measure the system's long-term impact on asset management effectiveness and organizational efficiency.

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