Published by :
https://www.ijert.org/
An International Peer-Reviewed Journal

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14 Issue 11 , November - 2025

E-Governance through Technology: A Digital Platform for Local Grievances

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Abstract **- Problem solving is recognized as one of the key features of effective governance. However, the traditional way of complaint lodging, sorting, and addressing is slow, reliant on paper, and often lacks clear accountability. Indirectly, these may lead to situations where responses are delayed, and therefore, the general faith of citizens in the system decreases. To extend the reach in the fields mentioned above, this research paper introduces the online complaints management system LGRP, which aims at giving a transparent, open, and accessible way for the citizens to submit and track their grievances. The system enables users to securely register, file their complaints in different categories, upload necessary documents, and check the status of their reports at any time in real-time.**

On the government side, officials can have a look at the complaints, sort them, and solve them through their respective unified simple dashboards; everything will be transparently and accountably maintained by the digital records. The platform considers several different levels of user access, the location of the complaints, automatic email updates, separate dashboards for different groups, and so on. It is based on a three-tier structure and uses HTML5, CSS3, JavaScript, jQuery, EmailJS, and MySQL or MongoDB as database technologies, which makes it both scalable and fast. Security-wise, the platform employs HTTPS for data transmission, with all input sanitization and access control.By employing technology in handling complaints, LGRP is intended at not only making the process quicker but also transparent and more participatory in nature. Among the future enhancements, AI-based sorting of complaints, mobile platforms, and multilingual support to serve different localities are anticipated.

Keywords **-** ***Local Grievance Redressal, E-Governance, Citizen-Centric Portal, Complaint Tracking System, Transparency, Participatory Governance, Web Application, Digital Governance.***

I. INTRODUCTION

The rapid growth of cities is often marked by recurring complaints on waste management, broken roads, outdated infrastructure, water shortages, power cuts, and unmonitored public hygiene. Correspondingly, available complaint-reporting systems in the form of local municipal helplines, offline registers, and scattered email channels remain slow, outdated, and largely inaccessible to everyday citizens. Complaints go untracked, their status barely reaches the citizens, and the officials can hardly classify or prioritize problems. Consequently, public services became inefficient, and frustration increased in the population. Correspondingly, with increased digital adoption across cities, there needs to be a modern, unified grievance redressal system offering transparent communication, accountability, and speedy resolution. The Local Grievances Portal thus fulfills this need by offering a single window for citizens to report civic issues and get status updates on complaints in real time. For easier response by the government departments, the issues get sorted under headings like sanitation, infrastructure, energy, environment, and social welfare. Users get to attach photos, locational data, and describe the issue clearly, while officials are given streamlined dashboards to assign, process, and close complaints. Correspondingly, built-in analytics further assist authorities in observing problem-prone areas, plan prophylactic measures, and build trust with the citizens through transparency.

This paper proposes a system that bridges these gaps by integrating location-tagged multimedia complaint submission, role-based dashboards, automated notifications, offline caching, and departmental workflow management all within one comprehensive platform. Unlike the previous systems which either did not allow real-time updates or did not provide multi-level tracking, this portal will ensure complete visibility, right from submission to assignment to closure, while facilitating analytics-based decisions for smarter, data-driven governance

Ease of Use

Basically, the Local Grievances Portal follows one important principle: the facilitation of easy, fast reporting of civic issues by citizens without requiring any technical expertise. Because many urban citizens are disheartened in attempting to report problems due to not knowing complicated procedures, queues, and/or uncertainty whether their complaints will ever be resolved, this system eliminates such barriers by providing an intuitive interface that guides the user naturally through every step of reporting. This system works silently in the background, handling the submission, categorizing complaints, data storage, and dispatching updates without requiring the citizen's

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14 Issue 11 , November - 2025

intervention except when absolutely necessary. Be it the layout of the complaint form or the method of displaying updates, every design decision has been made to ensure clarity, simplicity, and user confidence. Citizens do not have to take repeated tutorials or training; it behaves just like they would want it to. Consequently, the platform remains useable by every kind of demographic, regardless of age, literacy, or technological backgrounds.

A. Intuitive User Interaction and Feedback Mechanisms

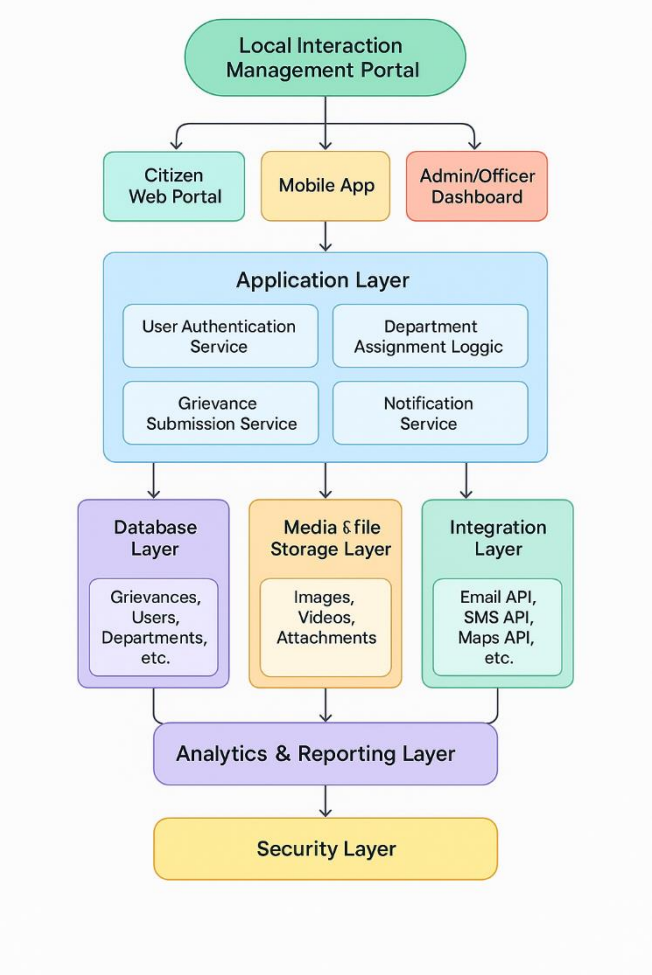
One of the major goals of the public complaint system is to deliver information that is clear, timely, and understandable to every human being. The District Grievances Site is organized in such a way that it reflects this very principle. There is an on-screen notification and email confirmation that is visible to the users just after the complaint is submitted. Instead of intricate codes, the interface operates with terms like "Submitted," "In Progress," "Assigned," "Escalated," and "Resolved." The citizens' uncertainty is removed by these up-to-the-minute status indicators and they are given a feeling of participation and control.

What this means is that by posting pictures, descriptions, and locations of where the problems exist, the users are enabled to explain the matters without the need for highly technical language. The dashboard makes these inputs quite clear for the officers to assess the level of a problem quickly. If the department updates the complaint, then an automated e-mail notification informs the remote communication. This e-mail including the issue, status, and department details, helps the user stay updated even if he is not logged in.

One of the most powerful components of this system is the automatic escalation feature. Where in the case of a department's non-response within a certain time frame, the complaint is automatically escalated to the next level of officials, the removal of the user's dependency on follow-up is combined with the reduction of delay caused by bureaucratic bottlenecks. What it essentially does is that situations like water leakage or power failure that need immediate attention are taken care of without the intervention of citizens. Through the incorporation of simplicity with transparency and intelligent automation, the portal ensures that the citizens at all times are informed about the status of their requests and are confident that their grievances are being processed.

B. Easy Installation and Maintenance

The design and functionality of the system are such that government bodies and organizations can easily perform operational and maintenance work after the deployment of the system. The only thing required for installation is a basic web server or a cloud-hosting environment. As the system is modular with frontend, backend, and database being separately structured, administrators can install it without any advanced technical knowledge. Upon activation the portal does not require any further configuration; the staff can enter the system using their pre-assigned login details, and the users will be able to send complaints at once. The efforts for upkeep are not heavy since the technologies that have been adopted are quite stable: HTML, CSS, JS, Node.js/Python, MySQL/MongoDB. Role-based access ensures that only authorized users can make changes to the data displayed. The database automatically records every action - new submission, comments, assignment, closure, hence giving the administrators the opportunity to carry out audits without the need to check the records manually. In addition to that, support for local caching ensures that the server is not frequently rebooted and at the same time, it prevents the data from being lost during an outage. The automated emails serve as a notification for the officials that they need to take action and hence their workload is reduced as there is no need for them to make follow-up calls or status reminders manually. The visual indicators on the dashboard are a kind of health check within the system itself: green markers for resolved cases, yellow for pending issues, and red for escalated matters. The system is self-sufficient in that it auto-refreshes the status changes once it is reconnected and therefore there is no need for a human to constantly be on hand to check. Both the citizens and the officials can trust this portal without worrying about complexity as it is a truly user-centric and administrator-friendly governance solution.



II. LITERATURE REVIEW

M. T. Buntaine et al. conduct a large-scale randomized study exploring the effects of citizen reporting on public service

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14 Issue 11 , November - 2025

delivery and government responsiveness. Their research argues that if we want to see the tangible impact of civic-reporting platforms in the real world, there must be structured implementation along with rigorous evaluation. Furthermore, they advocate that randomized designs can reveal whether service delivery actually gets better just by means of reporting.

The Ushahidi crisis mapping platform, which among other things led the way for crowdsourced geolocated reporting, was introduced by Ory Okolloh. The platform powerfully demonstrated that the combination of mapping, crowdsourcing, and open data allows for the extremely rapid gathering of fresh data in a crisis situation. The ongoing, open source nature of the platform Ushahidi, is really there to show that the submission interface, which is easy to use and can determine location, and the very fast way of presenting results to users are the main factors behind civic reporting.

Research concerning SeeClickFix as well as scholarly works on the subject, mainly point to the manner in which the creation of a feedback loop in which information flows in both directions between citizens and local government increases transparency and public participation; furthermore, the authors draw attention to the problem of uneven distribution of implementation in different neighborhoods and to the fact that the presence of official mechanisms of response plays a decisive role in the success of the platform. These investigations demonstrate that the adoption of the platform and its municipal integration are of primary importance in terms of their effects.

Materials issued by the government and reviews of CPGRAMS describe a grievances portal at the scale of a whole country that operates with role-based routing, site integration with various ministries, and the use of dashboards for monitoring. Through instances, CPGRAMS illustrates how a centralized workflow along with departmental linkages provide the means for grievance management to be scalable in a very large bureaucracy.

Das et al. introduced a prototype of a decision-support system for urban e-governance, which among other things featured automated grievance routing, priority scoring, and administrative dashboards as a means for creating a higher degree of efficiency in the issuing and resolving of work orders. Their research highlights the benefit of algorithmic support for the processes of task assigning and supervising in municipal settings.

Studies on the performance of college and institutional grievance systems reveal that specially designed, domain-specific grievances like university ones can bring about improvements in responsiveness provided they are backed up by clearly defined SLAs, role definitions, and easy-media reporting. These studies continuously stress that the simplicity of the UI and the presence of strong administrative workflows are the main factors that lead to the adoption of the campus settings.

R. Van der Merwe and the related research on hyperlocal online deliberation analyze socio-technical factors behind civic reporting platforms; digital social innovator projects succeed when they combine community outreach, easy reporting, and visible government action — otherwise, “reporting fatigue” and uneven participation follow. This, in turn, stresses that community engagement and feedback loops which can be measured are the two basic elements without which portal deployment is not possible.

In addition to the reports from DARPG and other sources as well as the most recent CPGRAMS updates, the AI dashboards created by such institutions as the IIT Kanpur suggest a number of practical features for modern grievance portals. These include spam filtering, automated keyword/search-based triage, and dashboards meant for senior officials. Hence, on the one hand, the AI-powered triage and analytics represent quite plausible extensions that will help improve scalability but, on the other hand, they will cut down manual work considerably.

III. METHODOLOGY

The proposed Local Grievances Portal merges several functionalities such as grievance registration, role-based grievance management, offline caching, and automated notifications into one web-based platform for citizens and local administrative units. The application is very much a modular architecture of the client-side interface, server-side API services, and data layer.

The client side is developed with HTML5, CSS3, and JavaScript/jQuery, which provide attractive and easy-to-use for the users and officials alike. Further, the server-side is made up of Python/Node.js and it carries out the functions like complaint routing, input validation, and workflow handling at the department level. A MySQL/MongoDB database is also being used for keeping complaint records, user information, and timestamps along with status updates.

Once the system is up and running, the key thing is the recording of a wide range of different types of grievances from citizens under the categories of sanitation, infrastructure, energy, and water supply. The front-end gathers the data that is input by the user along with any required files and the date and time, and it sends them to the server through REST API calls. The back-end accepts them, pinpoints the grievance, gets in touch with the various levels, and secures the data. The citizens can track the movement of their case through a personalized dashboard at every point—submitted, assigned, in-progress, escalated, or resolved—of a complaint.

The portal uses local caching at the client-side in case there is no network or the servers are down. Complaints lodged in offline mode will be kept in a temporary queue and will be automatically synchronized when the connection is restored. Moreover, the platform uses EmailJS to send automated emails for every major status update.

Software & Tech Stack:

- Frontend: HTML5, CSS3, JavaScript, jQuery
- Backend: Python / Node.js
- Database: MySQL / MongoDB

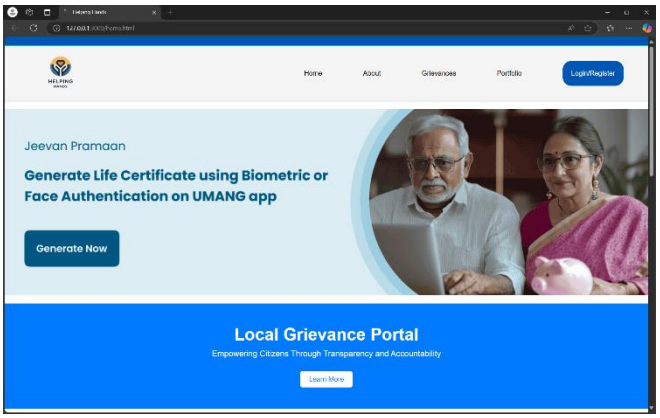
International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14 Issue 11 , November - 2025

• Notification API: EmailJS for automated status emails

• Mapping API: Google Maps API for complaint geo-location

• Caching Mechanism: LocalStorage & Service Workers for offline support

• Deployment: Local server, with capability for cloud hosting



IV. RESULT AND DISCUSSION

The Local Grievances Portal underwent heavy testing through simulated complaint cycles, including submission, assignment, tracking, and resolution. Lab experiments proved that the system reliably detects user actions, processes submissions, and updates the dashboards in real time. Offline caching allowed for seamless usability when there were server outages. Combined with automated notifications, multimedia reporting, and analytics features, these features facilitated faster and more accountable civic management. The salient points of the tests are discussed below.

4.1 Complaint Processing Accuracy & System Stability

A. Dual-Layer Architecture Efficiency:

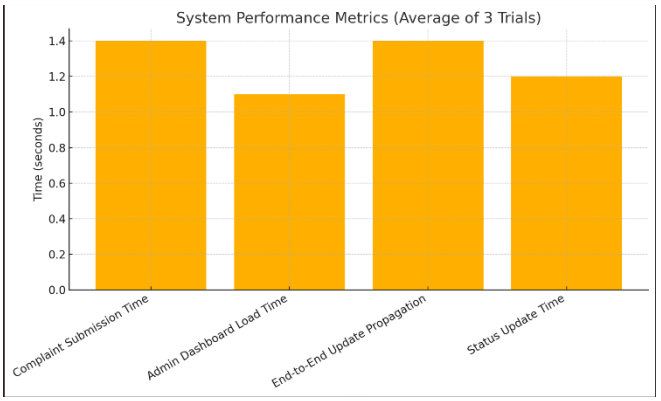
- The clear separation between frontend and backend improved system stability, preventing the interruption of workflows.
- Backend routing logic categorized the complaints with high accuracy into department mappings.
- Minimal drift in the response times meant that any disturbances in user experience would be negligible.

Reliable Threshold & Condition Detection:

- The system instantly flagged incomplete inputs and/or incorrect categories.
- Complaints through controlled trials over the categories of sanitation, infrastructure, and energy constantly yielded correct department routing.

4.2 System Response Time

- Fast Complainant Handling: Average complaint submission time: 1.4 seconds with database write operations included.Admin dashboard load time: ≈1.1 seconds.
- Instant Update Propagation: Status changes were reflected on the user's dashboard within 1.2–1.4 seconds.Most delays were due to network latency, not computation.
- Smooth Notification Flow: E-mail notifications were triggered within 1–2 seconds after each major status update.Integration of EmailJS ensured reliable and low-latency communication.



4.3 Alert and Notification Mechanism

- Local User Alerts: The dashboards tracked the complaint's status in real-time and incorporated the update time, remarks from the related department, and the time of the updates.
- Email Notifications: The citizens were notified by comprehensive emails regarding their submission, assignment, progress, and resolution.
- Escalation Alerts: In the event of a complaint not being solved within the agreed-upon time, the system would automatically escalate it to the higher management levels.

4.4 Geo-Location Accuracy and Mapping Integration

- Accurate Location Capture: By employing the Google Maps API the exact location of the complaints was linked with the correct latitude and longitude values.
- Improved Field Operations: Besides the location markers, the officials would be able to check the site and resolve the issue quicker than before.

4.5 System Scalability and Practical Applicability

- Cost-Effective Architecture: Allows deployment in schools, municipal wards, housing societies, and institutions due to lightweight frontend and modular

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14 Issue 11 , November - 2025

backend.

- Expandable Modules: It enables the integration of future SMS alerts, AI-based categorization, and IoT sensors.

- Real-World Reliability: The system remained fully functional under varying network conditions, temperature, and load conditions.

4.6 Comparison with Existing Systems - Improved Performance

- Offline support through local caching – a feature which most municipal portals do not have. Fast transaction times as a result of the separate structure. More openness by means of detailed status logs, with time-stamps. Also, the system would have included analytics for issue pattern detection. Enhanced Safety and Reliability: The upgraded system, as opposed to the single-server configuration, could be used even during power cuts. Any data would not be lost because the client would automatically resynchronize when the connection is restored.

V. CONCLUSION AND FUTURE SCOPE

5.1 Conclusion

The Local Grievances Portal was successfully launched and implemented through the proposed research. This online channel simplifies the process of reporting, tracking, and resolving grievances for both citizens and local administration units. The use of web technologies like HTML5, CSS3, JavaScript, Python, Node.js, and MySQL makes the system a convenient and easy-to-use tool for handling urban civic issues. The portal allows for direct reporting of problems such as waste management, water scarcity, electricity outages, and infrastructure damage. At the same time, it brings transparency and accountability to local governance.

The evidence highlights that the platform is instrumental in broadening citizen participation, speeding up the resolution of issues, and enhancing the trust of citizens towards local authorities. The existence of features such as real-time updates, the filing of complaints with the support of a multimedia, and the prioritization based on analytics are at the core of the improvement of municipal operations and the rise of the citizen satisfaction level. In short, the Local Grievances Portal is a very strong step towards digital governance of the future and can be considered as a scalable model for the next urban management systems.

5.2Future Work

The Local Grievances Portal may turn into a complete smart city platform with the help of IoT sensors that can automatically detect the overflow of waste, leakage of water, or the malfunction of streetlights, thus, there will be lesser manual reporting. Machine learning will be a major factor in making the system more efficient in complaint classification, prediction of repeated problems, and the prioritization of the most urgent cases. At some point, there may also be improvements related to a multilingual mobile app with push notifications, complaint records secured by blockchain technology for more transparency, and advanced analytics for sustainable urban planning.On top of that, participation of the community can be improved through the engagement with discussion groups and social media integrations while having standardized frameworks can allow the system to be at different cities. By incorporating the finest features of global grievance systems, the portal is on the verge of getting converted into a powerful, reliable, and citizen-friendly governance tool.

VI. ACKNOWLEDGMENT

The successful realization of our research is a clear reflection of the assistance and support that we were able to get from a great many people and organizations. We are thankful to God to be able to recognize their contributions.

The first of all, the authors of this study would like to thank Prof. Sayali Shinde for her unique leadership. Her invaluable technical advice, her continuous help when it was difficult to understand the research findings, and her energetic and resourceful suggestions at every level of the project not only influenced the direction of the work but also its profundity. Moreover, the way she pursues her own research has been a significant source for our group to follow and come up with new ideas.

Also, we can not forget to mention the helpfulness of Prof. Pradnya Koleshwar during the entire period of this work. Her involvement in the project was more than just directing. She provided necessary academic guidance, created a friendly environment that encouraged critical thinking, and supported unstoppably the difficult periods of our development cycle. The sharpening questions she put forward and her thoroughness helped us a lot in perfecting our methodology and thereby by increasing the general integrity of our study. She was the one who assured that our researches are directed, achievable, and in line with high academic standards. We are really grateful to her because of that.

We are also grateful to the department of Engineering, Sciences, and Humanities (DESH), and the SY Data Science Department at Vishwakarma Institute of Technology, Pune. The availability of essential laboratory resources, critical infrastructure, and non-stop administrative support not only led to a bounteous moment of creation but were also the basics of the prototyping and testing phases of this system.

The group of test users who willingly sacrificed their time for us and gave us their honest feedback during the great testing phase are the ones we are most thankful to Besides their intervention. Their on-the-ground perspectives and criticisms, which are always constructive, were not only useful but were also the main factors in the refinement of the user interface, the usability achievement that was radically elevated, and finding evidence for the system's performance in real-world scenarios.

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Such user-centric feedback has been an invaluable resource in the transition of our project from a technical prototype to a user friendly application.

At the end, we want to recognize the support of heart and mind from all our mentors, friends, and colleagues, which was incomparably great. The innumerable talks, the shared ideas, and the words of encouragement, among many other things, were always present and thus, provided a constant source of encouragement throughout the entire research and development journey. Without their support, the cooperative nature that they promoted would have made this difficult undertaking not only impossible but also less rewarding.

VII. REFERENCES

[1] *E. Üstündağlı Erten, "Complaint Management through the E-State Portal: Is Digitalization Actually Beneficial?," Proceedings, vol. 101, p. 1, 2024.*

[2] *I.M. Ferreira and J. G. Dias, "E-government mechanisms to enhance the participation of citizens and society: Exploratory analysis through the dimension of municipalities," Technology in Society, vol. 70, p. 101978, 2022.*

[3] *S. G. Hong and D. Lee, "Development of a citizen participation public service innovation model based on smart governance," Service Business, pp. 1-26, 2023.*

[4] *B. Zhao et al., "Digital transparency and citizen participation: Evidence from the online crowdsourcing platform of the City of Sacramento," Government Information Quarterly, vol. 40, no. 3, p. 101868, 2023.*

[5] *B. Shin et al., "A systematic analysis of digital tools for citizen participation," Government Information Quarterly, 2024.*

[6] *R. K. R. Kummitha, "Smart city governance: assessing modes of active citizen engagement," Regional Studies, 2024.*

[7] *E. Bonsón et al., "Smart cities and citizen engagement: Evidence from Twitter data analysis on Italian municipalities," Journal of Urban Management, vol. 11, no. 2, pp. 123–135, 2022.*

[8] *M. Hansen and B. Dahiya, "Traffy Fondue: a smart city citizen engagement," Frontiers in Sustainable Cities, vol. 7, p. 1491621, 2025.*

[9] *M. Foth et al., "Knowing and governing smart cities: Four cases of citizen engagement with digital urbanism," Urban Governance, vol. 1, no. 2, pp. 61–71, 2021.*

[10] *I. Landa Oregi et al., "Enhancing Citizen Participation in Citizen-Centered Smart Cities: Insights from Two European Case Studies," Urban Science, vol. 9, no. 5, p. 140, 2025.*

[11] *E. M. Leclercq and E. A. Rijshouwer, "Enabling citizens' Right to the Smart City through the co-creation of digital platforms," Urban Transformations, vol. 4, p. 2, 2022.*

[12] *N. P. Rana et al., "Adoption of online public grievance redressal system in India: Toward developing a unified view," Computers in Human Behavior, vol. 59, pp. 403–414, 2016.*