

USER EXPERIENCE ENGINEERING

EEI4361

GN QuickCheck

*A Mindful Digital Platform for Checking
Grama Niladhari Availability and
Required Documentation*

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1. Problem Identification

1.1. What is the problem you have identified to solve?

Problem Explanation

Accessing Grama Niladhari (GN) services in Sri Lanka has become a stressful, time-consuming, and inefficient process for many citizens. Individuals seeking essential documents such as NICs, certificates, verifications, and permits face several challenges due to the lack of proper information and transparency in the current system. Most GN-related communication still happens offline through physical notice boards, word-of-mouth, or phone calls. As a result, citizens often make multiple unnecessary trips to the GN office just to check officer availability or verify required documents.

Key problems identified:

- Information Uncertainty -
Citizens do not clearly know the exact documents required for different services, leading to repeated visits and confusion.
- Availability Uncertainty -
People are unaware of GN availability, office hours, or whether the officer is out on field duties, resulting in wasted time and travel.
- Process Anxiety & Emotional Stress -
Due to unclear procedures, misinformation, and long waiting times, citizens experience frustration, mental pressure, and a lack of clarity.
- No Unified Digital Platform -
Currently, there is no centralized online system to check GN schedules, required documents, sample forms, or service instructions in a clear and accessible way.

Therefore, the absence of real-time information and accessible guidance directly affects digital well-being, increases anxiety, and reduces efficiency in public administrative service usage.

GN QuickCheck aims to address these issues by providing a single mindful digital platform where citizens can check GN availability, view required documents, access forms, and prepare before visiting, ultimately minimizing stress, unnecessary visits, and improving overall public service experience.

1.2. Five example personas.



KAVINDU PERERA

PROFILE

Gender : Male
Age : 32
Education : Diploma in Business Management
Occupation : Small Construction & Hardware Business Owner
Address : No. 24, Lighthouse Road, Galle.



BIOGRAPHY

Kavindu manages a small construction and hardware business employing five staff members. His work often requires interaction with government offices, especially the Grama Niladhari, to obtain permits, verify land ownership, and confirm residency for clients. However, the unpredictability of GN availability and unclear documentation requirements frequently waste his time, causing frustration and delays in business operations. Kavindu seeks a digital solution that helps him plan his GN-related tasks efficiently and stress-free.

MOTIVATIONS

- To save time and manage his business more efficiently.
- To access accurate, up-to-date GN information online.
- To prepare all required documents before visiting the GN office.
- To reduce stress and uncertainty when dealing with administrative tasks.

GOALS

- Check real-time GN officer availability before visiting.
- View required document lists for specific services
- Download digital forms and sample documents easily.
- Access the platform in Sinhala or English for convenience.

FRUSTRATIONS

- Wastes valuable time due to GN unavailability.
- Often misses deadlines because of missing or unclear paperwork.
- Finds government notice boards difficult to interpret.
- Lacks a central digital system for local administrative processes.
- Feels stressed managing both business and administrative tasks.

PERSONALITY



TECHNOLOGY



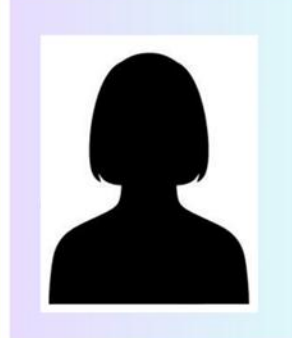
BRANDS

- Dialog (Business Internet)
- Samsung Smartphone
- Google Workspace
- WhatsApp Business
- People's Bank (Online Banking)

SACHINI DE SILVA

PROFILE

Gender : Female
Age : 30
Education : Bachelor's degree
Occupation : Accountant
Address : 327, De Soysa road, Molpe, Moratuwa.



BIOGRAPHY

Sachini recently fulfilled a lifelong dream of buying her own house. The legal process was complex, and she now needs to update her property details with the GN. She is diligent but feels out of her depth with legal paperwork and wants to ensure everything is done correctly to avoid future problems.

MOTIVATIONS

To secure her investment and ensure all her legal documents are perfectly in order.

GOALS

- To get an authoritative, step-by-step checklist for her specific situation.
- To understand the "why" behind the required documents.

FRUSTRATIONS

- Contradictory information from different sources.
- Fear of making a mistake that could have legal consequences.
- Procedures that are not transparent.

PERSONALITY



TECHNOLOGY



BRANDS

- Google Workspace
- Microsoft Office / Excel
- LinkedIn
- Dialog / SLT-Mobitel
- Facebook / Instagram
- LankaPay / Bank Apps
- Newsfirst / Daily Mirror Online

SUNIL RANAWAKA

PROFILE

Gender : Male
Age : 73
Education : O/Ls
Occupation : Retired School Clerk
Address : "SISILASA", Mahagama, Diyakaduwa



BIOGRAPHY

Sunil worked for 40 years in government service and is now enjoying his retirement. His children live abroad, so he often has to manage bureaucratic tasks on his own. He finds new technology confusing and intimidating, preferring face-to-face interactions, but his mobility is not what it used to be.

MOTIVATIONS

To maintain his independence and receive his pension without hassle. He wants to feel respected and not be a burden.

GOALS

- To collect his pension reliably every month.
- To complete any government work in a single, quick visit

FRUSTRATIONS

- Long, unpredictable queues at the GN office
- Being told he is missing a document after a long wait
- Complex websites and mobile apps.

PERSONALITY



TECHNOLOGY



BRANDS

- Mobitel
- HNB / People's Bank
- Sri Lanka Post
- TV Derana / Rupavahini
- Facebook
- WhatsApp

2. User and task analysis

2.1. User analysis

User analysis provides a clear understanding of who will use the system and what goals they aim to achieve. For the GN QuickCheck platform, this analysis focuses on understanding citizen needs, difficulties, and interaction patterns when accessing Grama Niladhari services. GN QuickCheck is designed for a wide variety of citizens. Based on field visits, interviews, and persona development, the following user groups were identified:

- Ordinary Citizens
- Working Professionals
- Students and Young Adults
- Elderly Citizens and People with Disabilities
- GN Officers

This analysis guides the design decisions, ensuring the interface is simple, accessible, and aligned with real user workflows. The users are able to go through the system and do the following tasks, which are shown below.

Users :-

Login → Login User → User Login → Dashboard → Services
Civil Registration → Civil Registration Page → Registration of Past births
Registration of past birth page

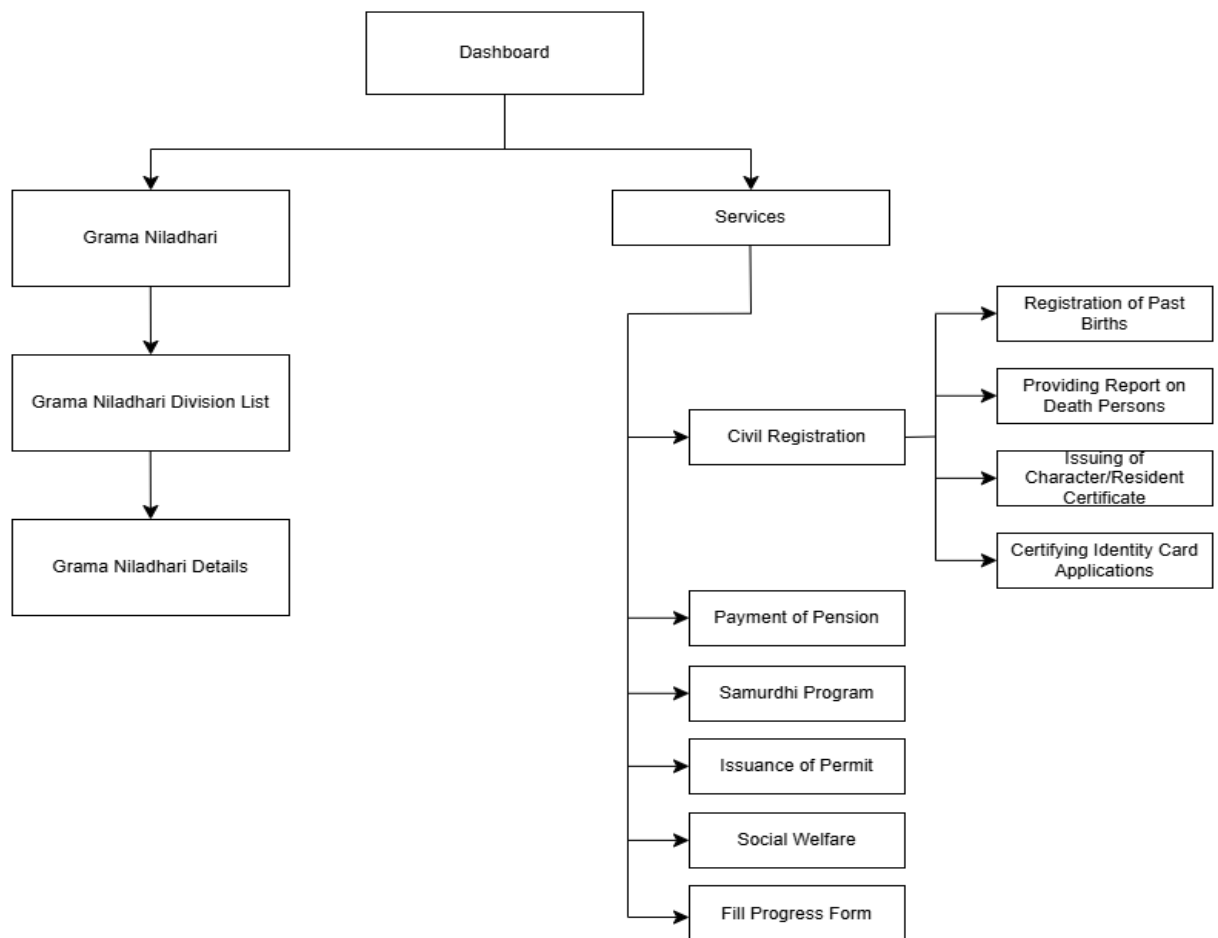
Grama Niladhari :-

Login → Login Grama Niladhari → Grama Niladhari Login → Grama
Niladhari Details → Click Logo → Dashboard → Services → Civil
Registration → Civil Registration Page → Registration of Past births →
Registration of past birth page

Common :-

Check → Grama Niladhari Division List → Grama Niladhari Details → Click
Logo → Dashboard

2.2. Task analysis



Selected Feature : Checking GN availability and viewing the required documents for a service.

End-to-End Task Flow

- User opens GN QuickCheck
- User selects their GN Division
- System displays:
 - GN availability (Available / Not Available)
 - Office hours
 - Contact number
- User selects service type (e.g : Residence Certificate, NIC Application Support)
- System displays:
 - Required documents
 - Number of copies
- Special instructions (e.g : bring photographs, signature requirements)
- User prepares documents
- User visits GN at the available time
- Task completed without confusion or repeated visits

3. Identified scenario

Feature : Check GN availability and View required documents

Scenario : Anoma realizes she needs to register her newborn and apply for child benefits but wants to avoid multiple visits with her baby.

- She opens GN QuickCheck on her phone during the baby's nap.
- She enters her address, and the system automatically identifies her GN division.
- The app displays GN availability :
 - Available day (Monday, Thursday)
- She selects her services :
 - Birth registration
 - Residence confirmation
 - Child benefit application
- GN QuickCheck shows a clear document checklist for each service, including downloadable forms.
- Anoma prepares all documents at home and checks off each item in the app.
 - Birth Registration
 - Hospital birth card (original and copy)
 - Parents' NICs (original and copies)
 - Marriage certificate
 - Completed registration
 - Residence Confirmation
 - Utility bill (electricity or water)
 - Proof of residence (letter if renting)
- Child Benefit Application
 - Bank account details
 - NIC copies
 - Completed benefit form
- She plans her visit for the time slot when the GN is available, and the queues are low.
- Anoma visits the GN office at the correct time with all documents ready.
- When she arrives at the GN office:
 - The GN is available exactly as shown
 - There is no unnecessary waiting
 - She submits all documents in one go
- She completes all tasks in one visit, avoiding stress, delays, and repeat trips.

GN QuickCheck helps Anoma complete all her essential tasks in one well-planned visit by guiding her on the exact documents she needs. This reduces her anxiety, prevents unnecessary repeat visits, and minimizes her newborn's exposure to public spaces. Overall, the platform gives her clarity, confidence, and a smoother experience during an important and stressful time. In Sri Lanka, accessing Grama Niladhari (GN) services remains a significant challenge for many citizens. The process of obtaining essential documents such as national identity cards, certificates, and permits often involves navigating unclear requirements and inconsistent communication. Most information about GN services is still shared through physical notice boards, word-of-mouth, or phone calls, leaving citizens uncertain about what documents they need or whether the GN officer is available.

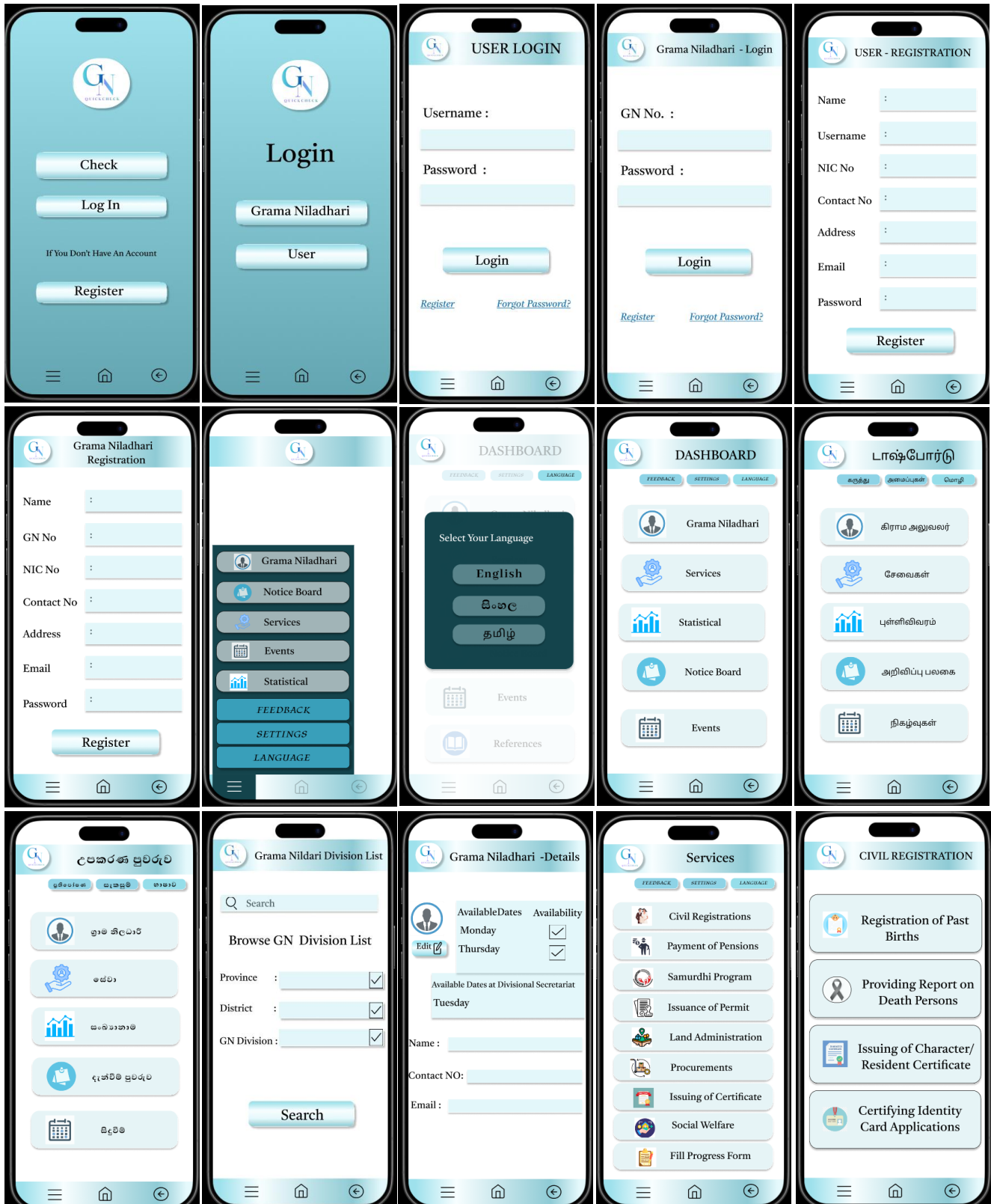
This lack of transparency and accessible guidance leads to repeated, unnecessary visits to GN offices. People frequently spend valuable time travelling, only to find that the officer is unavailable or that they are missing required documents. The resulting frustration and stress negatively affect their overall experience and erode trust in public administrative services.

The scenario highlights the urgent need for a centralized digital platform. By providing real-time information on GN officer availability, required documents, and service guidelines, such a solution can streamline the process, reduce anxiety, and improve the efficiency of public service delivery for all citizens.

4. Prototype

We have created several user interfaces for both the website and the mobile app, and added the link to the prototype created using Figma.

Mobile app Link: [GN Quickcheck \(Mobile app\)](#)





Website Link: [GN_Quickcheck \(Website\)](http://GN_Quickcheck.com)

This screen shows the initial registration process. It features a 'Check' button, a 'Log In' button, and a 'Register' button. A message states: 'If You Don't Have An Account'.

This screen is for user login. It includes a 'Login' button and a 'User' button. The text 'Grama Niladhari' is displayed above the buttons.

This screen is for user registration. It contains fields for Name, Username, NIC No, Contact No, Address, Email, and Password, along with a 'Register' button.

This screen is for Grama Niladhari registration. It includes fields for Name, GN No, NIC No, Contact No, Address, Email, and Password, and a 'Register' button.

This screen is for User Login. It features fields for Username and Password, a 'Log In' button, and links for 'Register' and 'Forgot Password?'.

This screen is for Grama Niladhari Login. It includes fields for GN No and Password, a 'Log In' button, and links for 'Register' and 'Forgot Password?'.

This screen is for the forgot password process. It has an 'Email' field and a 'Get Password Reset Link' button.

This is the main dashboard screen. It displays icons for Grama Niladhari, Notice Board, Services, Events, and Statistical data. Navigation tabs for FEEDBACK, SETTINGS, and LANGUAGE are at the top.

This screen shows the dashboard with a language selection overlay. The overlay offers options for English, Tamil, and Sinhala.

5. Heuristic Evaluation

Scenario 1 : UX/UI Designer (Government Service Specialist)

Name : Ms. Nadeesha Perera
Role : Senior UX/UI Designer
Experience : 6 years
Expertise : Designing digital platforms for public sector services (e-services, citizen portals).

A UX/UI designer experienced in government digital platforms opens the GN QuickCheck prototype to evaluate the clarity and simplicity of the “Check GN Availability and Required Documents” feature.

She focuses on design consistency, icon clarity, spacing, readability, and whether users can easily follow steps without confusion. The evaluator checks if screens follow common design standards used in government portals and identifies issues like cluttered text blocks or unclear visual hierarchies.

Scenario 2 : HCI Researcher / Academic

Name : Dr. Kevin Silva
Role : Lecturer in Human–Computer Interaction
Experience : 10+ years
Expertise : Usability testing, interaction design, Nielsen’s Heuristics, user-centered design.

An HCI expert conducts a systematic walkthrough of the interface using Nielsen’s 10 heuristics.

He attempts tasks such as searching for a GN division, checking availability, and viewing required documents. The evaluator notes any heuristic violations like ambiguous system status, lack of error prevention, or mismatch between system terms and real-world GN processes. His evaluation ensures the system adheres to established usability principles.

Scenario 3 : Grama Niladhari Officer (Domain Expert)

Name : Mr. S. Tharindu Jayakody
Role : Grama Niladhari - Colombo Division
Experience : 8 years in service
Expertise : Civil registration, certificate issuance, Samurdhi verification, pension approvals, land administration.

A GN officer uses the system to verify if it accurately reflects real GN workflows, such as issuing certificates, handling civil registrations, Samurdhi, land permits, and pension-related documents.

He checks whether the terminology matches what citizens use, whether steps represent real officer availability patterns, and whether instructions are practical. He pointed out inconsistencies or incorrect information that could confuse users or misrepresent GN services.

Scenario 4 : Citizen User (General Public – Moderate Digital Literacy)

Name : Ms. Hiruni Dilhani
Role : School teacher & regular user of GN services
Experience : Moderate digital literacy
Expertise : Frequent use of GN services for certificates, permits, school documentation.

A citizen who frequently visits the GN office opens GN QuickCheck to find requirements for a land certificate and to check whether the officer is available today.

During evaluation, she identifies points where they feel confused, overwhelmed, or uncertain. She comments on whether the system is easy to understand, whether the instructions are clear, and if she can complete her task without prior training. Her feedback highlights real-world usability issues from the citizen's perspective.

Scenario 5 : Social Service Officer / Administrative Clerk

Name : Mr. Malshan Raveesha
Role : Social Service Officer – Welfare & Pension Unit
Experience : 7 years
Expertise : Handling Samurdhi approvals, pension forms, land and welfare documentation.

A social service officer familiar with Samurdhi, pensions, welfare programs, and certificate processing evaluates the platform by performing typical citizen tasks. He checks whether the document requirements listed in the system match actual administrative procedures. He also observes whether users are prevented from making common mistakes, such as submitting incomplete forms. His scenario focuses on workflow accuracy and error prevention.

6. Thinking Aloud

User 1 : Young Adult Applying for NIC Update

Name : Dinuka Fernando

Profile : Undergraduate at University of Colombo, 23 years old, studying IT

Since citizens of varying ages and digital literacy will use GN QuickCheck, we tested the system on five users with different expertise levels in IT and experience with government services.

Dinuka did a great job navigating the platform because of his high IT literacy. He easily located his GN division and checked the documents required for address verification. However, he asked where to download the application form initially, suggesting the button could be more prominent. Overall, he was satisfied with the experience and found the platform helpful.

User 2 : Parent Requesting School Admission Letter

Name : Nadeesha Gunawardena

Profile : School Teacher, 38 years old, moderate digital literacy

Nadeesha represents adult users who frequently need GN services. She successfully searched for her GN division and viewed the required documents for her child's residency certificate. She noted that some service names were confusing and suggested using simpler language. Despite minor navigation confusion, she felt confident using the platform and appreciated the checklist feature.

User 3 : Elderly Citizen Applying for Pension

Name : Harsha Liyanage

Profile : Retired Government Worker, 63 years old, low digital literacy

Harsha represents elderly users with limited IT experience. He struggled initially to select the correct service but successfully completed the task with guidance. He suggested increasing font size and adding clearer instructions. Overall, he was satisfied that the system showed officer availability and reduced his need to visit the GN office multiple times.

User 4 : Small Business Owner Applying for Permit

Name : Shanthi Rajapaksha

Profile : Small Business Owner, 42 years old, moderate IT literacy

Shanthi represents users dealing with permits and business-related GN services. She handled the tasks well, finding the required documents and GN availability. She recommended making the download button for forms more visible. She appreciated how the system helped her plan a single, well-prepared visit to the GN office.

User 5 : Samurdhi Beneficiary Submitting Welfare Documents

Name : Megha Aviraj

Profile : Welfare Beneficiary, 31 years old, basic IT literacy

Megha represents low-literacy users relying on GN services for welfare. He successfully found the Samurdhi service and officer availability but needed guidance understanding some terminology. He suggested adding simple instructions or icons. Despite minor confusion, he found the platform useful and said it would save him time and unnecessary visits.

7. Results

7.1. Heuristic Evaluation Results

Evaluator	Role	What They Did	Key Issues Found	Results / Recommendations
Ms. Nadeesha Perera	UX/UI Designer	<ul style="list-style-type: none"> - Evaluated layout - Spacing - Icons - Visual hierarchy 	<ul style="list-style-type: none"> - Cluttered text blocks - Inconsistent spacing - Unclear visual hierarchy 	<ul style="list-style-type: none"> - Improve spacing - Increase contrast - Standardize icons - Enhance readability
Dr. Kevin Silva	HCI Researcher	<ul style="list-style-type: none"> - Applied Nielsen's heuristics to key tasks 	<ul style="list-style-type: none"> - Weak visibility of system status - Limited error prevention - Mismatch in real-world terminology 	<ul style="list-style-type: none"> - Strengthen feedback messages - Add error-prevention cues - Improve terminology alignment
Mr. S. Tharindu Jayakody	Grama Niladhari Officer	<ul style="list-style-type: none"> - Validated workflow accuracy and terminology 	<ul style="list-style-type: none"> - Minor inconsistencies in Samurdhi/ pension terminology - Some unclear steps 	<ul style="list-style-type: none"> - Correct administrative wording - Improve clarity of multi-signature instructions
Ms. Hiruni Dilhani	Citizen User	<ul style="list-style-type: none"> - Performed a task to check land certificate requirements 	<ul style="list-style-type: none"> - Confusing service names - Momentary uncertainty during navigation 	<ul style="list-style-type: none"> - Simplify wording - Make service labels more citizen-friendly
Mr. Malshan Raveesha	Social Service Officer	<ul style="list-style-type: none"> - Reviewed welfare/pension documentation accuracy 	<ul style="list-style-type: none"> - Missing warnings for common mistakes - Unclear form requirements 	<ul style="list-style-type: none"> - Add error-prevention messages - Highlight photocopy/original document needs

Heuristic	Evaluator 1	Evaluator 2	Evaluator 3	Evaluator 4	Evaluator 5	Average Rating
1. Visibility of System Status	5	4	5	5	4	4.6
2. Match Between System & Real World	4	4	5	3	4	4.0
3. User Control & Freedom	5	4	5	4	4	4.4
4. Consistency & Standards	5	5	5	5	5	5.0
5. Error Prevention	4	3	4	4	5	4.0
6. Recognition Rather Than Recall	5	4	4	5	4	4.4
7. Flexibility & Efficiency of Use	4	5	4	4	5	4.4
8. Aesthetic & Minimalist Design	3	4	5	4	4	4.0
9. Help & Documentation	4	4	5	5	4	4.4

1 - Very Poor
2 - Poor
3 - Average
4 - Good
5 - Excellent

7.2. Thinking Aloud Results

User	Profile	Experience During Task	Issues Faced	Suggestions / Improvements
Dinuka Fernando	IT Undergraduate	- Completed tasks easily - smooth navigation	Missed download button at first	Make form download button larger and more prominent
Nadeesha Gunawardena	Parent & Teacher	- Found documents and GN division successfully	Some service names confusing	Use simpler terms for services
Harsha Liyanage	Elderly Citizen	- Completed task with guidance - appreciated availability feature	Small font size, unclear icons	Add large-font mode and clearer icons
Shanthi Rajapaksha	Small Business Owner	- Easily found permit requirements and availability	Download button not visible enough	Highlight form download section
Megha Aviraj	Samurdhi Beneficiary	- Found required services and availability with slight help	Difficult terminology, needed icons	Add icons, simplify language, include visual cues

8. Conclusion

GN QuickCheck effectively addresses a long-standing issue in Sri Lanka's administrative system uncertainty and stress when accessing GN services. By offering a transparent, mindful, and easy-to-use platform, it enables citizens to make informed decisions, prepare documents correctly, and avoid unnecessary visits to GN offices.

The system successfully:

- Reduces confusion and misinformation
- Improves efficiency and planning
- Supports elderly, rural, and low digital literacy users
- Enhances trust in public administrative services
- Encourages digital transformation in local governance

Both the Heuristic Evaluation and Thinking Aloud sessions confirm that users value the platform's clarity, simplicity, and practicality. With future enhancements such as, complete accessibility features, appointment scheduling, and real-time service updates. GN QuickCheck has strong potential to evolve into a nationally adopted tool, transforming how citizens interact with their GN officers and improving the overall public service experience.
