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Optimizing a logging process for contact center solutions

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Master’s Thesis | Abstract

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Optimizing a logging process for contact center solutions

This thesis explored how structured change management and service design methods were used to improve internal processes in a digital work environment. The study focused on a case within a local technical support department, where a logging tool used in customer service was being redesigned to enhance efficiency and employee experience. Through workshops, qualitative feedback, and performance metrics, the project was applying collaborative design practices to address resistance, improve workflow, and support adaptation during organizational change. The findings highlighted the value of combining service design with clear change leadership to implement sustainable improvements in fast-paced digital teams.

Keywords:
Change management, digitalization, leadership practices, service design, user experience, HTML, CSS, JavaScript

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Jonny Ekholm

Asiakaspalvelukeskuksen kirjausprosessin optimointi

Tämä opinnäytetyö tutki, miten jäsenneltyä muutosjohtamista ja palvelumuotoilun menetelmiä voidaan hyödyntää sisäisten prosessien parantamisessa digitaalisessa työympäristössä. Tutkimus keskittyi paikallisen teknisen tuen osaston tapaukseen, jossa asiakaspalvelussa käytetty kirjautumistyökalu suunniteltiin uudelleen tehokkuuden ja työntekijäkokemuksen parantamiseksi. Työpajojen, laadullisen palautteen ja suorituskykymittareiden avulla projekti sovelsi yhteiskehittämisen käytäntöjä vastarinnan käsittelemiseksi, työnkulun kehittämiseksi ja muutokseen sopeutumisen tukemiseksi organisaatiossa. Tulokset korostavat palvelumuotoilun ja selkeän muutosjohtamisen yhdistämisen arvoa, kun tavoitteena on toteuttaa kestäviä parannuksia nopeatempoisissa digitaalisissa tiimeissä.

Asiasanat:
Muutosjohtaminen, digitalisaatio, johtamiskäytännöt, palvelumuotoilu, käyttäjäkokemus, HTML, CSS, JavaScript

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List of abbreviations (or) symbols

Abbreviation	Explanation of abbreviation (Source)
API	Application Programming Interface
BI	Business Intelligence
CRM	Customer Relationship Management
CSAT	Customer Satisfaction
GDPR	General Data Protection Regulation
ID	Identification
NLP	Natural Language Processing
NPS	Net Promoter Score
UI	User Interface

1 Introduction

This thesis explores the optimization of a logging process within a local technical support department as part of a broader organizational change initiative. Using service design, leadership theory, and change management, the thesis project aimed to reduce manual input and repetitive tasks while preserving user familiarity and minimizing disruption.

The core objectives were to examine leadership practices in change settings within the organisation, apply collaborative service design methods, and explore how structured change management can address team dynamics and resistance. The goal was to enhance operational efficiency for frontline employees and improve process transparency for middle and upper management. The research was guided by the following questions: What challenges were encountered in implementing change management? What role did service design play in streamlining processes and improving workflow? And how could communication strategies support adaptation to changes in team dynamics?

A mixed-methods case study was used. Qualitative data came from interviews and workshops with frontline staff, while quantitative metrics assessed improvements in speed, accuracy, and productivity. The project aimed to demonstrate how participatory methods and intentional leadership can drive sustainable process improvement in a dynamic workplace environment.

Evaluating the existing tool

Before initiating the thesis project, it was necessary to analyze the existing logging tool that had been in use by the technical support department. This evaluation served as the foundation for understanding current challenges and identifying areas for improvement. The old tool, while functional, had multiple limitations that impacted user experience and efficiency (see Appendix 1). One of the most frequently reported issues was the manual nature of the tool. Users were required to input repetitive data, often duplicating entries that could

otherwise have been automated. This not only consumed valuable time but also increased the likelihood of human error. From a user experience perspective, the interface of the original tool was not intuitive, especially for new employees. Many users reported a lack of real-time feedback and uncertainty about whether tasks had been logged correctly. There was also no centralized way to track performance metrics or visualize task history, making it difficult for employees to self-assess or for supervisors to provide targeted support. Feedback collected during initial team discussions revealed a strong desire for a more efficient, transparent, and user-friendly tool. These insights helped shape the objectives of the workshops and guided the choice of service design methods. The goal was not only to replace the old system but to co-create a solution that genuinely met user needs and aligned with evolving operational requirements.

2 The need for organizational adaption in a digital world

The continuous emergence of new technologies creates an ongoing need for companies to adapt in order to remain competitive and avoid falling behind at critical turning points. In parallel, employee attitudes significantly influence the success of change initiatives, acting as both positive and negative forces in the change management process. This theoretical chapter explores several interconnected concepts, such as change management, digitalization, service design, and leadership practices. Together, these elements provide a foundation for understanding how organizations can effectively navigate technological transformation and continuous improvement.

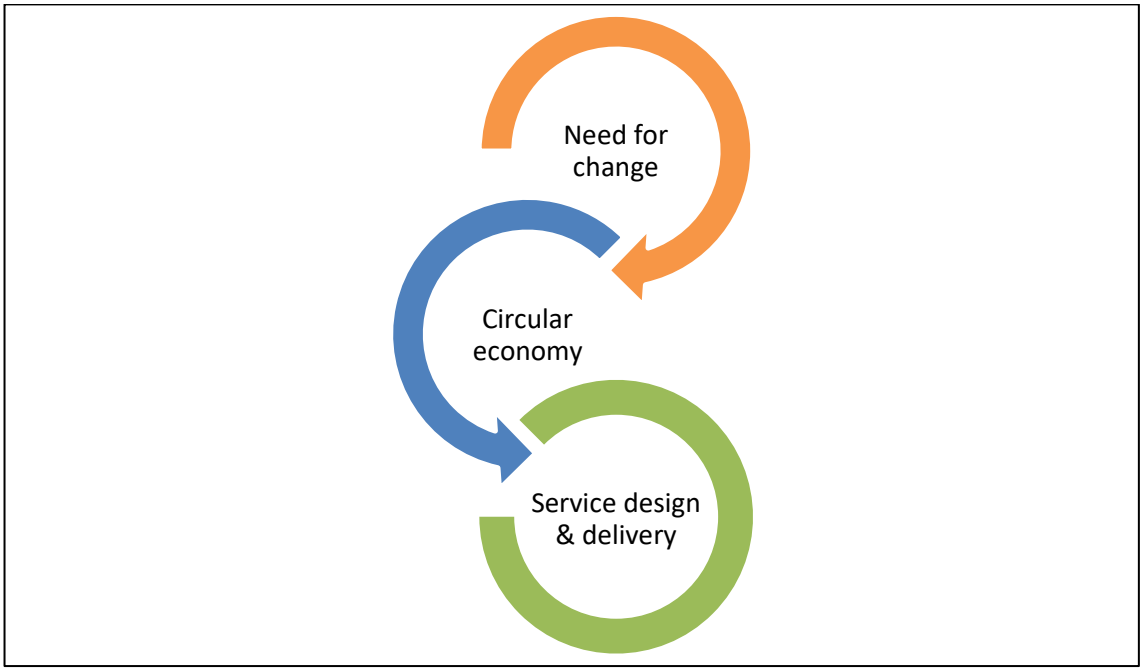

Figure 1. The iterative process.

Figure 1 illustrates how the need for change can be addressed through circular economy principles, which in turn inform service design and delivery. This process is iterative, highlighting the ongoing nature of adaptation and refinement in organizational development.

2.1 Theoretical approaches to change management

Numerous theoretical models have been developed to guide organizational change. These include Lewin's Change Theory, Chin and Benne's Effecting Changes in Human Systems, Bullock and Batten's Phases of Planned Change, Beckard and Harris's Change Formula, and the 7-S Framework (Passenheim, 2010, pp. 13-17).

Chin and Benne identified three strategies for implementing change within organizations. The empirical-rational strategy assumes that individuals will adopt change when it is shown to be in their best interest. The normative-reeducative strategy emphasizes the importance of aligning change with the recipient's values and beliefs. In contrast, the power-coercive strategy relies on authority and enforcement to overcome resistance (Passenheim, 2010, pp. 13-14).

Bullock and Batten proposed a linear four-phase model: exploration, planning, action, and integration. According to this model, organizations begin by diagnosing problems, then move on to designing and implementing solutions, which are ultimately integrated into the organizational culture (Passenheim, 2010, pp. 14-16).

The 7-S Framework, introduced by McKinsey & Company, suggests that successful change requires coherence across seven internal dimensions: strategy, structure, systems, shared values, style, staff, and skills (Waterman et al., 1980, pp. 17-26). Alignment among these elements is seen as critical for sustainable transformation.

In Lewin's change management model, the process consists of three stages: unfreezing, changing, and refreezing. During the unfreezing stage, the manager prepares individuals for change by creating awareness of its necessity and explaining why the organization must adapt to new technology to remain competitive. The unfreezing stage is followed by the change phase, which involves implementing new processes and systems. This may include training

employees on how to use the technology. Finally the refreezing stage reinforces the change, solidifying it into the organizational culture (Passenheim, 2010, p. 26).

Figure 2. An illustration of Lewin's change management model.

Beckard and Harris's change formula is a conceptual equation used to evaluate whether change is feasible. According to Passenheim (2010), "For change to occur, the cost of change must be outweighed by dissatisfaction with the status quo, the desirability of the proposed change, and the practicality of the change" (p. 16). In the formula, D represents dissatisfaction with the current state, V stands for a clear and compelling vision, F denotes the first steps toward change, and R signifies resistance.

$$(D\ x\ V\ x\ F) > R$$

Figure 3. Beckard and Harris's Change formula.

These components are used to assess whether the drivers of change are strong enough to overcome resistance. It is expected that some degree of resistance will occur, and this model helps management determine whether the proposed change is worth pursuing.

For this thesis project, Lewin's change management model was deployed. The unfreeze-change-refreeze framework offered a clear structure for guiding the change process with minimal disruption to daily operations. Staff were prepared for the unfreezing phase through evidence-based communication, achievable visions, and managerial support. During implementation, progress updates and

personalized support helped employees navigate the change phase. In the refreezing stage, the new solution was stabilized within daily routines. To further embed the change and promote understanding, positive behaviors were rewarded, and ongoing discussions were encouraged to maintain alignment with the new approach.

2.2 Frame of reference

This thesis project is grounded in a multidisciplinary framework combining principles from change management, service design, and leadership practices. The selected theories and models provide both conceptual clarity and practical guidance for the implementation and evaluation of the proposed logging tool.

From a change management perspective, Lewin's change management model offers a foundational structure through its three phases of unfreezing, changing, and refreezing. This mode is complemented by the Kübler-Ross change curve, which offers insight into the emotional responses that often accompany organizational change. Together, these frameworks enable a dual focus on both structural and human aspects of transformation.

Service design principles, particularly the Double Diamond model, provide a structured approach to innovation and problem-solving. The model's four stages, Discover, Define, Develop, and Deliver, support iterative development and participatory design, ensuring that end-user insights directly inform the solution.

At a tactical level, empathy mapping and persona development were employed to capture the nuanced experiences and needs of frontline employees. These tools formed the basis for a customer journey map and a service blueprint, which were used to visualize pain points and identify opportunities for process improvement.

To evaluate the feasibility and internal support for the change, Beckard and Harris's change formula serves as a diagnostic tool for understanding the

balance between dissatisfaction, vision, first steps, and resistance. Dissatisfaction (D) was explored through empathy mapping and interviews, where agents voiced frustrations with repetitive logging, unclear input fields, and wasted time. A shared vision (V) of a more efficient and user-friendly process emerged during co-creation workshops, where participants helped outline key features such as auto-filled fields and reduced manual steps. First steps (F) were introduced early through low-fidelity prototypes and transparent communication about the upcoming changes, allowing participants to see immediate progress and feel involved. Resistance (R), initially present in the form of skepticism and hesitancy, was tracked through workshop feedback and informal interactions. As D, V, and F strengthened through participation and early testing, resistance declined, ultimately confirming that the conditions for successful change were in place.

This layered frame of reference enabled a coherent integration of leadership theory, user research, and digital development. It allowed the project to address both technical and cultural dimensions of change, and provided the analytical foundation for the qualitative and quantitative methods used throughout the thesis.

2.3 The circular economy and its relationship to digitalization

The circular economy provides a sustainability-focused lens for evaluating digital processes, especially in terms of reducing waste, maximizing efficiency, and promoting reuse. Digitalization plays a key role in enabling circular practices by identifying redundancies, optimizing workflows, and designing systems that are both resource- and energy-efficient (Khan et al., 2021, p. 4081; Theeraworawit et al., 2022, pp. 2, 12-13).

In the context of this thesis project, circular principles were applied through service design to minimize manual input, reduce redundant data entry, and support the reuse of structured data across workflows. This aligns with the European Union’s circular economy framework, which encourages the

reduction, reuse, and redesign of systems to create long-term value (van Langen, 2019).

For example, redesigning the case logging process to automate common entries and reusing existing templates reduced not only logging time but also digital waste, such as unnecessary documentation or repeated efforts. These improvements reflect core circular economy goals, which are improving longevity, reducing resource strain, and enhancing digital sustainability (Matarneh et al., 2024, p. 13).

While the circular economy is often discussed in material contexts, this thesis demonstrates its relevance to information systems by applying it to everyday processes in contact center operations. The result is a leaner, more efficient system aligned with both operational and environmental performance goals.

2.4 Iterative design as a change strategy

Global organizations are continuously influenced by internal and external factors. Economic fluctuations, regulatory shifts, technological advancements, and changing market dynamics all play a critical role in shaping strategic decisions. For instance, corporate mergers often present challenges related to integrating varied distribution systems and aligning operational procedures. Likewise, the accelerating pace of technological development demands constant innovation and adaption to maintain competitiveness.

To manage these complexities, an iterative design process is essential. Rather than pursuing a single, static implementation, the iterative model allows for continuous refinement of tools and systems based on real-time feedback and changing requirements. This approach not only promotes agility but also helps ensure that each development cycle brings the solution closer to meeting user needs and organizational goals.

In the context of this thesis project, once a version of the tool was finalized, it was deployed according to the iterative service design process. Post-

deployment, close monitoring was conducted to identify any issues and to allow for rapid iteration. Support mechanisms, such as dedicated contact points and feedback channels, were established to aid users during the transition.

Ongoing maintenance was prioritized to keep the tool effective and relevant over time. This included adapting to user feedback, correcting identified issues, and updating features in alignment with evolving workflows. By following a structured yet flexible process, the organization was able to implement changes with minimal disruption, while maintaining alignment with strategic weekly metrics and staff expectations.

2.5 Service design as a developing framework

By using service design as the guiding framework, the process emphasized co-creation, open dialogue, and the integration of diverse perspectives. Workshop activities, such as empathy mapping and persona development, enabled participants to surface both practical needs and unspoken concerns. These insights laid the foundation for a user-centered tool aligned with operational goals. The iterative nature of service design allowed for real-time validation and refinement, ensuring the final solution addressed both everyday challenges and broader strategic objectives.

2.6 Empathy mapping and persona development

Empathy mapping and persona development are complementary tools often used in workshops to create a holistic understanding of the end user. While personas represent archetypal users based on research, empathy maps go deeper into the user’s thoughts, feelings, needs, and behaviors (Service Design Tools, n.d.; Userpilot, 2022). Together, they offer a well-rounded perspective that supports human-centered design.

The outcomes of empathy mapping and persona development can be used to construct a customer journey map, which visualizes the user’s experience and

highlights pain points and unmet needs. In practice empathy mapping should be conducted alongside persona development to provide a richer understanding of user objectives.

Both tools are iterative by nature and form part of a broader user research process (Myre, 2023). Ethical considerations must be addressed during data collection, especially regarding privacy and compliance with regulations such as the General Data Protection Regulation (GDPR). When gathering data from individuals, anonymization and data minimization are key to protecting participant privacy and ensuring that only relevant information is processed (Dietrich, 2019).

Companies like Spotify and Airbnb have successfully employed these tools to better understand user behavior and design solutions that meet real needs. AirBnB used empathy mapping to identify user behavior patterns, goals, and pain points, enabling the company to provide a more personalized experience. Features such as 24/7 customer support and personalized listings helped Airbnb grow into an international platform active in over 200 countries and regions (Jawfer, 2023).

Similarly, Spotify's approach to enhancing user experience avoids generalizations by crafting specific personas. By analyzing customers of varying ages, cultures, and lifestyles, Spotify identifies diverse attitudes toward music consumption, perceived value of paid services, and device-specific usage patterns. This behavioral analysis allows Spotify to refine features that meet the needs of particular client segments without alienating others (Torres de Souza et al., 2019).

As Bascur and Rusu (2020, pp. 1, 7) note, delivering a great customer experience is a significant competitive advantage. By leveraging empathy maps, customer journey maps, and personas, designers can better identify user motivations and create meaningful, user-focused experiences (Alvarez et al., 2020, pp. 13-16).

3 Workshop implementation

This chapter outlines the methodology used in the project and explains how service design methods, particularly empathy mapping and persona development, were applied in the development of the new logging tool.

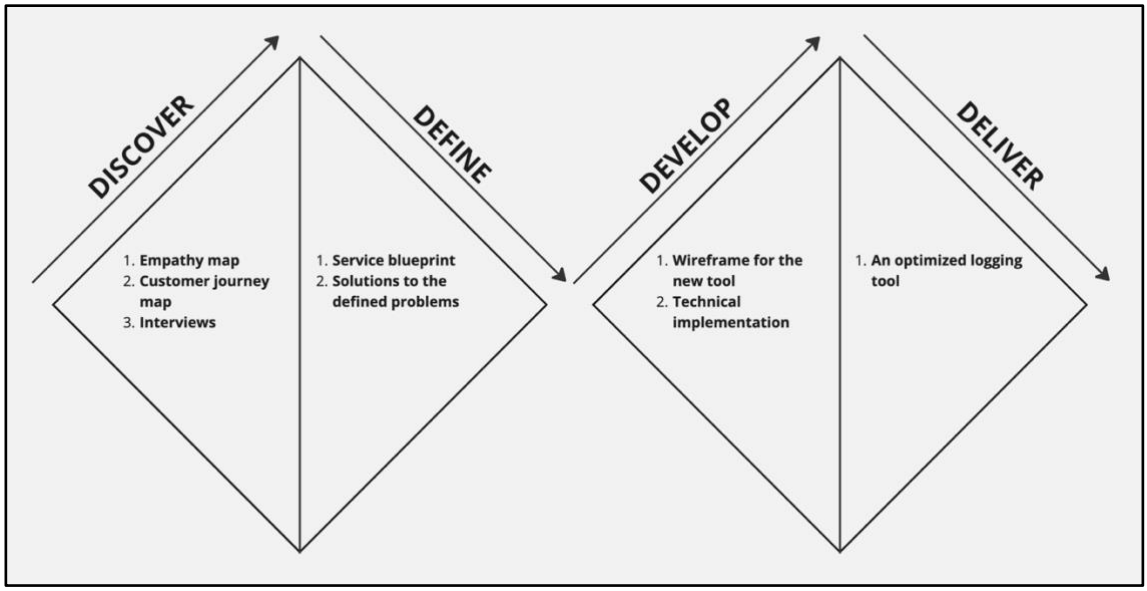

Figure 4. A double diamond diagram showing the main development stages.

The project followed the Double Diamond model, which provided a structured framework through the Discover, Define, Develop, and Deliver phases. The work was carried out under the guidance of my team leader.

Three in-depth meetings with the team leader were held during the project, supplemented by informal discussions. These sessions served to explore previous implementations, evaluate employee feedback, and finalize decisions regarding process changes.

Empathy mapping and persona development were used during workshop sessions to capture end-user perspectives and guide tool development. Participants included technical support agents and supervisors, selected through purposeful sampling to ensure relevant insights. Due to the limited

timeframe, introductory activities were combined with collaborative exercises to make the most of the session.

Semi-structured interviews were conducted beforehand to surface individual needs and workflow pain points. Insights from these interviews informed the persona creation and were later validated through stakeholder collaboration in the workshops.

To preserve privacy and comply with data regulations, all research outputs were anonymized or synthetically generated. The use of triangulation, combining interviews, workshop observations, and visual artifacts, enhanced the reliability of the findings.

During the workshop, each participant created a persona based on their experience, which were then refined into one shared group persona. Using this persona, the team collaboratively created an empathy map, focusing on what the user sees, hears, thinks, feels, and does. These activities highlighted unmet needs and generated design priorities for the tool.

Zoom and Miro were the primary platforms used for breakout sessions, discussions, and collaborative exercises.

3.1 Workshop planning and execution

A timetable (see Appendix 2) was developed based on methods described by Miro (2024) and Sessionlab (n.d.). A total of 60 minutes was allocated for the workshop.

The workshop was conducted on the Zoom platform with five colleagues. Participants used Miro to create individual personas and later combined them into a single comprehensive persona (see figure 5).

The session began with the activity on managing difficult participants. Suggestions written on the cards included: address disruptive behavior directly, encourage participation, establish clear ground rules, limit individual speaking time, and remind participants of expected conduct. The most common question, appearing on two cards, was addressing disruptive behavior directly. This response was unsurprising, as the participants already knew each other well and worked together daily.

Following this, participants created individual personas. All requested anonymity, so synthetic data were used in reporting the results. The persona creation took slightly longer than expected, primarily because none of the participants had used Miro before.

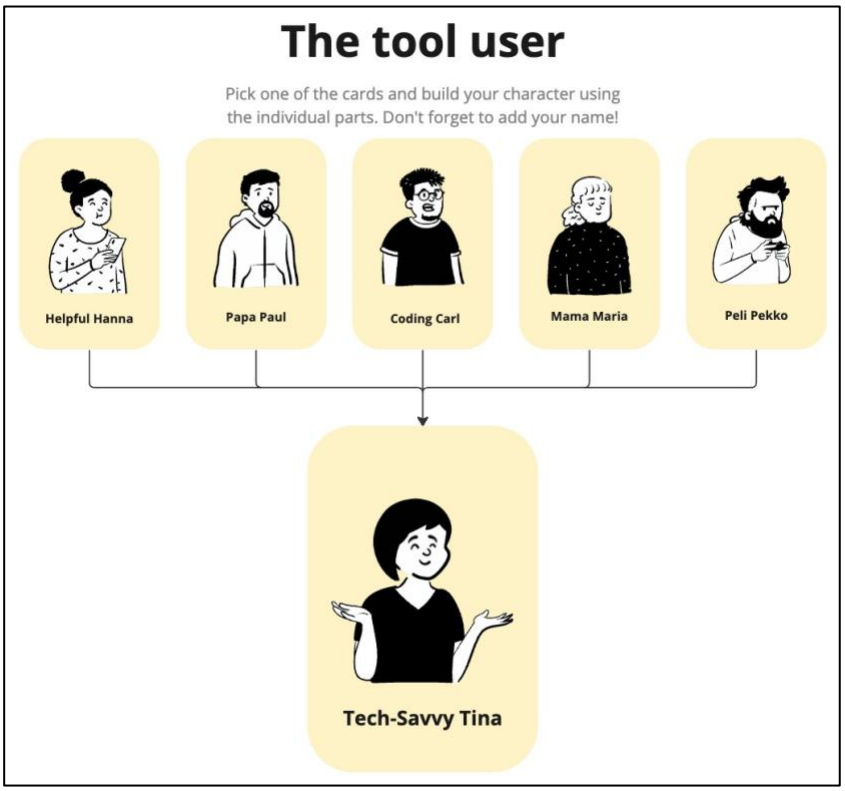

Figure 5. The result of the persona creating workshop.

The empathy mapping session also exceeded scheduled time, but the group successfully reached consensus on the traits of the final persona. Participants reported finding the results insightful and stated that they gained a clearer understanding of the workshop process by its conclusion.

Although alternative approaches were discussed at the outset, learning by doing proved to be the most effective method for this group. Participants suggested that the outputs could be used as onboarding material for new employees, visual aids in HR and stakeholder presentations, and a reference for identifying end-user needs during tool development.

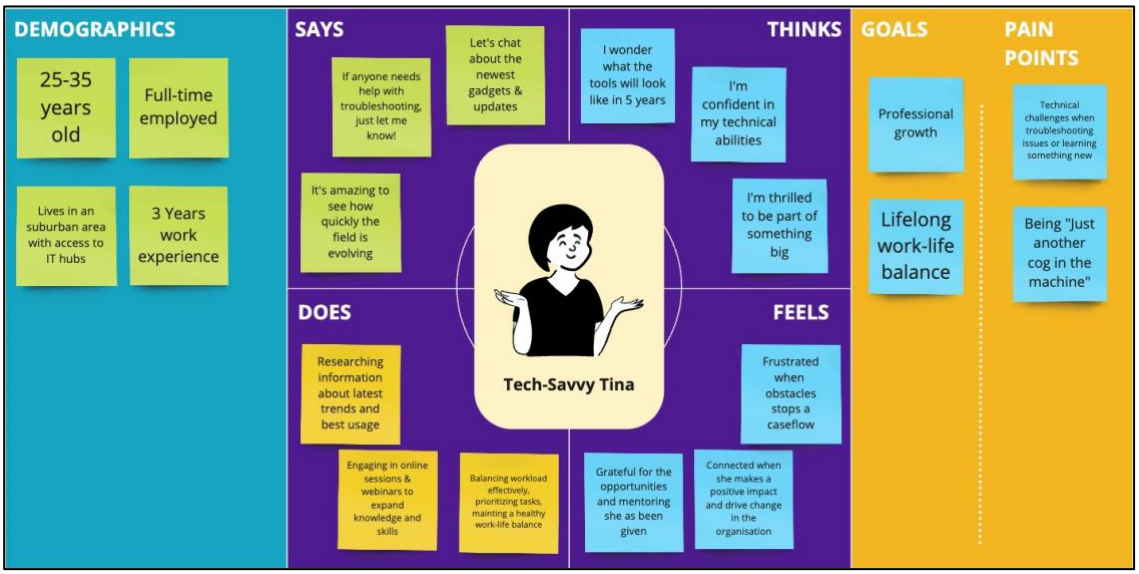

Figure 6. The result of the empathy mapping workshop.

3.2 Qualitative and quantitative analysis

As an extension of the workshop sessions, three colleagues were interviewed about their daily work experience and interaction with the logging tool. Each represented a key perspective within the department: a seasoned agent with two years of experience, a supervisor with five years of tenure, and a newly hired employee who had recently completed training. Together, their viewpoints provided a well-rounded understanding of the tool’s usability and limitations.

The interviews revealed several recurring themes, such as difficulties with outdated logging functions, inconsistent terminology, and a need for clearer guidance and standardization. A full summary of interview notes and the extracted insights can be found in Appendix 3.

Based on these findings, a service blueprint was developed to visualize the end-to-end logging process within the department (see Appendix 4). This tool helped to identify pain points and opportunities for improvement across the entire service journey, from frontstage agent interactions to backstage systems and support processes.

From a cybersecurity and GDPR compliance perspective, best practice dictates restricting data access and administrative privileges to the minimum required (General Data Protection Regulation [GDPR], 2016, Art. 32; Farman, 2024). Accordingly, the logging tool was designed as a standalone product, separate from the CRM. Preloading data from the CRM into the logging tool was explicitly prohibited. Instead, the proposed solution emphasized dynamic dropdown menus, standardized input fields, automatic tagging, and reusable log templates.

An analysis of current performance showed that the logging tool was used for an average of 40 seconds per case. The overall logging error rate stood at 12%, while the average case handling time was 15.2 minutes. The internal NPS for the logging process was 78%, and CSAT measured 92.5%.

To define success in measurable terms, management set a target to reduce logging time by 30%, from 40 seconds to 28 seconds. Given that agents typically handle 15 to 20 cases per day, this would result in approximately 3.5 minutes saved per agent daily. In a local department of 150 agents, this equates to a cumulative saving of roughly 8.75 hours of production time per day, which is a clear efficiency gain from a small but focused process improvement.

4 Process optimization and key learnings

This chapter outlines how the insights gathered from workshops, interviews, and observations were translated into concrete design decisions. Drawing on the principles of service design and user-centered development, the project moved from insight to implementation by identifying pain points, prototyping solutions, and integrating feedback. The following sections present the key findings from the research, the resulting design proposals, and the technical realization of the improved logging tool.

4.1 Key insights and observations

The workshops and interviews revealed that end users valued access to up-to-date technology, enjoyed helping others, and felt motivated when contributing to meaningful work. They reported the greatest sense of connection when their efforts led to visible improvements within the organization.

Conversely, users were discouraged by technical difficulties and by feeling like “just another cog in the machine”. Common frustrations included manual data re-entry, excessive typing, poor data structure, inconsistent logs, and the absence of templates, mandatory fields, and autofilled inputs.

To address these issues, a Double Diamond model was developed to explore and define core problems, and to guide the creation of a tool that better meets user needs (see figure 7).

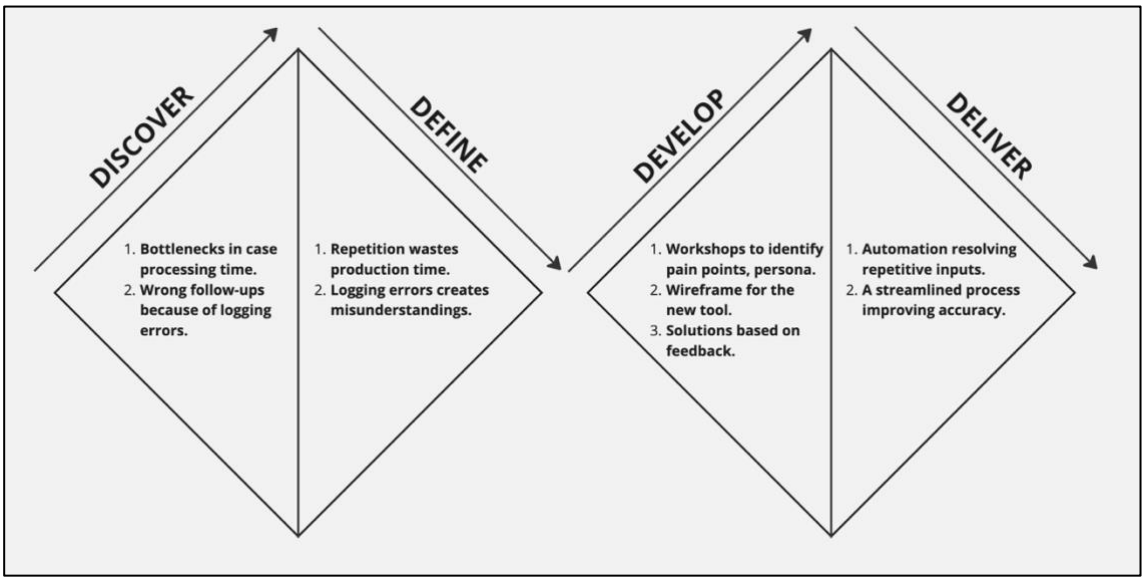

Figure 7. A double diamond diagram based on the key findings.

A customer journey map was also created from the data gathered during meetings and workshops (see figure 8). This map highlighted that the company should initially focus on creating positive user experiences when introducing the tool. After users had tried the product, their feedback could be collected and applied in subsequent development cycles. To encourage this, users could be rewarded for providing feedback and participating in continuous improvement. A QR code linking to a brief feedback survey was suggested as an easy-access solution for collecting insights and identifying recurring bottlenecks.

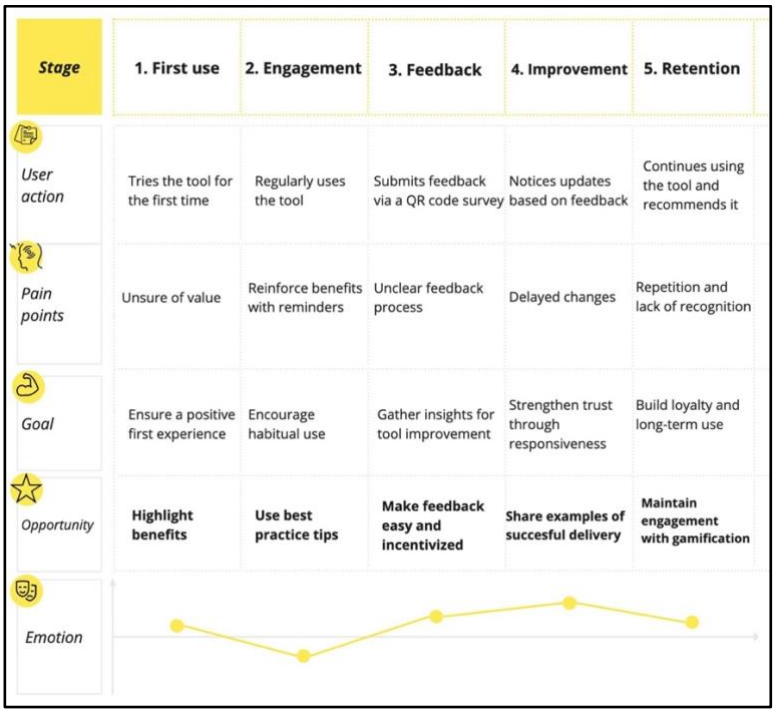

Figure 8. A proposed customer journey map based on the data collected.

4.2 Technical integration

A wireframe was developed based on user observations, interviews, and case usage data (see figure 9). The goal was to streamline the case logging process by improving navigation, enhancing usability, and embedding automation features. The interface was redesigned to follow the logical sequence of how users naturally interact with the tool, reducing friction and minimizing unnecessary steps.

To support continuous improvement, a built-in feedback mechanism was added. A QR code located beside the logging tool allows users to submit real-time suggestions and feedback via a digital form. This low-friction method encourages participation and enables the development team to identify common pain points, feature requests, and usability issues.

Figure 9. The complete wireframe of the new logging tool.

One of the core improvements was the automation of form fields. Based on prior cases and frequently used categories, the system now pre-populated fields dynamically. This reduced manual input and accelerated the logging process. Context-aware suggestions adjusted automatically based on previous user selections, decreasing cognitive load and improving accuracy.

Once users selected a case type and product category, subsequent options were filtered to match only relevant fields. In addition, mandatory fields ensured consistency and compliance with internal standards. This structured approach supported better analytics and follow-up processes.

To boost engagement and reinforce correct usage, a light gamification system was introduced. Users earned points for specific actions, such as completing and copying a log to the clipboard, which contributed to visible user levels within the tool. Achievements like the “Master Logger” badge for logging 50 cases in a

week, celebrated user milestones. These features promoted motivation, while also allowing managers to align achievements with target metrics, and reward high performers with incentives such as lunch breaks, coffee packages, or internal recognition.

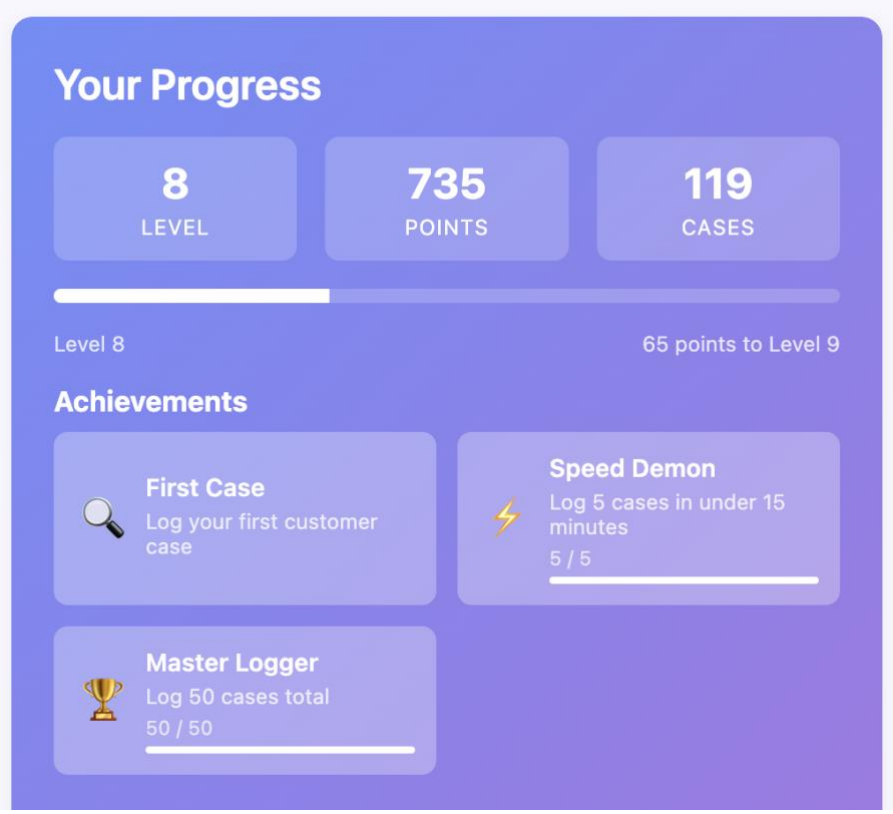

Figure 10. The gamification feature.

The wireframe was technically realized using the platform Lovable.dev. Content and interface language were refined with the support of ChatGPT-4o, ensuring clarity, consistency, and a user-friendly tone. For transparency, the raw source code is included in Appendix 5, allowing future iterations to build on the current version. This prototype represents a foundational step toward a more efficient, user-driven logging environment.

5 Implementing the change in practice

The next iteration of the project began with a team meeting during which all employees gathered to test the newly optimized logging tool. As anticipated, the initial response was not entirely positive. Many employees expressed frustration and disappointment with the implemented changes.

To address this resistance, the team conducted a live demonstration comparing the new and old logging methods. The result showed that the new streamlined process completed the task in just 18 seconds. Compared to over 40 seconds using the previous methods, that is a 55% increase in efficiency. Following the demonstration, employee interest increased notably, and attitudes toward the project began to shift.

In managing this transition, the team drew upon the Kübler-Ross Model, which outlines five stages of grief: denial, anger, bargaining, depression, and acceptance (Avis et al., 2021, pp. 1-8). Prior to the meeting, signs of denial had already emerged, with some employees expressing disbelief or insisting that no real change would occur. During the meeting, reactions progressed into anger, which was acknowledged by facilitating an open discussion. Employees were invited to share their concerns freely, with the goal of reducing emotional resistance and creating space for dialogue.

As the session continued, many participants transitioned into the bargaining stage, requesting access to the previous version of the tool or proposing compromises to avoid adopting the new system. These concerns were addressed with empathy, and the team emphasized the broader benefits of the change for workflow efficiency and organizational improvement. By the conclusion of the meeting, most participants appeared to accept the process and its intended outcomes.

Following the initial rollout, some employees reported new usability issues and pain points. They were encouraged to submit suggestions for improving the tool. Based on this feedback, a revised version was released with enhanced

autofill functionality and additional achievement features. While this second wave of changes received mixed feedback, ranging from renewed frustration to increased enthusiasm, many employees demonstrated a willingness to adapt and support the project's success.

With most team members integrating the tool into their daily routines, the project entered the refreezing stage of Lewin's change model. During the final meeting with the team leader, the implementation process was reviewed holistically. It was concluded that the approach used in this project could serve as a repeatable model for future change initiatives within the organization.

As part of the project's ongoing maintenance, employees are encouraged to continue contributing ideas for new achievement badges and incentive mechanisms. These suggestions will be reviewed by management and, where applicable, integrated into future updates of the tool. This continuous feedback loop supports sustained engagement and reinforces a culture of iterative improvement.

6 Conclusion

Effective leadership lies in balancing autonomy with structure. In the context of organizational change, a participative leadership approach fosters a sense of ownership and commitment among employees. Allowing individuals to express their potential and contribute meaningfully, while maintaining a structured framework, creates as environment favorable to both growth and successful adaptation. Those seeking to develop a leadership mindset should consider how influence can be exerted both horizontally and vertically within an organization. This involves inspiring others, guiding attention, and offering alternative perspectives, which ultimately deepens one’s understanding of broader organizational dynamics and strengthens leadership capacity.
The final prototype of the logging tool demonstrated a 55% improvement in process efficiency, resulting in a cumulative saving of approximately 16 hours of production time per day. This outcome underscores the value of collaborative, user-centered development, and structured change management.

Future development opportunities include the integration of machine learning techniques to improve predictive categorization and pattern recognition. For example, automated classification of transcripts and recordings into predefined categories could be used to generate real-time response suggestions (Algolia, 2023). Additionally, trend analysis could identify correlations between product models and reported issues, enabling automatic reporting for management insights and proactive intervention. Over time, with sufficient refinement, the tool could evolve into a fully automated system, potentially reducing the need for manual logging altogether.

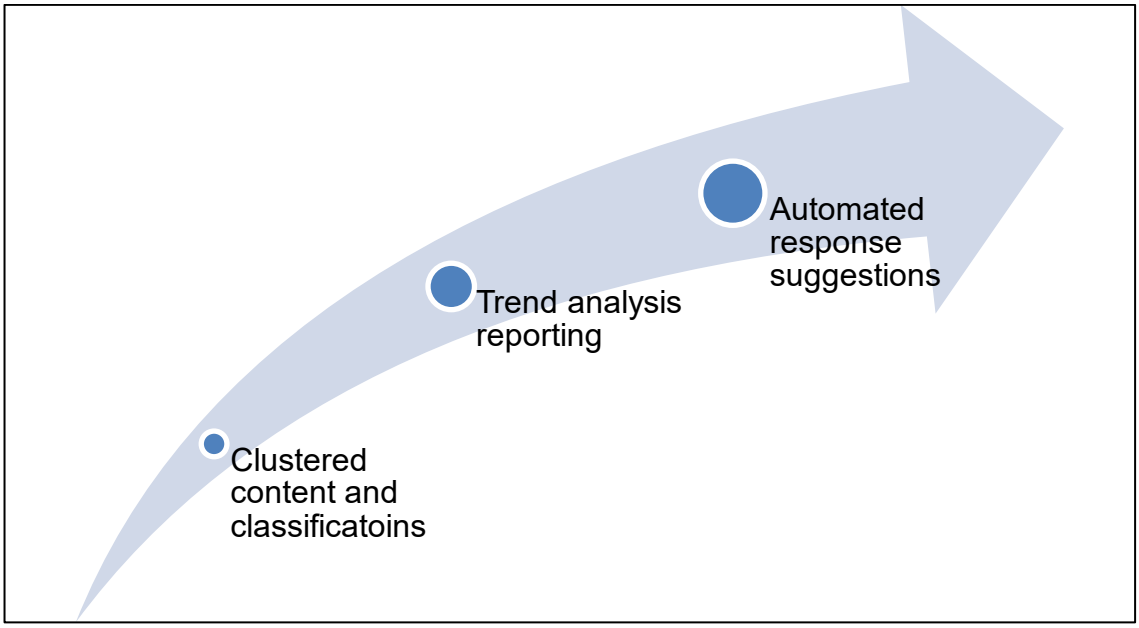

Figure 11. An abstract depiction of a future development timeline.

Reflections on practice and learning outcomes

As the project progressed, I was confronted with a difficult realization: the very tool I helped create, designed to improve efficiency, could eventually replace some of my own daily responsibilities. This insight was unsettling, but it also reinforced an important truth: in a world of rapid technological advancement, adaptability is essential.

Throughout this project, I gained a deeper understanding of how people experience and resist change, both professionally and personally. Learning about the Kübler-Ross model helped me recognize how familiar these stages were, not only in the workplace but in navigating my own life experiences. This perspective gave me greater confidence in leading others through transitions with empathy and clarity.

This process also prompted me to reevaluate my leadership approach. I have come to value compassion and resilience as essential qualities in managing change. Effective change leadership requires more than delivering instructions; it demands active follow-up, attention to how the change is received, and an

awareness of compounding effects, especially when multiple initiatives are introduced simultaneously.

In real-world settings, change is rarely clean or predictable. Team members may miss updates due to absence, illness, or temporary reassignment. Even small changes require consistent follow-up to ensure understanding, identify friction points, and correct misinterpretations. For larger operational changes, it is critical to share information early and build readiness deliberately. This allows team members time to consider the implications and prepare their own responses. However, readiness must be managed carefully, as shared assumptions can sometimes turn out to be inaccurate, creating further challenges down the line.

Ultimately, this thesis project has equipped me with the mindset and tools to lead with intention during times of change. It has highlighted the importance of empathy, clear communication, and structured adaptability in shaping successful organizational outcomes, and in shaping me as a leader.

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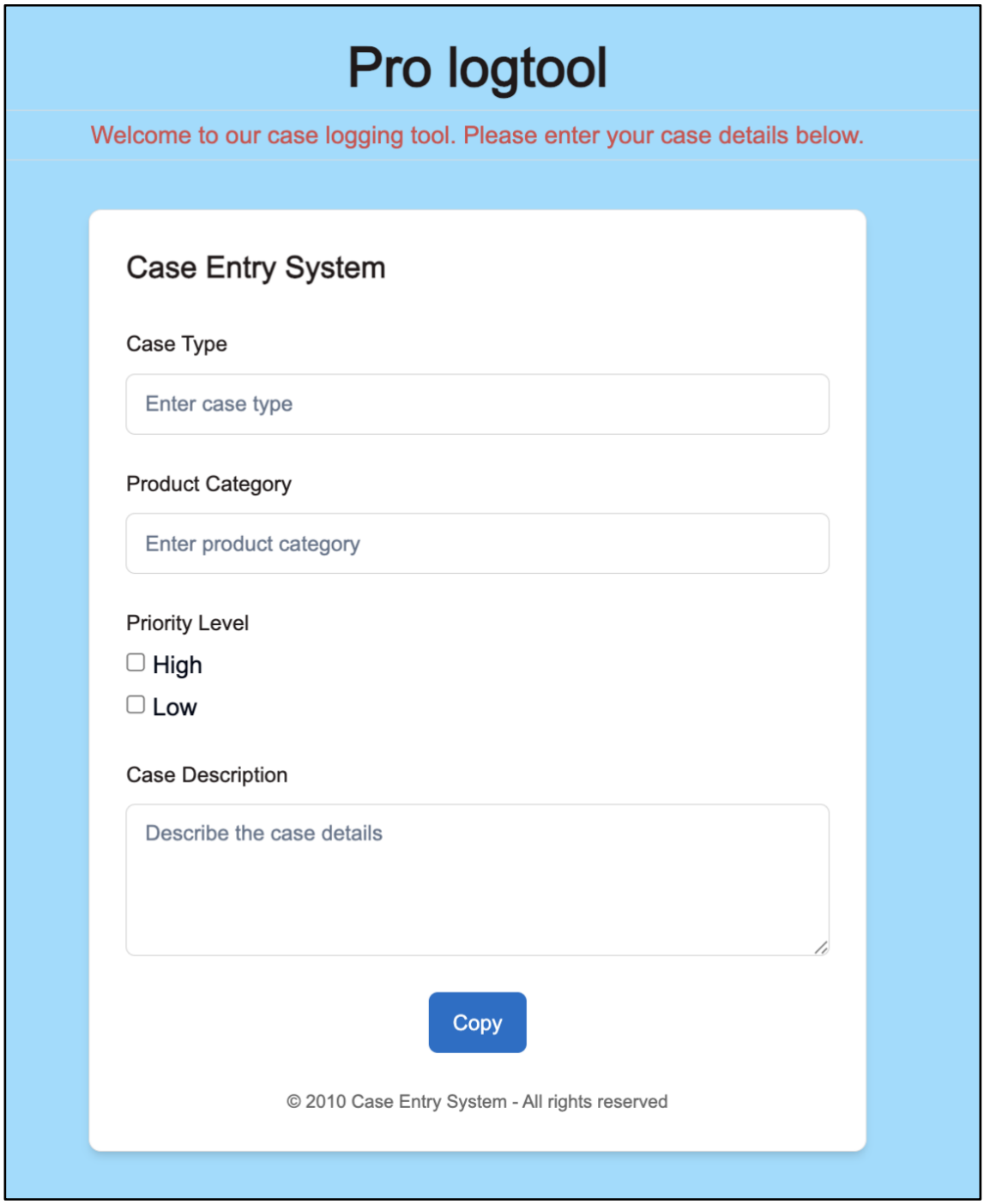
Appendix 1 - Screenshot of the logging tool that was about to be replaced



Appendix 2 - The timetable for the workshops.

Table 1. The timetable for the workshops.

Session	**Activity**	**Duration**
1	Introduction	5 minutes
	- Overview of the agenda. - Reminder of objectives and importance	
2	Combating difficult participants	10 minutes
	- Explanation of purpose and material. - Brainstorming strategies. - Cards shuffled and redistributed. - Identification of common patterns.	
3	Persona development	20 minutes
	- Introduction to persona development. - Individual persona creation. - Identifying similarities and refining into one persona.	
4	Empathy mapping	20 minutes
	- Introduction of empathy mapping. - Sharing and recording persona insights. - Collaborative completion of the empathy map.	
5	Conclusion and next steps	5 minutes
	- Summary of key insights. - Discussion of potential applications in tool development.	

Appendix 3 - The interview summary table.

Table 2. The interview summary table.

Employee	Raw interview notes	Extracted insights
Sofia, Agent (2y)	- Logging functions were lengthy and outdated. - Uncertainty about correct categories. - Difficulty in reviewing previous logs. - Desire for templates and autofill options.	- Simplify and streamline logging functions. - Add tooltips or contextual guidance. - Introduce smart templates based on case type.
Max, Supervisor (5y)	- Uses logs for escalations and compliance. - Inconsistencies in log quality across agents. - Would benefit from mandatory fields and tagging features.	- Standardize required fields across logs. - Use dynamic fields based on contact reason. - Enable auto-tagging or AI-powered suggestions.
Emilia, New hire (2mo.)	- Relies on peers and past logs for learning. - Confused by vague terminology. - Wants clearer guidance.	- Clarify interface terminology. - Embed best practices or tips within the UI.

Appendix 4 - Service blueprint for the logging process.

Table 3. Service blueprint for the logging process.

Touchpoints	**Frontstage**	**Backstage**	**Support processes**	**Pain points**	**Opportunities**
CRM interface	Receives call, confirms order	System pulls up customer data	Database / API call	Data load delays	Preload basic info based on contact number
Logging UI	Opens logging form	Autofills customer / order details	CRM ↔ Logging tool	Manual re-entry needed	Link for to CRM to reduce duplication
During Call	Selects issue type	System suggests likely outcomes	Machine learning	Too many options	Use dynamic menus based on contact reason
Logging	Voice notes or types short text	System transcribes voice, tags log	NLP / Voice to text AI	Typing slows resolution	Voice input + pre-filled templates
Post-call	Submits log	System archives + links to case ID	Logging archive system	Poor data structure	Auto-tagging and required fields
Supervisor Usage	Supervisor views case log	Data visualized in performance dashboard	BI Tool / Data reporting	Not consistent logging	Standardized fields and reusable log structures

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-
scale=1.0">
  <title>Case Logs</title>
  <style>
    * {
      margin: 0;
      padding: 0;
      box-sizing: border-box;
      font-family: -apple-system, BlinkMacSystemFont, 'Segoe UI',
Roboto, Oxygen, Ubuntu, Cantarell, 'Open Sans', 'Helvetica Neue',
sans-serif;
    }

    body {
      background-color: #F8F7FF;
      color: #1A1F2C;
      padding: 1rem;
    }

    .container {
      max-width: 1200px;
      margin: 0 auto;
      padding: 1rem;
    }

    .grid {
      display: grid;
      grid-template-columns: 1fr;
      gap: 1.5rem;
    }

    @media (min-width: 768px) {
      .grid {
        grid-template-columns: 2fr 1fr;
      }
```

```
}

.card {
  background-color: white;
  border-radius: 0.75rem;
  box-shadow: 0 2px 10px rgba(0, 0, 0, 0.05);
  overflow: hidden;
}

.card-header {
  padding: 1.5rem;
  border-bottom: 1px solid #eee;
}

.card-title {
  font-size: 1.5rem;
  font-weight: 600;
}

.card-content {
  padding: 1.5rem;
}

.form-group {
  margin-bottom: 1rem;
}

label {
  display: block;
  margin-bottom: 0.5rem;
  font-size: 0.875rem;
  font-weight: 500;
}

select, input, textarea {
  width: 100%;
  padding: 0.5rem;
  border: 1px solid #ddd;
  border-radius: 0.375rem;
```

```
  font-size: 0.875rem;
}

textarea {
  min-height: 100px;
  resize: vertical;
}

.grid-cols-3 {
  display: grid;
  grid-template-columns: 1fr;
  gap: 1rem;
}

@media (min-width: 640px) {
  .grid-cols-3 {
    grid-template-columns: repeat(3, 1fr);
  }
}

.button {
  display: flex;
  align-items: center;
  justify-content: center;
  gap: 0.5rem;
  width: 100%;
  padding: 0.625rem;
  background-color: #9b87f5;
  color: white;
  border: none;
  border-radius: 0.375rem;
  font-weight: 500;
  cursor: pointer;
  transition: background-color 0.2s;
}

.button:hover {
  background-color: #8670e0;
}
```

```
.subject-dropdown {
  position: relative;
}

.suggestions-container {
  position: absolute;
  width: 100%;
  max-height: 200px;
  overflow-y: auto;
  background-color: white;
  border: 1px solid #ddd;
  border-radius: 0.375rem;
  z-index: 10;
  box-shadow: 0 4px 12px rgba(0, 0, 0, 0.1);
  display: none;
}

.suggestion-item {
  padding: 0.5rem;
  cursor: pointer;
  transition: background-color 0.1s;
}

.suggestion-item:hover {
  background-color: #f3f3f3;
}

.toast {
  position: fixed;
  bottom: 20px;
  right: 20px;
  padding: 1rem;
  background-color: #333;
  color: white;
  border-radius: 0.375rem;
  box-shadow: 0 4px 12px rgba(0, 0, 0, 0.15);
  transform: translateY(100px);
  opacity: 0;
```

```
    transition: all 0.3s;
    z-index: 1000;
}

.toast.show {
    transform: translateY(0);
    opacity: 1;
}

.toast-title {
    font-weight: 600;
    margin-bottom: 0.25rem;
}

.qr-section {
    display: flex;
    flex-direction: column;
    align-items: center;
    text-align: center;
}

.qr-label {
    font-size: 0.75rem;
    color: white;
    margin-top: 0.5rem;
}

/* Gamification styles */
.gamification-card {
    background: linear-gradient(135deg, #6e8efb 0%, #a777e3 100%);
    color: white;
}

.stats-container {
    display: flex;
    flex-wrap: wrap;
    gap: 1rem;
    margin-bottom: 1rem;
}
```

```
.stat-box {
  background-color: rgba(255, 255, 255, 0.2);
  padding: 0.75rem;
  border-radius: 0.5rem;
  flex: 1;
  min-width: 100px;
  text-align: center;
}

.stat-value {
  font-size: 1.5rem;
  font-weight: bold;
  margin-bottom: 0.25rem;
}

.stat-label {
  font-size: 0.75rem;
  text-transform: uppercase;
  letter-spacing: 0.05em;
}

.progress-container {
  height: 0.5rem;
  background-color: rgba(255, 255, 255, 0.2);
  border-radius: 1rem;
  margin: 0.5rem 0 1rem;
  overflow: hidden;
}

.progress-bar {
  height: 100%;
  background-color: #ffffff;
  transition: width 0.3s ease;
}

.level-info {
  display: flex;
  justify-content: space-between;
```

```
  font-size: 0.75rem;
  color: rgba(255, 255, 255, 0.8);
}

.achievements-title {
  margin-top: 1rem;
  margin-bottom: 0.5rem;
  font-size: 1rem;
  color: white;
}

.achievements-grid {
  display: grid;
  grid-template-columns: repeat(2, 1fr);
  gap: 0.75rem;
}

.achievement-badge {
  background-color: rgba(255, 255, 255, 0.15);
  border-radius: 0.5rem;
  padding: 0.75rem;
  display: flex;
  align-items: center;
  gap: 0.5rem;
  transition: transform 0.2s, background-color 0.2s;
}

.achievement-badge.unlocked {
  background-color: rgba(255, 255, 255, 0.3);
}

.achievement-badge:hover {
  transform: translateY(-2px);
}

.achievement-icon {
  font-size: 1.5rem;
  min-width: 2rem;
  text-align: center;
```

```
}

.achievement-details {
  flex: 1;
}

.achievement-name {
  font-size: 0.875rem;
  font-weight: 600;
  margin-bottom: 0.25rem;
}

.achievement-description {
  font-size: 0.75rem;
  color: rgba(255, 255, 255, 0.8);
  margin-bottom: 0.25rem;
}

.achievement-progress {
  font-size: 0.7rem;
  color: rgba(255, 255, 255, 0.7);
}

.achievement-progress-bar {
  height: 4px;
  background-color: rgba(255, 255, 255, 0.2);
  border-radius: 2px;
  margin-top: 0.25rem;
  overflow: hidden;
}

.achievement-progress-fill {
  height: 100%;
  background-color: #ffffff;
  transition: width 0.3s ease;
}

footer {
  margin-top: 3rem;
```

```
      padding-top: 1rem;
      border-top: 1px solid #eee;
    }
  </style>
</head>
<body>
  <div class="container">
    <div class="grid">
      <div>
        <div class="card">
          <div class="card-header">
            <h2 class="card-title">Case Log</h2>
          </div>
          <div class="card-content">
            <form id="caseForm">
              <div class="grid-cols-3">
                <div class="form-group">
                  <label for="caseType">Case Type</label>
                  <select id="caseType" name="caseType">
                    <option value="">Select type</option>
                    <option value="Technical Issue">Technical
Issue</option>
                    <option value="Feature Request">Feature
Request</option>
                    <option value="Billing Question">Billing
Question</option>
                    <option value="Account Access">Account
Access</option>
                    <option value="Product Inquiry">Product
Inquiry</option>
                  </select>
                </div>

                <div class="form-group">
                  <label for="productCategory">Product
Category</label>
                  <select id="productCategory" name="productCategory">
                    <option value="">Select category</option>
```

```
                    <option value="Desktop Software">Desktop
Software</option>
                    <option value="Mobile App">Mobile App</option>
                    <option value="Web Application">Web
Application</option>
                    <option value="API Integration">API
Integration</option>
                    <option value="Hardware">Hardware</option>
                  </select>
                </div>

                <div class="form-group">
                  <label for="priority">Priority</label>
                  <select id="priority" name="priority">
                    <option value="low">Low</option>
                    <option value="medium" selected>Medium</option>
                    <option value="high">High</option>
                    <option value="critical">Critical</option>
                  </select>
                </div>
              </div>

              <div class="form-group">
                <label for="status">Status</label>
                <select id="status" name="status">
                  <option value="New" selected>New</option>
                  <option value="In Progress">In Progress</option>
                  <option value="Pending Customer">Pending
Customer</option>
                  <option value="Pending Developer">Pending
Developer</option>
                  <option value="Resolved">Resolved</option>
                </select>
              </div>

              <div class="form-group subject-dropdown">
                <label for="subject">Subject</label>
                <input type="text" id="subject" name="subject"
placeholder="Enter case subject">
```

```
                <div class="suggestions-container"
id="subjectSuggestions"></div>
              </div>

              <div class="form-group">
                <label for="description">Case Description</label>
                <textarea id="description" name="description"
placeholder="Enter detailed case description here..."></textarea>
              </div>

              <button type="button" class="button" id="copyButton">
                 Copy to Clipboard
              </button>
            </form>
          </div>
        </div>
      </div>

      <div class="card">
        <!-- Gamification Dashboard -->
        <div class="card gamification-card">
          <div class="card-content">
            <h2 class="card-title" style="color: white; margin-bottom:
1rem;">Your Progress</h2>

            <div class="stats-container">
              <div class="stat-box">
                <div id="level-value" class="stat-value">1</div>
                <div class="stat-label">Level</div>
              </div>
              <div class="stat-box">
                <div id="points-value" class="stat-value">0</div>
                <div class="stat-label">Points</div>
              </div>
              <div class="stat-box">
                <div id="cases-value" class="stat-value">0</div>
                <div class="stat-label">Cases</div>
              </div>
            </div>
```

```
            <div class="progress-container">
              <div id="level-progress" class="progress-bar"
style="width: 0%"></div>
            </div>

            <div class="level-info">
              <span>Level <span id="current-level">1</span></span>
              <span><span id="points-to-next-level">100</span> points
to Level <span id="next-level">2</span></span>
            </div>

            <h3 class="achievements-title">Achievements</h3>
            <div id="achievements-container" class="achievements-
grid">
              <!-- Achievements will be inserted here by JavaScript --
>
            </div>

          </div>
          <div class="card-content qr-section">
  <img src="qr.png" alt="QR code for feedback" width="50"/>
            <p class="qr-label">Scan to give feedback</p>
          </div>
        </div>

      </div>
    </div>
  </div>

  <footer>
  </footer>

  <div class="toast" id="toast">
    <div class="toast-title">Copied to clipboard</div>
    <div class="toast-description">Case details have been copied to
clipboard</div>
  </div>
```

```
<script>
  // -------------------- Gamification System --------------------
  const defaultAchievements = [
    {
      id: "first_case",
      name: "First Case",
      description: "Log your first customer case",
      icon: "",
      points: 10,
      unlocked: false
    },
    {
      id: "speed_demon",
      name: "Speed Demon",
      description: "Log 5 cases in under 15 minutes",
      icon: "⚡",
      points: 30,
      unlocked: false,
      progress: 0,
      target: 5
    },
    {
      id: "master_logger",
      name: "Master Logger",
      description: "Log 50 cases total",
      icon: "",
      points: 100,
      unlocked: false,
      progress: 0,
      target: 50
    }
  ];

  let userStats = {
    totalCases: 0,
    fastResolutions: 0,
    customerSatisfaction: 0,
    level: 1,
    points: 0,
```

```
      achievements: [...defaultAchievements],
      recentCases: []
    };

    // Load user stats from localStorage if available
    function loadUserStats() {
      const savedStats = localStorage.getItem('userStats');
      if (savedStats) {
        userStats = JSON.parse(savedStats);
        // Ensure achievements are up-to-date with current definition
        // This handles removing achievements that no longer exist
        userStats.achievements =
defaultAchievements.map(defaultAchievement => {
          const existingAchievement = userStats.achievements.find(a =>
a.id === defaultAchievement.id);
          return existingAchievement || defaultAchievement;
        });
      }
      updateUI();
    }

    // Save user stats to localStorage
    function saveUserStats() {
      localStorage.setItem('userStats', JSON.stringify(userStats));
    }

    // Calculate level based on points
    function calculateLevel(points) {
      return Math.floor(points / 100) + 1;
    }

    // Calculate level progress percentage
    function calculateLevelProgress(points) {
      return (points % 100);
    }

    // Update achievements based on user activity
    function updateAchievements() {
      const achievements = [...userStats.achievements];
```

```
      let pointsAdded = 0;

      // First case achievement
      if (!achievements.find(a => a.id === "first_case").unlocked &&
userStats.totalCases > 0) {
        const index = achievements.findIndex(a => a.id ===
"first_case");
        achievements[index] = { ...achievements[index], unlocked: true
};
        pointsAdded += achievements[index].points;
      }

      // Master logger achievement
      const masterLoggerAchievement = achievements.find(a => a.id ===
"master_logger");
      if (!masterLoggerAchievement.unlocked && userStats.totalCases >=
masterLoggerAchievement.target) {
        const index = achievements.findIndex(a => a.id ===
"master_logger");
        achievements[index] = { ...achievements[index], unlocked:
true, progress: masterLoggerAchievement.target };
        pointsAdded += achievements[index].points;
      } else if (!masterLoggerAchievement.unlocked) {
        const index = achievements.findIndex(a => a.id ===
"master_logger");
        achievements[index] = { ...achievements[index], progress:
userStats.totalCases };
      }

      // Speed demon achievement - tracking cases logged within 15
minutes
      const speedDemonAchievement = achievements.find(a => a.id ===
"speed_demon");
      if (speedDemonAchievement && !speedDemonAchievement.unlocked) {
        // Get recent cases in the last 15 minutes
        const now = Date.now();
        const fifteenMinutesAgo = now - (15 * 60 * 1000);

        // Add the current case
```

```
        if (!userStats.recentCases) {
          userStats.recentCases = [];
        }
        userStats.recentCases.push({ timestamp: now });

        // Filter recent cases within the last 15 minutes
        const recentCases = userStats.recentCases.filter(c =>
c.timestamp >= fifteenMinutesAgo);
        userStats.recentCases = recentCases; // Keep only recent cases

        const casesInTimeframe = recentCases.length;
        const index = achievements.findIndex(a => a.id ===
"speed_demon");

        if (casesInTimeframe >= (speedDemonAchievement.target || 5)) {
          achievements[index] = {
            ...achievements[index],
            unlocked: true,
            progress: speedDemonAchievement.target
          };
          pointsAdded += achievements[index].points;
        } else {
          achievements[index] = {
            ...achievements[index],
            progress: casesInTimeframe
          };
        }
      }

      userStats.achievements = achievements;
      userStats.points += pointsAdded;
      userStats.level = calculateLevel(userStats.points);

      saveUserStats();
      updateUI();

      // If points were added from achievements, show a notification
      if (pointsAdded > 0) {
        showAchievementToast(pointsAdded);
```

```
    }
  }

  // Add points to user's stats
  function addPoints(points) {
    userStats.points += points;
    userStats.level = calculateLevel(userStats.points);
    saveUserStats();
    updateUI();
  }

  // Increment the number of cases
  function incrementCases() {
    userStats.totalCases += 1;
    updateAchievements();
  }

  // Show achievement notification
  function showAchievementToast(points) {
    const toast = document.getElementById('toast');
    toast.querySelector('.toast-title').textContent = 'Achievement
Unlocked!';
    toast.querySelector('.toast-description').textContent = `You
earned ${points} points`;
    toast.classList.add('show');

    setTimeout(() => {
      toast.classList.remove('show');
    }, 3000);
  }

  // Update the UI to reflect current user stats
  function updateUI() {
    // Update level and points display
    document.getElementById('level-value').textContent =
userStats.level;
    document.getElementById('points-value').textContent =
userStats.points;
```

```
      document.getElementById('cases-value').textContent =
userStats.totalCases;

      // Update level progress
      const progressPercent =
calculateLevelProgress(userStats.points);
      document.getElementById('level-progress').style.width =
`${progressPercent}%`;

      // Update level info text
      document.getElementById('current-level').textContent =
userStats.level;
      document.getElementById('next-level').textContent =
userStats.level + 1;
      document.getElementById('points-to-next-level').textContent =
100 - progressPercent;

      // Render achievements
      renderAchievements();
    }

    // Render achievement badges
    function renderAchievements() {
      const achievementsContainer =
document.getElementById('achievements-container');
      achievementsContainer.innerHTML = '';

      userStats.achievements.forEach(achievement => {
        const achievementElement = document.createElement('div');
        achievementElement.className = `achievement-badge
${achievement.unlocked ? 'unlocked' : ''}`;

        const hasProgress = achievement.progress !== undefined &&
achievement.target !== undefined;
        const progressPercent = hasProgress ? (achievement.progress /
achievement.target) * 100 : 0;

        achievementElement.innerHTML = `
          <div class="achievement-icon">${achievement.icon}</div>
```

```
          <div class="achievement-details">
            <div class="achievement-name">${achievement.name}</div>
            <div class="achievement-
description">${achievement.description}</div>
            ${hasProgress ? `
              <div class="achievement-
progress">${achievement.progress} / ${achievement.target}</div>
              <div class="achievement-progress-bar">
                <div class="achievement-progress-fill" style="width:
${progressPercent}%"></div>
              </div>
            ` : ''}
          </div>
        `;

        achievementsContainer.appendChild(achievementElement);
      });
    }

    // -------------------- Subject Suggestions --------------------
    const subjectSuggestions = {
      "Technical Issue": {
        "Desktop Software": [
          "Application crashes on startup",
          "Error when saving files",
          "Performance issues with latest update",
          "Installation failure"
        ],
        "Mobile App": [
          "App freezes during login",
          "Push notifications not working",
          "Battery drain issue",
          "Sync failure between devices"
        ],
        "Web Application": [
          "Page loading error",
          "Login authentication failed",
          "Session timeout issues",
          "Data not displaying correctly"
```

```
    ],
    "API Integration": [
      "API connection timeout",
      "Authentication error with API",
      "Rate limit exceeded",
      "Incorrect data format returned"
    ],
    "Hardware": [
      "Device not powering on",
      "Connection issues with peripherals",
      "Overheating problems",
      "Driver compatibility issues"
    ]
  },
  "Feature Request": {
    "Desktop Software": [
      "Add dark mode support",
      "Implement keyboard shortcuts",
      "Add file export options",
      "Support for additional file formats"
    ],
    "Mobile App": [
      "Offline mode functionality",
      "Widget for home screen",
      "Improved notification management",
      "Integration with health apps"
    ],
    "Web Application": [
      "Two-factor authentication",
      "Enhanced reporting dashboard",
      "Bulk action capabilities",
      "Custom field creation"
    ],
    "API Integration": [
      "Webhook support",
      "Batch processing endpoints",
      "Rate limit increase",
      "Additional authentication methods"
    ],
```

```
    "Hardware": [
      "Support for new operating system",
      "Additional connectivity options",
      "Custom firmware request",
      "Power management features"
    ]
  },
  "Billing Question": {
    "Desktop Software": [
      "License renewal issue",
      "Upgrade pricing inquiry",
      "Refund request",
      "Volume licensing options"
    ],
    "Mobile App": [
      "Subscription cancellation",
      "In-app purchase not showing",
      "Family plan inquiry",
      "Promo code not working"
    ],
    "Web Application": [
      "Incorrect charge on account",
      "Change billing cycle",
      "Update payment method",
      "Invoice request"
    ],
    "API Integration": [
      "Usage billing questions",
      "API quota exceeded charges",
      "Enterprise pricing options",
      "Pay-as-you-go model details"
    ],
    "Hardware": [
      "Warranty extension options",
      "Service plan inquiry",
      "Replacement parts pricing",
      "Return policy question"
    ]
  },
```

```
  "Account Access": {
    "Desktop Software": [
      "Reset activation code",
      "Transfer license to new computer",
      "Account migration assistance",
      "Admin privileges issue"
    ],
    "Mobile App": [
      "Cannot sign in after update",
      "Account recovery",
      "Device authorization issue",
      "Switch account between devices"
    ],
    "Web Application": [
      "Password reset not working",
      "Two-factor authentication locked out",
      "Account suspended",
      "Email change verification"
    ],
    "API Integration": [
      "API key regeneration",
      "OAuth token expired",
      "Developer account access",
      "Permission scopes issue"
    ],
    "Hardware": [
      "BIOS password reset",
      "Device lockout after failed attempts",
      "Factory reset assistance",
      "Recovery mode access"
    ]
  },
  "Product Inquiry": {
    "Desktop Software": [
      "System requirements",
      "Compatibility with OS version",
      "Available languages",
      "Offline capabilities"
    ],
```

```
        "Mobile App": [
          "Device compatibility check",
          "Data usage requirements",
          "Availability in app store",
          "Differences between free and paid versions"
        ],
        "Web Application": [
          "Browser compatibility",
          "Data security measures",
          "User limit on plans",
          "Custom deployment options"
        ],
        "API Integration": [
          "Available endpoints",
          "Documentation access",
          "Sample integration code",
          "SLA guarantees"
        ],
        "Hardware": [
          "Technical specifications",
          "Comparison between models",
          "Upgrade path information",
          "Compatibility with third-party products"
        ]
      }
    };

    // -------------------- Form Handling --------------------
    document.addEventListener('DOMContentLoaded', function() {
      // Load user stats
      loadUserStats();

      const caseTypeSelect = document.getElementById('caseType');
      const productCategorySelect =
document.getElementById('productCategory');
      const subjectInput = document.getElementById('subject');
      const subjectSuggestionsContainer =
document.getElementById('subjectSuggestions');
      const copyButton = document.getElementById('copyButton');
```

```
      const toast = document.getElementById('toast');

      // Update subject suggestions based on case type and product
category
      function updateSubjectSuggestions() {
        const caseType = caseTypeSelect.value;
        const productCategory = productCategorySelect.value;

        if (caseType && productCategory &&
subjectSuggestions[caseType]?.[productCategory]) {
          const suggestions =
subjectSuggestions[caseType][productCategory];

          // Clear previous suggestions
          subjectSuggestionsContainer.innerHTML = '';

          // Add new suggestions
          suggestions.forEach(suggestion => {
            const item = document.createElement('div');
            item.classList.add('suggestion-item');
            item.textContent = suggestion;
            item.addEventListener('click', () => {
              subjectInput.value = suggestion;
              subjectSuggestionsContainer.style.display = 'none';
            });

            subjectSuggestionsContainer.appendChild(item);
          });
        }
      }

      // Show suggestions when clicking on subject input
      subjectInput.addEventListener('click', () => {
        const caseType = caseTypeSelect.value;
        const productCategory = productCategorySelect.value;

        if (caseType && productCategory &&
subjectSuggestions[caseType]?.[productCategory]) {
          subjectSuggestionsContainer.style.display = 'block';
```

```
        }
      });

      // Hide suggestions when clicking outside
      document.addEventListener('click', (e) => {
        if (e.target !== subjectInput && e.target !==
subjectSuggestionsContainer) {
          subjectSuggestionsContainer.style.display = 'none';
        }
      });

      // Update suggestions when case type or product category changes
      caseTypeSelect.addEventListener('change',
updateSubjectSuggestions);
      productCategorySelect.addEventListener('change',
updateSubjectSuggestions);

      // Filter suggestions based on input
      subjectInput.addEventListener('input', () => {
        const caseType = caseTypeSelect.value;
        const productCategory = productCategorySelect.value;
        const inputValue = subjectInput.value.toLowerCase();

        if (caseType && productCategory &&
subjectSuggestions[caseType]?.[productCategory]) {
          const suggestions =
subjectSuggestions[caseType][productCategory];

          // Clear previous suggestions
          subjectSuggestionsContainer.innerHTML = '';

          // Filter and add matching suggestions
          const filteredSuggestions = suggestions.filter(suggestion =>
            suggestion.toLowerCase().includes(inputValue)
          );

          if (filteredSuggestions.length > 0) {
            filteredSuggestions.forEach(suggestion => {
              const item = document.createElement('div');
```

```
            item.classList.add('suggestion-item');
            item.textContent = suggestion;
            item.addEventListener('click', () => {
              subjectInput.value = suggestion;
              subjectSuggestionsContainer.style.display = 'none';
            });

            subjectSuggestionsContainer.appendChild(item);
          });

          subjectSuggestionsContainer.style.display = 'block';
        } else {
          subjectSuggestionsContainer.style.display = 'none';
        }
      }
    });

    // Format case details for clipboard
    function generateFormattedDescription() {
      const caseType = caseTypeSelect.value || "[Not selected]";
      const productCategory = productCategorySelect.value || "[Not
selected]";
      const priority = document.getElementById('priority').value ||
"[Not selected]";
      const status = document.getElementById('status').value ||
"[Not selected]";
      const subject = subjectInput.value || "[No subject]";
      const description =
document.getElementById('description').value || "[No description]";

      return `Case type: ${caseType}
Product category: ${productCategory}
Priority: ${priority}
Status: ${status}
Subject: ${subject}
Description: ${description}`;
    }

    // Copy to clipboard functionality
```

```
      copyButton.addEventListener('click', () => {
        const formattedText = generateFormattedDescription();

        navigator.clipboard.writeText(formattedText)
          .then(() => {
            // Show toast notification
            toast.querySelector('.toast-title').textContent = 'Copied
to clipboard';
            toast.querySelector('.toast-description').textContent =
'Case details have been copied to clipboard';
            toast.classList.add('show');
            setTimeout(() => {
              toast.classList.remove('show');
            }, 3000);

            // Update gamification stats - add points and increment
cases
            incrementCases();
            addPoints(5);
          })
          .catch(err => {
            console.error("Could not copy text: ", err);
            alert("Failed to copy to clipboard. Please try again.");
          });
      });
    });
  </script>
</body>
</html>
```