



A Review of Web-Based Society Maintenance Management Systems for Residential Communities

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Abstract— Residential housing societies coordinate recurring activities such as maintenance fee collection, complaint resolution, worker coordination, event communication, resident records, and security-related tasks. When these activities are handled through paper registers, spreadsheets, phone calls, and separate messaging groups, information can become fragmented and follow-up may be delayed. This review examines literature relevant to digital society administration, property management, and facility management. It considers web-based management portals as a practical approach for centralizing records, supporting role-based access, tracking complaints and payments, recording worker details, and communicating events and notices. Existing society-management work identifies resident, secretary, and security-guard workflows as important parts of a unified system, while wider facility-management research emphasizes service monitoring, data integration, asset maintenance, privacy, and interoperability. The review identifies common design requirements: clear role separation, reliable record keeping, status tracking, secure handling of personal and financial data, accessible interfaces, and transparent administrative processes. It also highlights limitations in the literature, including a lack of comparable evaluation metrics for small and medium residential societies, limited evidence on long-term adoption, and challenges related to data quality and user training. The paper concludes that a simple, secure, and maintainable web-based system can support more organized residential community operations when accompanied by appropriate governance and regular evaluation.

Keywords— Society maintenance; residential community; facility management; web-based system; complaint management; maintenance payments; role-based access; digitalization.

I. INTRODUCTION

Residential housing societies are responsible for coordinating shared services and maintaining common facilities used by residents. Typical administrative work includes collecting monthly maintenance charges, recording expenses, addressing complaints, coordinating housekeeping and maintenance workers, communicating notices, organizing community events, and maintaining security-related information. These activities require regular communication among residents, the society secretary or committee, security personnel, and service workers. When information is stored in separate registers or messaging channels, it can be difficult to identify the latest status of a request, verify a payment record, or determine who is responsible for the next action.

Digitalization offers a way to bring routine society activities into one structured system. A web-based society maintenance management system can provide a shared point of access for authorized users while maintaining different views according to their responsibilities. Residents may submit complaints and review notices or payment information; a secretary may manage records and assign work; security personnel may maintain visitor or entry records where such a module is included; and administrators may manage users and system settings. The exact functions vary by implementation and should be selected according to the needs of each society.

Research on facility management and property-management digitalization provides a wider foundation for these systems. Studies discuss the use of digital tools for service monitoring, maintenance planning, information integration, and asset lifecycle management [2]–[5]. Directly related work on society-management applications also describes the digitization of resident services, complaint handling, maintenance dues, visitor management, parking, and administrative records [1]. However, the availability of features alone does not guarantee effective use. A system must be easy to understand, protect sensitive records, support clear responsibility, and fit the working practices of the society.

The purpose of this paper is to review relevant literature and organize the major functions, benefits, design considerations, and research gaps associated with web-based society maintenance management systems. The review focuses on operational and administrative workflows rather

than assuming that every society requires advanced technologies such as artificial intelligence, Internet of Things devices, or digital twins.

II. LITERATURE REVIEW

Digital management of residential communities overlaps with property management and facility management. Facility management focuses on coordinating services that help a built environment function effectively. ISO 41001 describes requirements for a facility-management system intended to support organizational objectives and consistently meet the needs of interested parties [2]. Although the standard is not specifically written for housing-society software, its emphasis on structured management and stakeholder needs is relevant when planning digital administrative processes.

Society Sync, described in a 2022 paper, presents a digital society-management concept delivered through a website or application. The work discusses resident, secretary, and watchman functions and refers to maintenance dues, complaints, notices, visitor management, parking, amenities, and attendance records [1]. This is directly relevant because it frames society administration as connected workflows rather than isolated tasks. However, the benefits of a proposed system should be evaluated in actual use rather than assumed solely from the presence of modules.

Research on digitisation in facility management reviews technologies such as building information modelling, reality capture, the Internet of Things, and geographic information systems. It identifies data interoperability and integration across systems as continuing challenges [3]. For a residential society, the same issue may appear in a simpler form: payment records may be held in one file, complaints in another, and worker details in a paper register. A centralized application can reduce duplication, but it must use consistent identifiers and well-defined data-entry rules.

Reviews of digital-twin-enabled smart facility management describe growing interest in real-time data integration, asset management, and predictive maintenance [4], [5]. These studies concern more advanced building environments than a basic society portal. Nevertheless, they point to a common principle: information is useful only when it is accurate, understandable, and available to the people who need it.



Recent work on digitalization in property and facility management also highlights privacy, security, interoperability, and adoption [6]. These concerns are important for society management because the system may contain names, flat numbers, contact details, payment histories, complaint descriptions, and security records. Access controls, data minimization, backups, and clear retention practices should therefore be treated as core requirements.

Table 1. Summary of Relevant Literature

	Area	Key contribution	
	Society administration	Describes resident, secretary and watchman workflows; complaints, dues, visitor management and notices.	L m
	Facility management	Framework for effective service delivery and stakeholder needs.	G a
	Facility digitalization	Reviews digital technologies and stresses integration and interoperability.	B r
	Digital-twin facility management	Reviews real-time data, asset lifecycle and facility operations.	A b
	Smart-building facility management	Reviews maintenance, monitoring and integration challenges.	F a
	Property/facility digitalization	Summarizes trends and gaps in privacy, interoperability and adoption.	F c

III. METHODOLOGY

This paper uses a focused narrative review of directly relevant society-management literature and broader work on facility and property management. The source set includes a paper describing society-management software, an international facility-management standard, and review articles on facility-management digitalization, digital twins, and property-management technology [1]–[6]. The sources were selected for their relevance to common administrative functions, digital record keeping, maintenance workflows, system integration, and user or data-management challenges.

The review is thematic rather than a full systematic review. It does not claim to have searched every bibliographic database, does not report a PRISMA screening flow, and does not assign a total number of screened papers. Findings are grouped into four themes: functional modules and user roles; operational benefits; security, usability, and implementation considerations; and gaps that can guide future evaluation. The reviewed sources differ in scope, so their findings are interpreted according to the context in which each was published.

IV. RESULTS AND DISCUSSION

A. Common Functional Modules

Across direct society-management work and the wider facility-management literature, several functional groups are relevant to residential communities. These modules represent a synthesis of common requirements; they are not a claim that every reviewed source implements every module.

Resident and flat records: Maintain resident profiles, flat identifiers, contact information, and relevant household records. Access to personal details should be limited to authorized roles.

Complaint management: Allow residents to submit complaints, record categories and dates, assign responsibility, and update status from submitted to in progress and resolved.

Maintenance payments: Record charges, payment dates, amounts, outstanding balances, and receipts where supported. Financial entries should be traceable and corrections auditable.

Worker details and tasks: Store worker or service-provider details, work categories, and assigned tasks. Task status and completion notes can help the secretary follow up.

Notices and events: Publish notices, meeting information, event dates, and community announcements in one location.

Security and visitor records: Where required, allow authorized security staff to record visitor entries or other permitted security information. Such records need restricted access and defined retention periods.

Administration and reporting: Manage accounts, roles, categories, and summary reports using consistent records and protecting personal information.

B. Role-Based Access and Accountability

A society portal commonly serves several user groups whose responsibilities differ. Residents generally need access to their own relevant records and the ability to raise complaints or read announcements. The secretary or committee needs broader administrative access for payments, assignments, notices, and reports. Security staff may require access only to entry-related functions, while a system administrator manages accounts and configuration. Permissions should be enforced by the backend and database operations, not merely by hiding buttons in the interface. Important actions should record who performed them and when, especially payment changes, complaint status updates, and access to security records.

C. Expected Operational Benefits

A centralized application can make records easier to locate, reduce repeated manual entry, and provide a consistent place to check the status of a complaint or administrative task. Digital payment records may make outstanding dues easier to review, while structured worker and task records can support follow-up. Notices and event information can be distributed more consistently than through disconnected channels. These are plausible operational benefits; their actual size depends on adoption, data quality, training, and the society's existing procedures.

D. Security, Privacy, and Usability

Society systems can hold personal and financial information. Practical safeguards include individual user accounts, strong authentication, role-based authorization, secure password storage, input validation, database backups, controlled exports, and a process for removing access when a user's role changes. The system should collect only information needed for its stated purpose. Sensitive visitor or resident records should not be visible to every user. Administrative actions should be logged, and backup restoration should be tested periodically.

Usability is equally important. Residents, committee members, and security workers may have different levels of digital experience. Labels should be simple, forms should request only necessary details, and success or error messages should explain what happened. The interface should work on common mobile and desktop screens, support readable text, and avoid relying on color alone to communicate status. Where residents prefer different languages, language support can improve access. Clear procedures are also needed for people who cannot or do not wish to use the portal.

E. Implementation Considerations

A web-based system can be implemented using a browser-based interface, a server-side application, and a relational database. The database should use defined relationships among residents, flats, payments, complaints, workers, tasks, and events. Validation should occur on the server as well as in the interface. Testing should cover successful workflows and negative cases, including unauthorized access, duplicate submissions, invalid payment values, missing required fields, and attempts to view another resident's restricted information. The implementation should document who maintains the software, how backups are taken, and how records are corrected.

F. Research Gaps

- Limited comparative evaluation: the literature does not provide a common set of metrics for comparing society-management systems across different society sizes and governance models.
- Long-term adoption: more evidence is needed on whether residents and staff continue using a portal after deployment and what training or support improves continued use.
- Transparency and trust: future studies should measure whether status histories, itemized payment records, and visible responsibility improve perceived fairness and confidence.
- Privacy and access governance: research should examine practical ways to minimize personal data, manage role changes, and retain or delete records appropriately.
- Interoperability and migration: tools are needed to import existing spreadsheets and paper records accurately and export data in usable formats.
- Evaluation beyond feature lists: deployments should report task completion time, complaint resolution time, payment-record error rates, user satisfaction, accessibility, and security-test results.



V. FUTURE DIRECTIONS

Future work should prioritize dependable core workflows before adding complex technologies. A useful evaluation can begin with a pilot involving residents, the secretary, and security staff. Measures may include the time required to find a payment record, the percentage of complaints with a recorded status, average complaint closure time, duplicate or incomplete records, and user satisfaction. Interviews can help identify barriers that numerical measures do not explain. Results should report participant numbers, study duration, and limitations.

Further development may include optional payment-gateway integration, reminders, multilingual interfaces, audit logs, and structured exports. Such features should be added only when there is a clear need and when the society can support their security and maintenance requirements. Sensor-based building monitoring or predictive maintenance may be valuable for larger communities, but these approaches introduce additional hardware, integration, and operating costs. A phased design can make a basic system more achievable for smaller societies.

VI. CONCLUSION

This review examined web-based society maintenance management in the context of residential administration, facility management, and property-management digitalization. The literature indicates that digital tools can bring resident records, maintenance payments, complaints, worker coordination, notices, and selected security workflows into a more structured process. Wider facility-management research reinforces the importance of service monitoring, reliable data integration, and well-defined management practices. At the same time, a successful system depends on more than the number of available modules. Role-based access, data accuracy, privacy protection, clear status tracking, accessible design, user training, and ongoing maintenance are essential. The main research gap is the need for transparent, comparable evaluations of society-management systems in real residential settings. Future studies should assess usability, administrative efficiency, record accuracy, trust, and security over time. A carefully scoped web-based system can support more organized society operations when its design is matched to user needs and responsible governance.

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